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CONDUCTED BY

H. H. STATHAM,

FELLOW OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.



"EVERY man's proper mansion-house, and home, being the theater of his hospitality, the seat of self-fruit, the comfortablest part of his own life, the noblest of his sonne's inheritance, a kind of private principedome, nay, to the possessors thereof, an epitome of the whole world, may well deserve, by these attributes, according to the degree of the master, to be decently and delightfully adorned."

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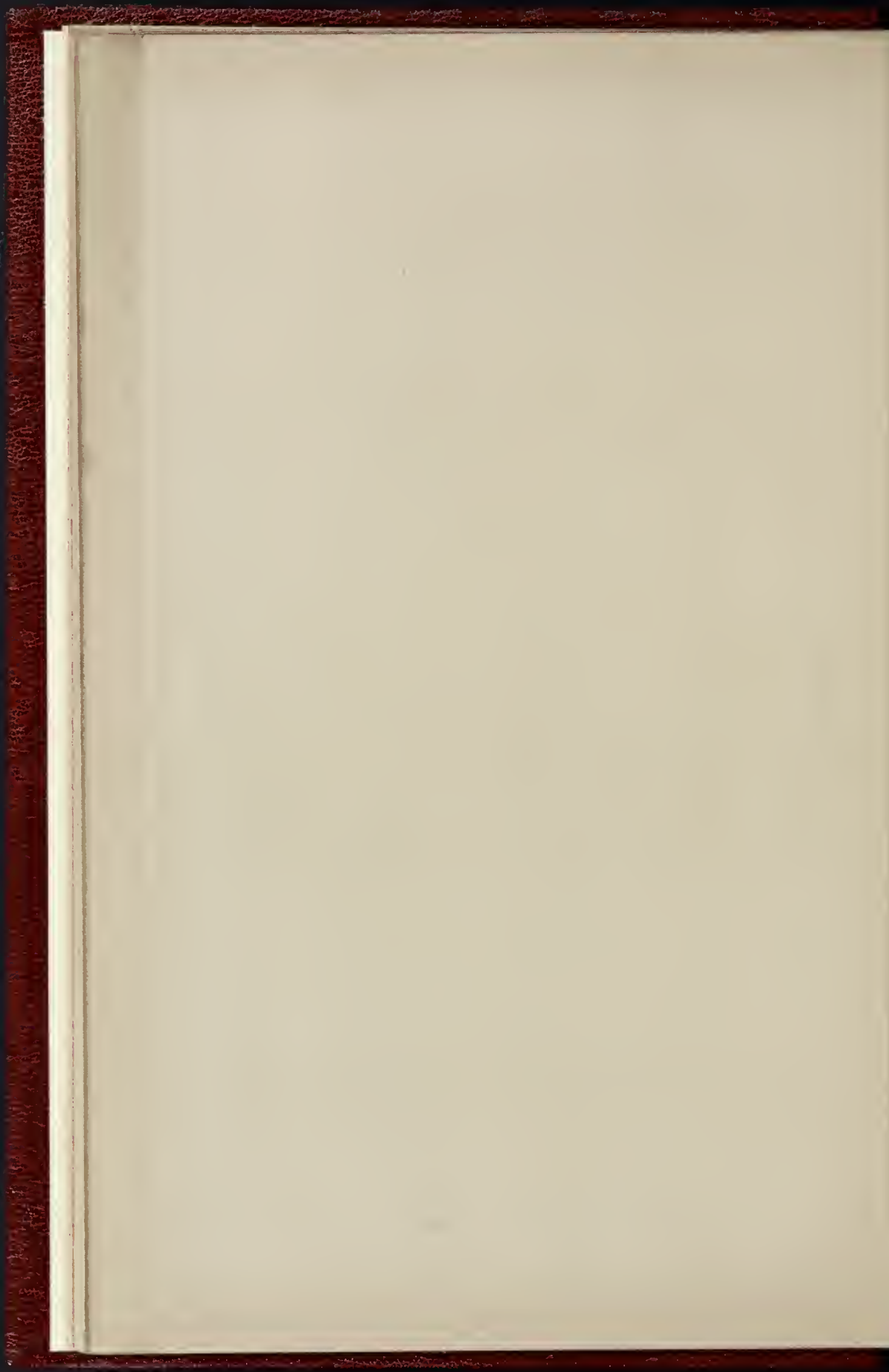
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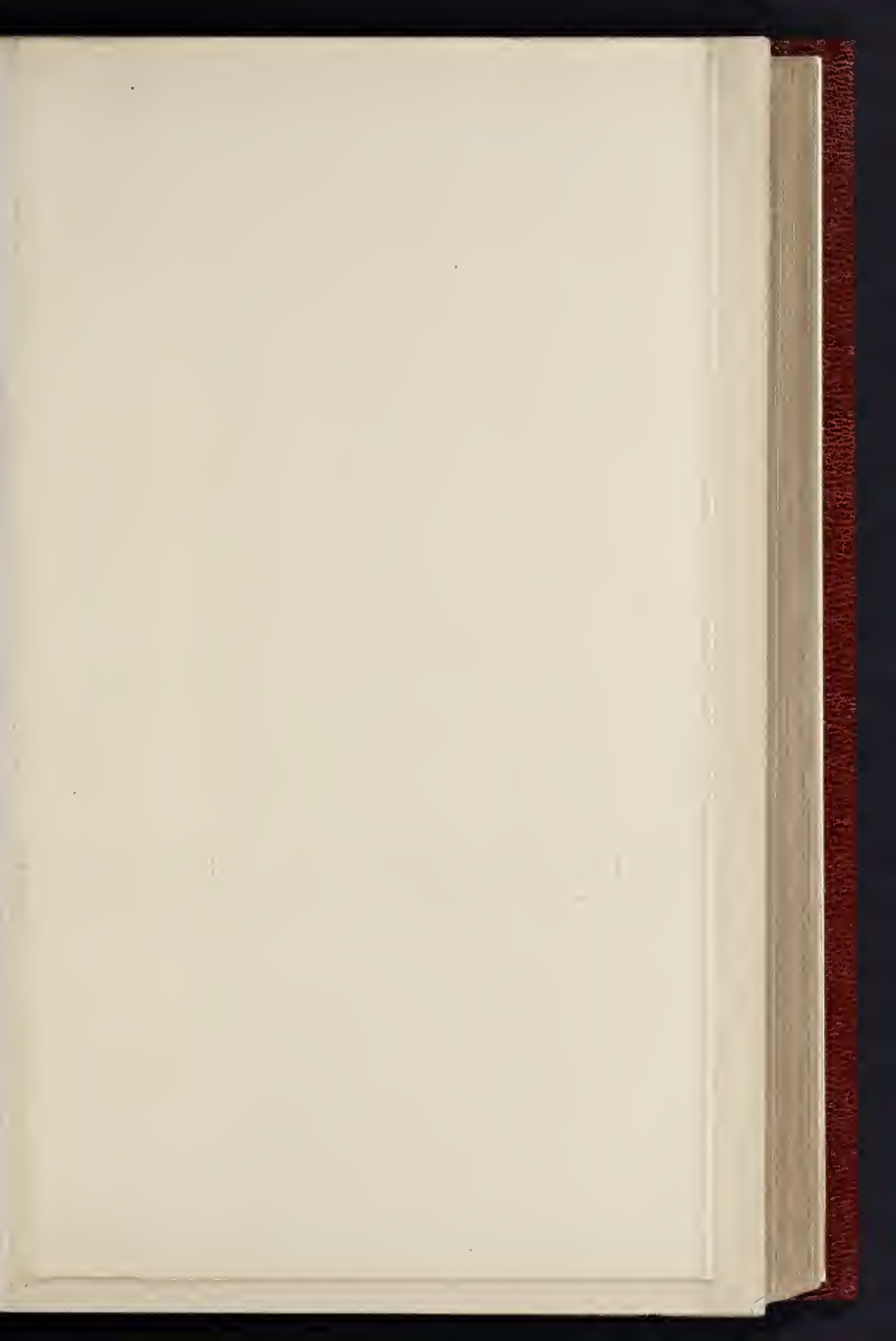
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DER ANGEL



FRIEZE - ALLIÉES - M. J. S. 1861





Hackney.

West Ham & Purry . St Botolph Aldgate

City, St. Aldgate .

Boro . Bowley, Purry . St Mary Whitechapel



The Dove House.

Howards Hatch

"Bleis Marks" St Andrew's on the hill of The Refectory

Holy Trinity Church of Priory

West End of Priory

Bowley Street

Whitechapel Docks

Moores

City Hall - Poor Jewry

Priory House

Great Court of Purry

St Michaels Church & Gate of Priory

Chief Church Clergery

St Catharine Cree

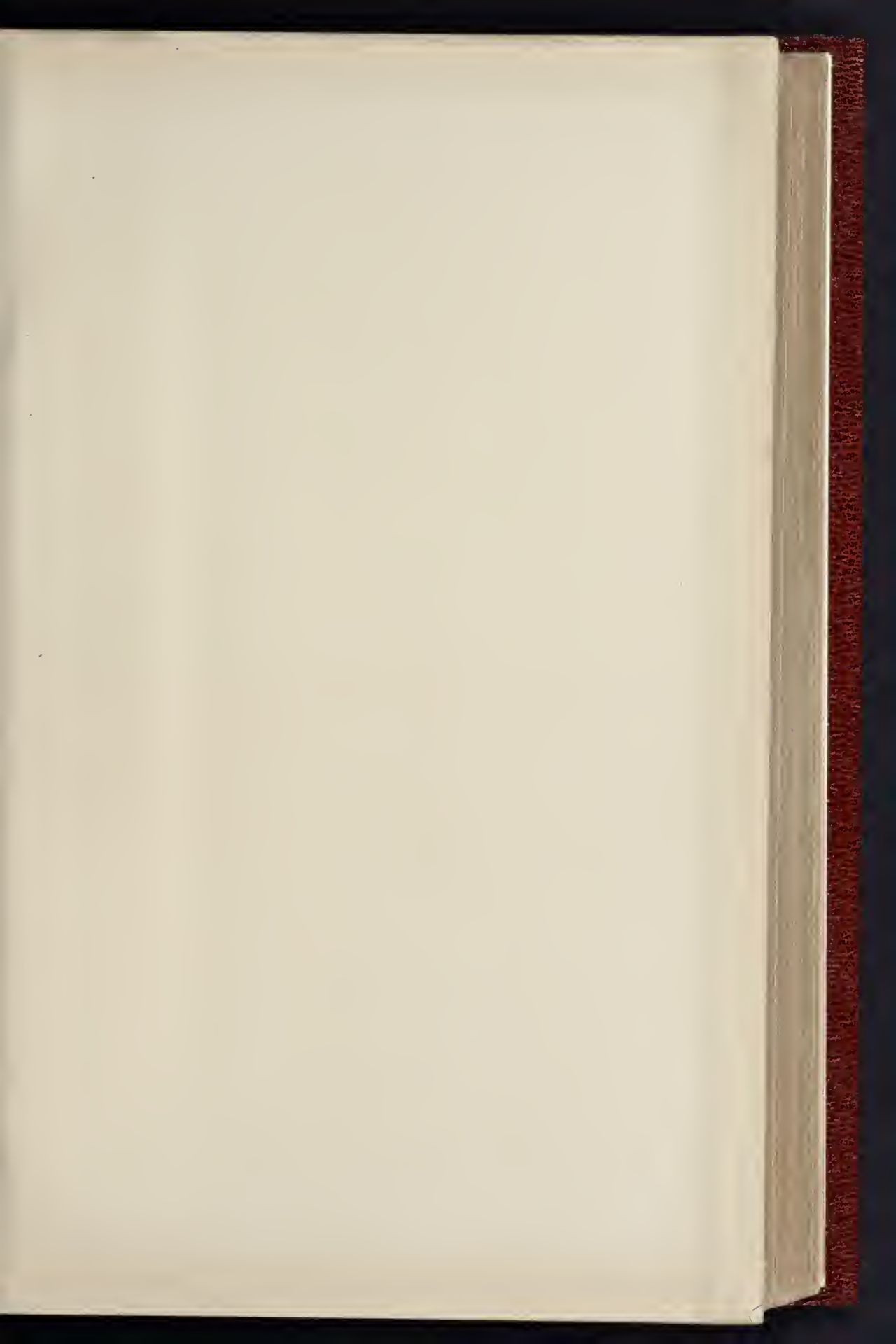
Cree Lane

House of Abbot of Bury St. Edmunds

Holy Trinity Priory gate Cree Church Lane.

St Andrew Undershaft.

ALDGATE in 1531.



THE BUILDER. JANUARY 2, 1897.

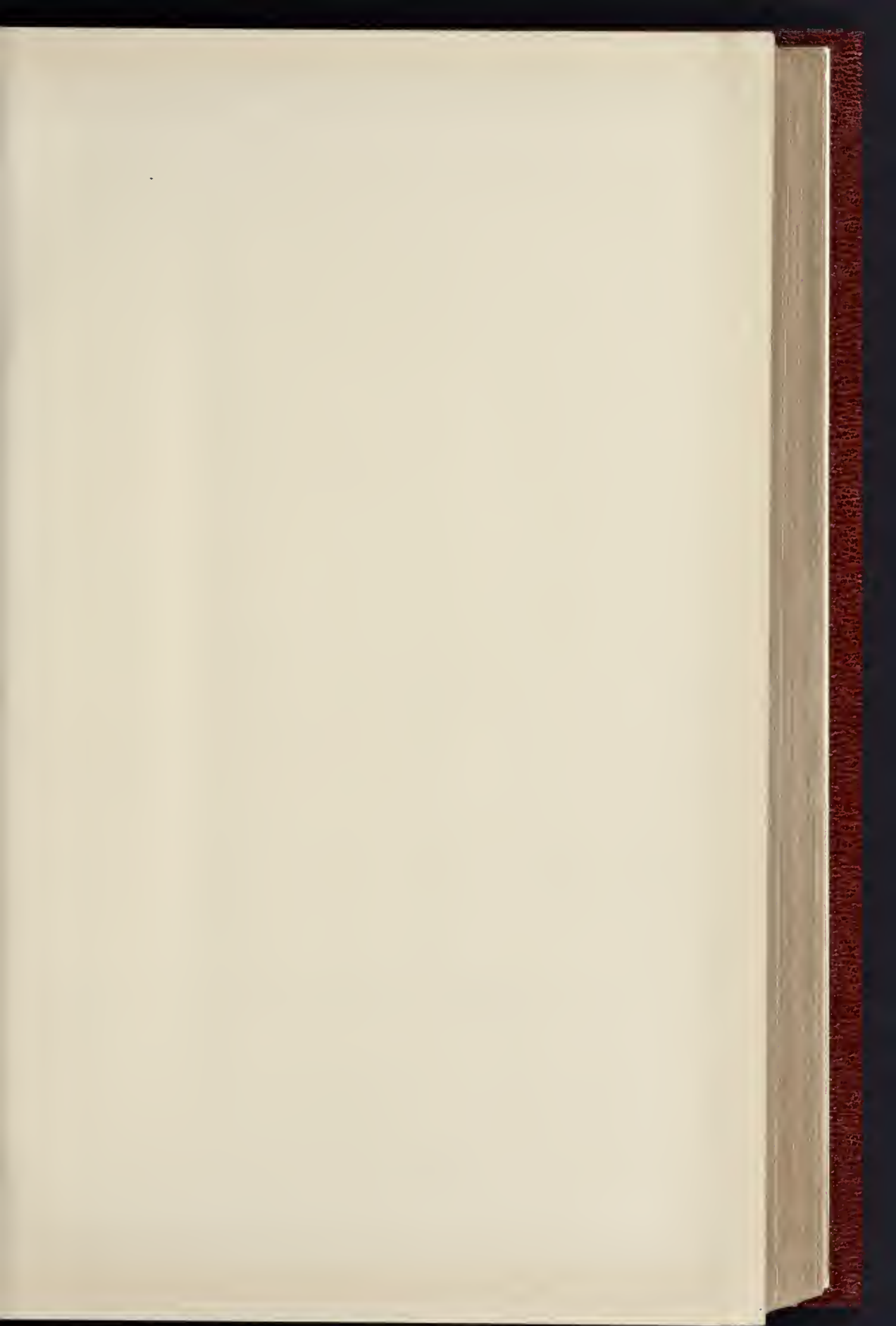




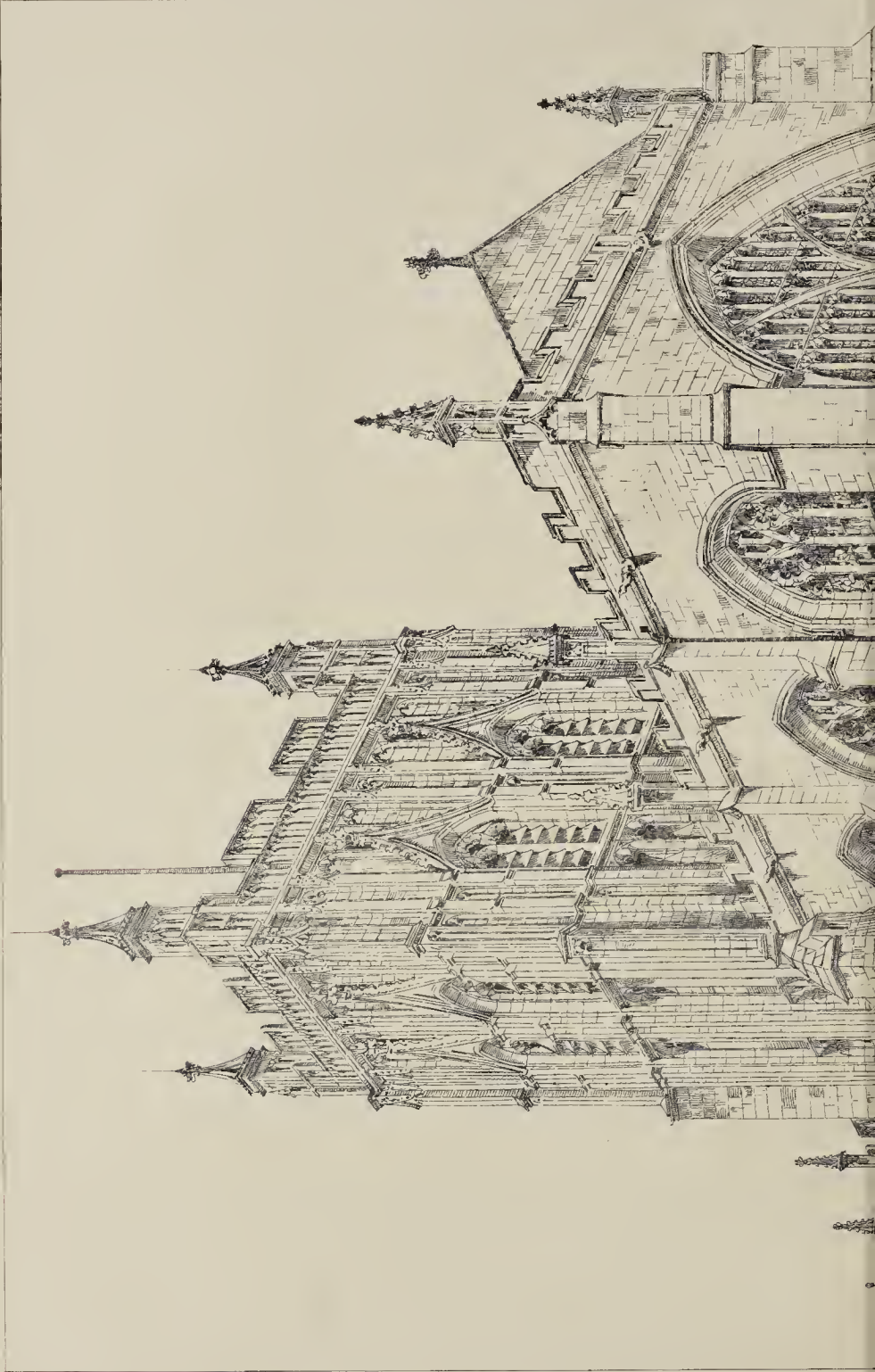
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SKETCH FOR A CORNER OF THE "PALACE OF ART" (SEE TENNYSON'S POEMS)—BY THE EDITOR

"I built my soul a lordly pleasure house
Wherein at ease for aye to dwell."



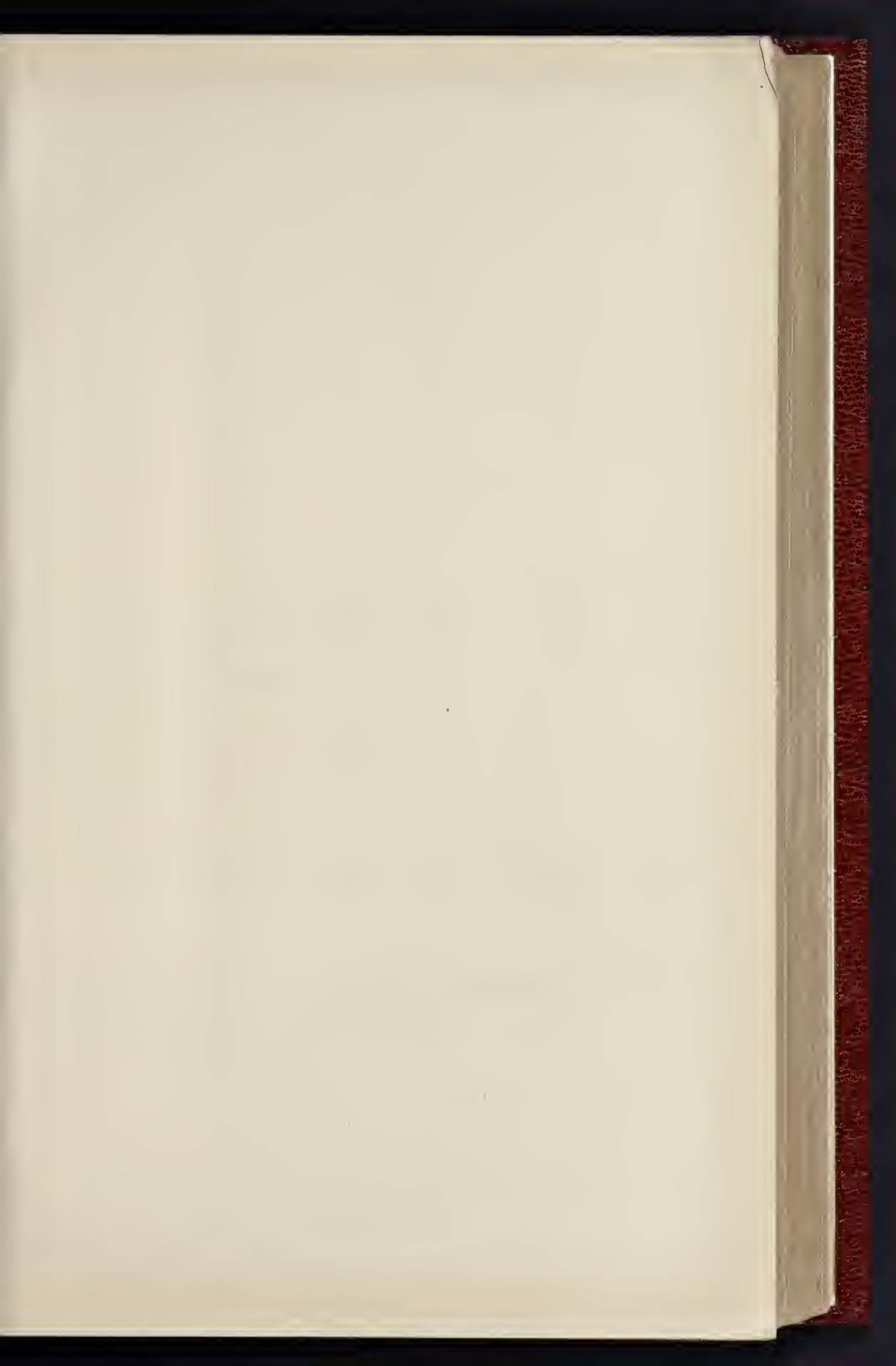
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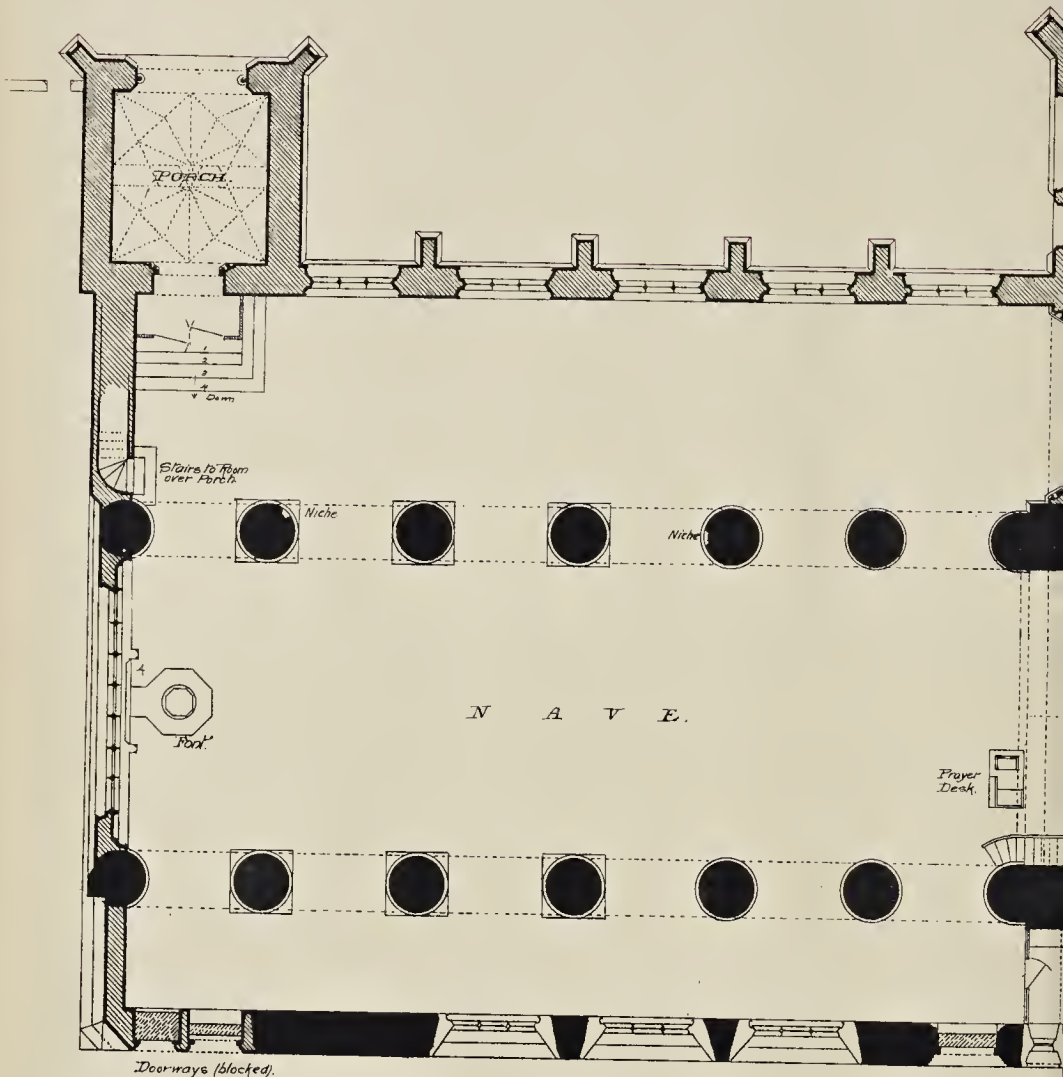


THE ABBEY OF GREAT MALVERN, MALVERN, WORCESTERSHIRE. DRAWN BY MR. ROLAND W. PAUL.

THE ABBEYS OF GREAT BRITAIN. No. 20. GREAT MALVERN
DRAWN BY MR. ROLAND W. PAUL.



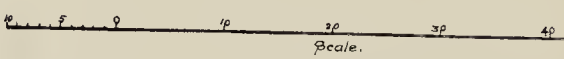
GREAT MALVERN PRIORY CHURCH.
Ground-Plan.







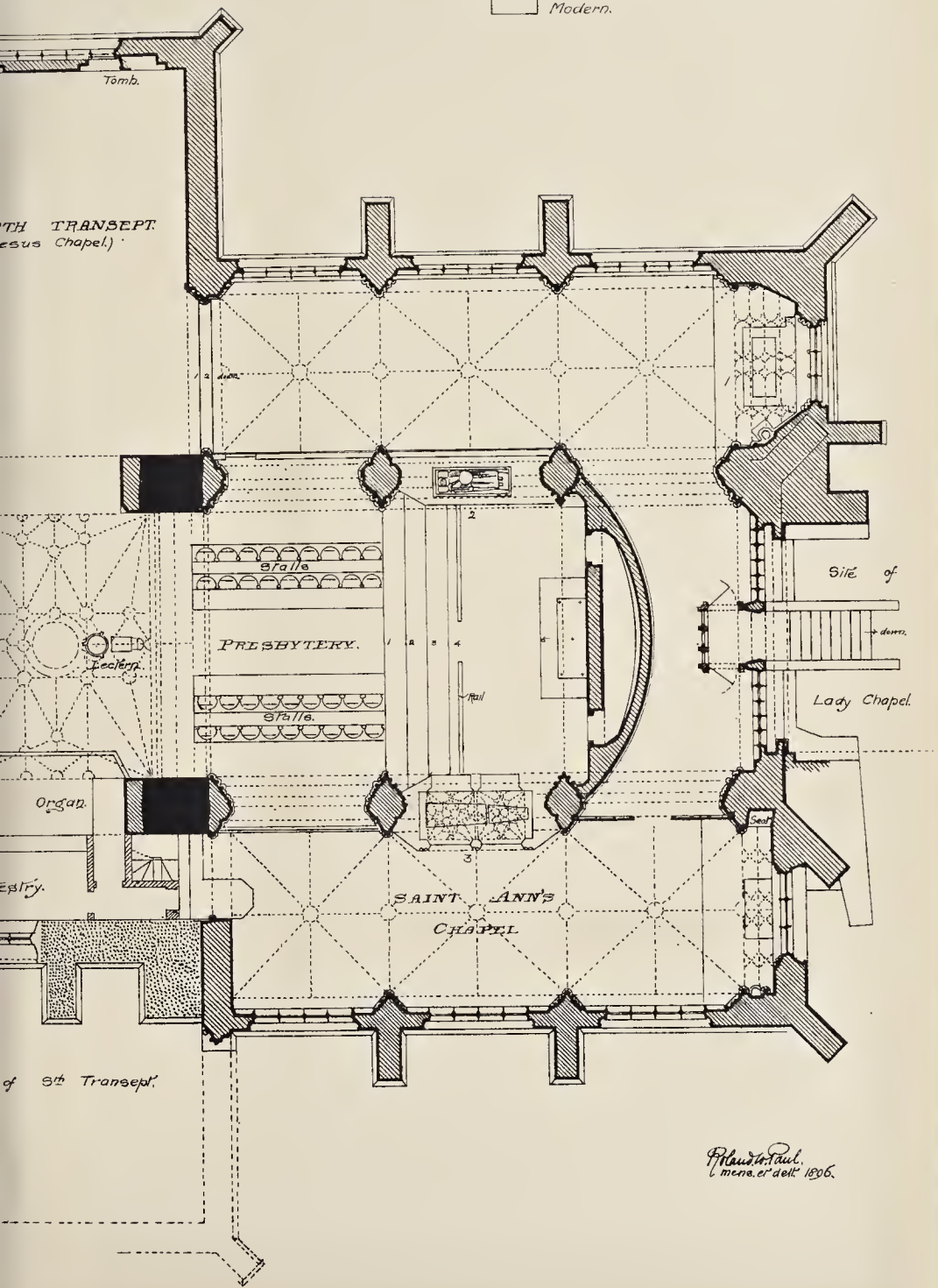
Doorways (blocked).

- Monuments.
1. Thompson Monument
 2. Effigy of a Knight
 3. Chantry with Knowlesford Tomb (1589) over.
 4. Lambert Memorial

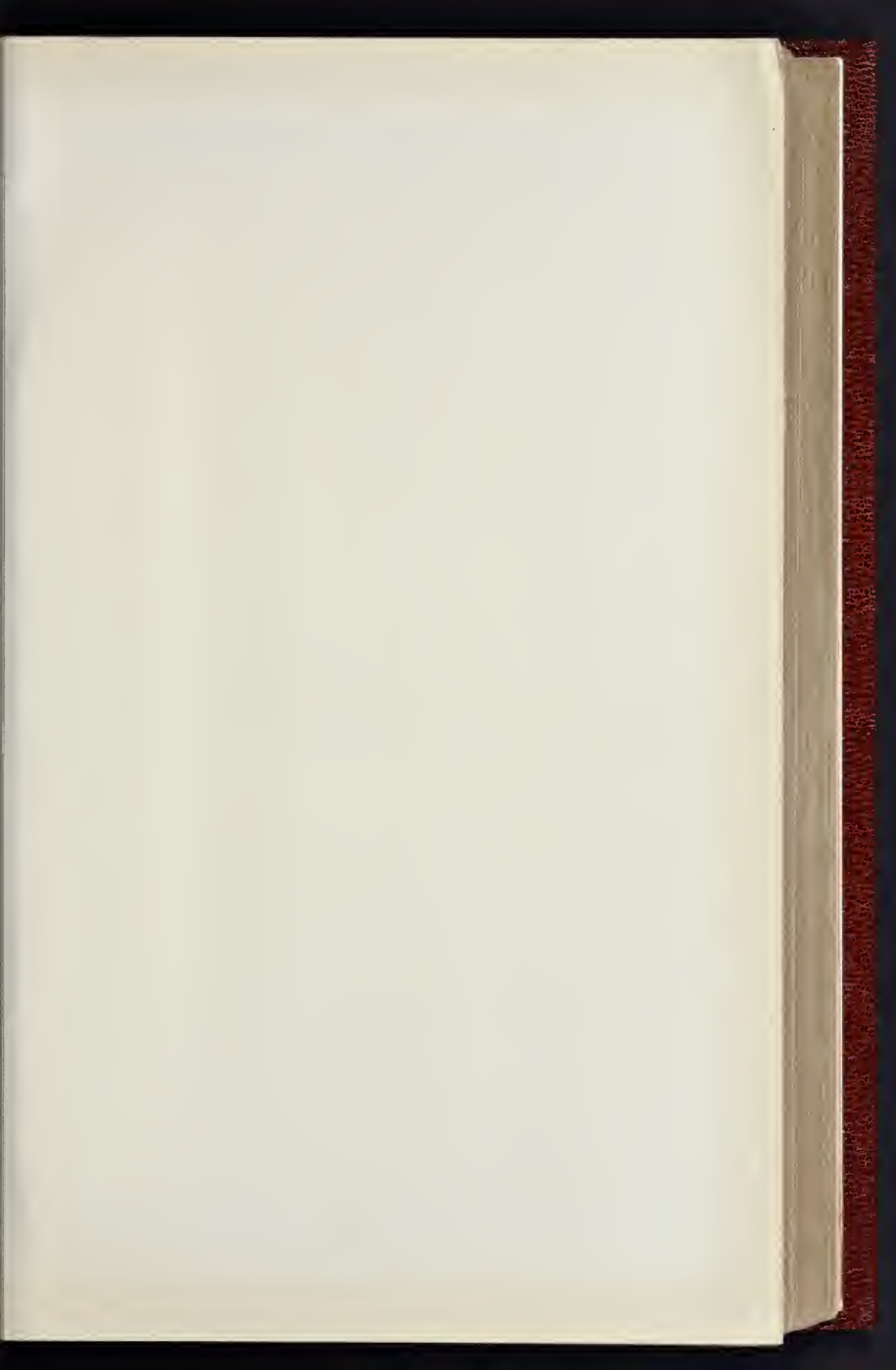
Site of Cloister.



-  Norman.
-  Perpendicular.
-  Wall built after destruction of Transept.
-  Modern.



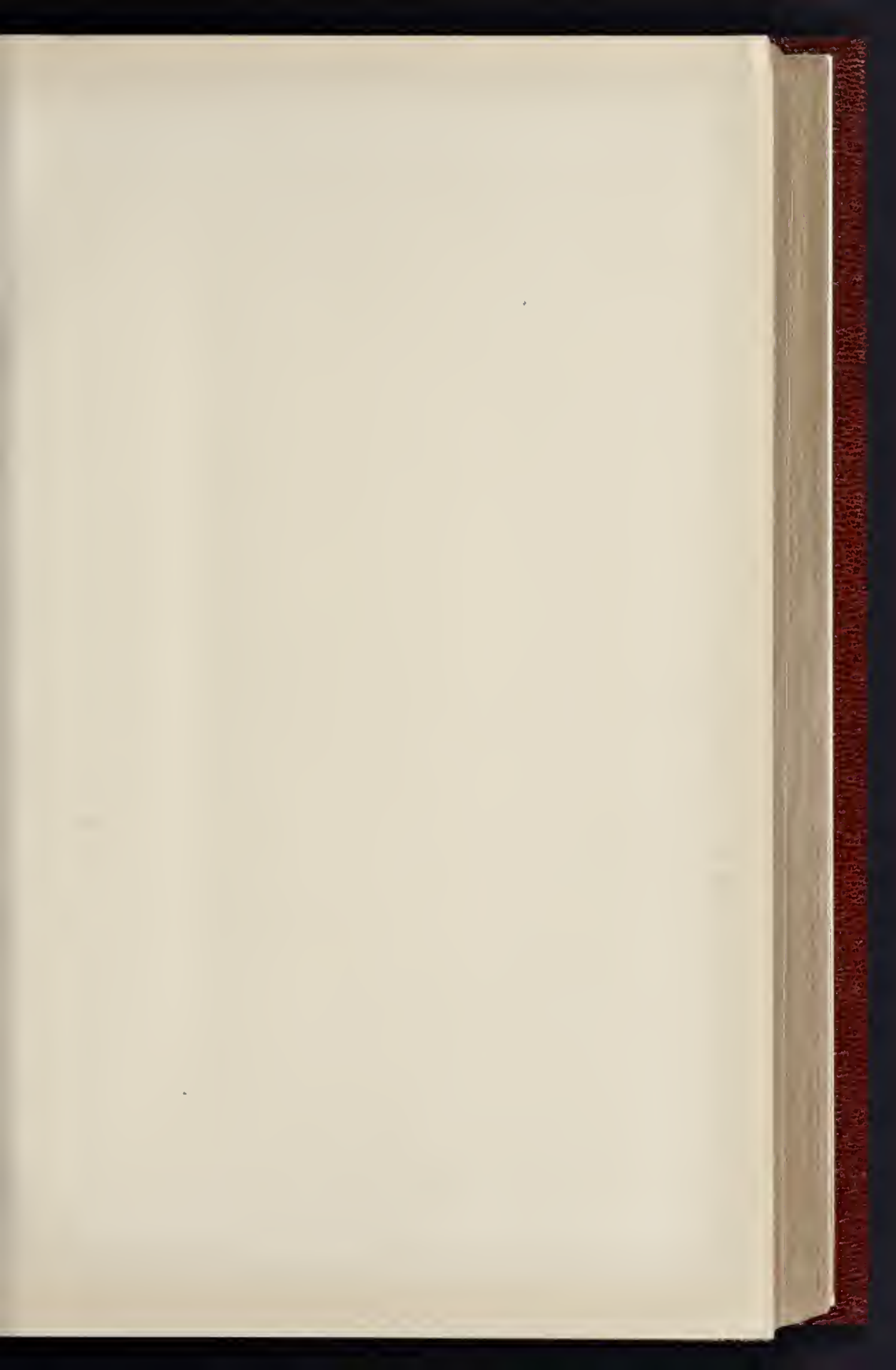
*P. A. Paul.
mens. et del. 1896.*





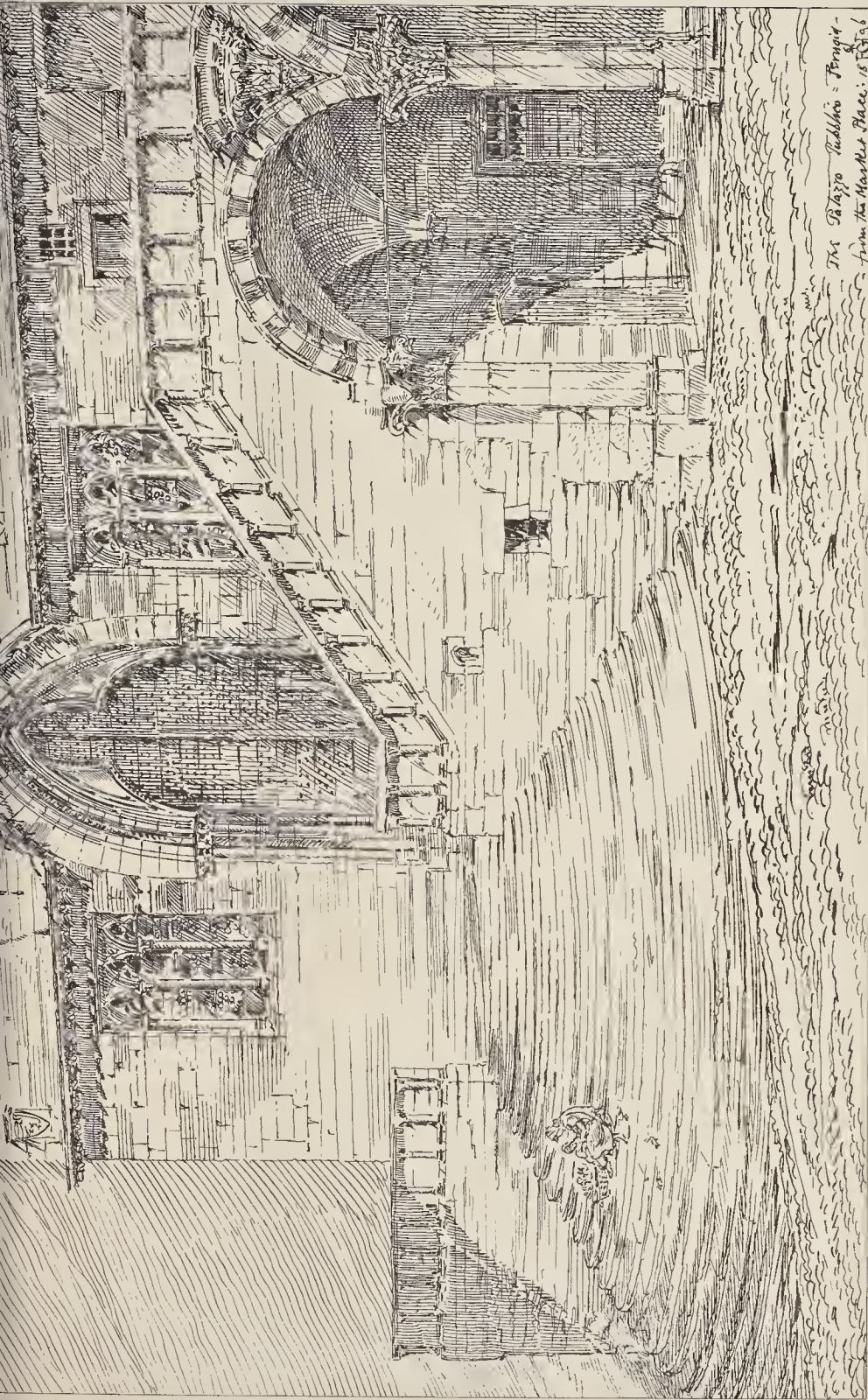


CHELSEA. 18 MONK 76



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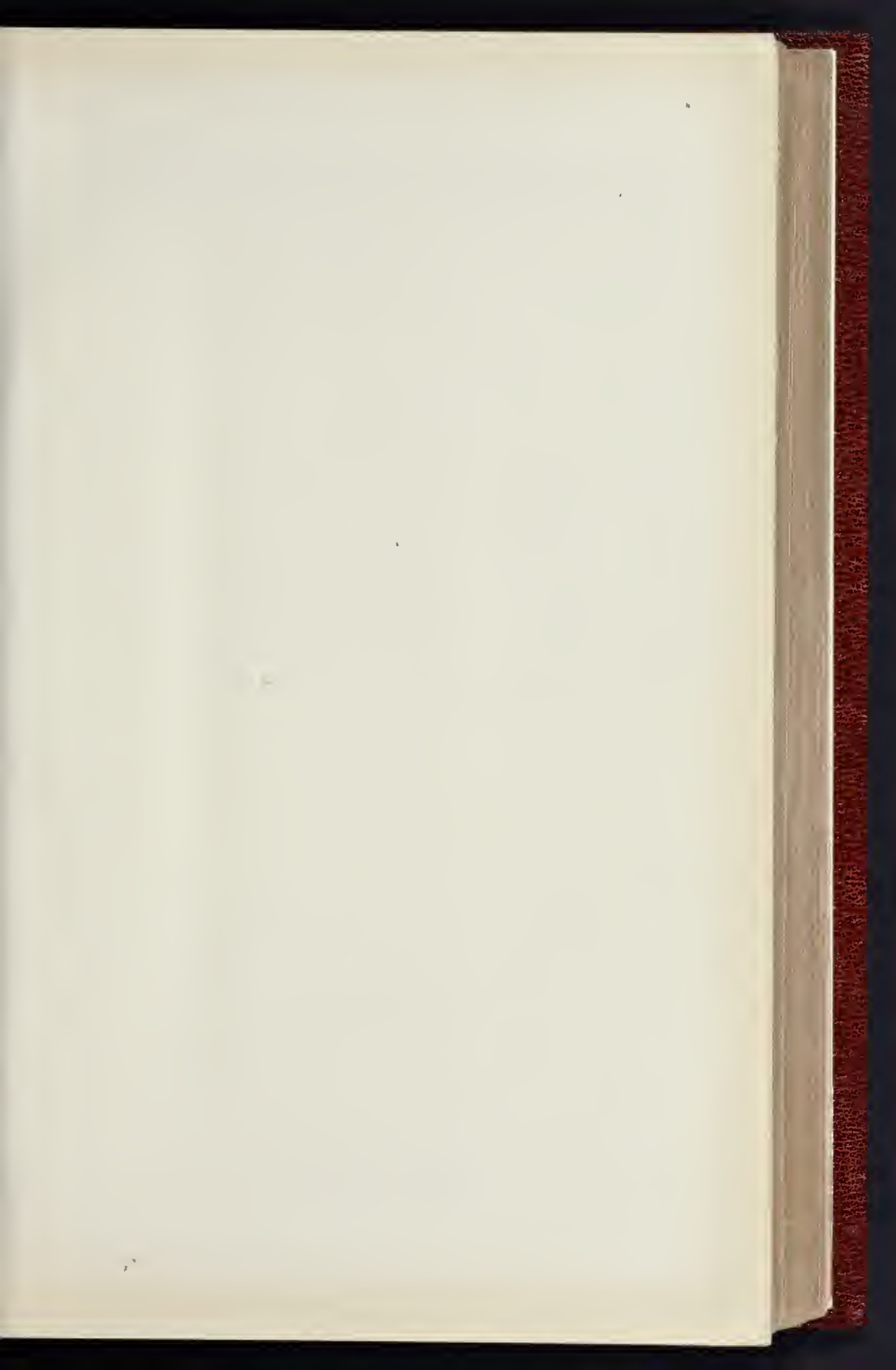




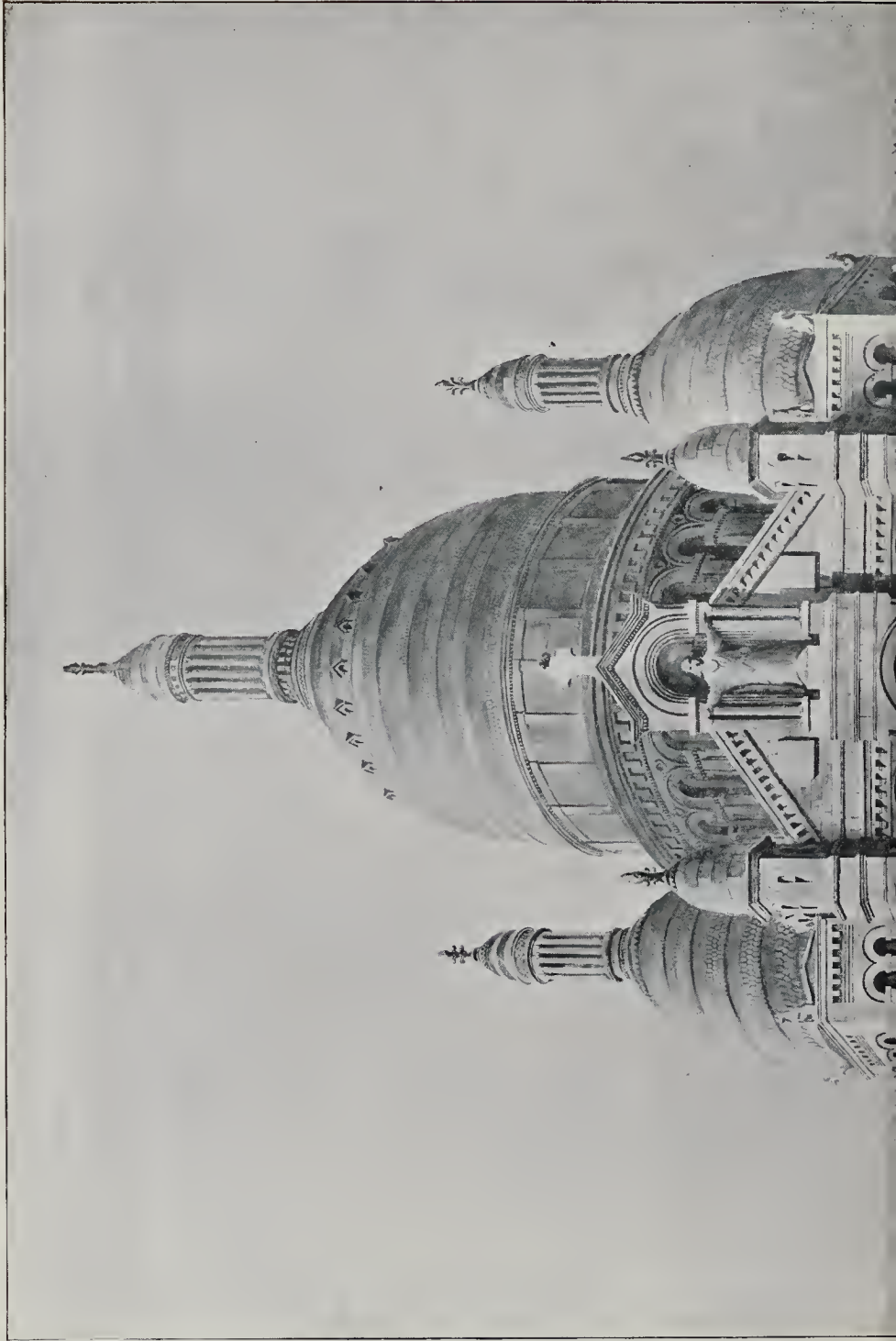
The Palazzo Pubblico - Perugia -
from the Market Place: 1875

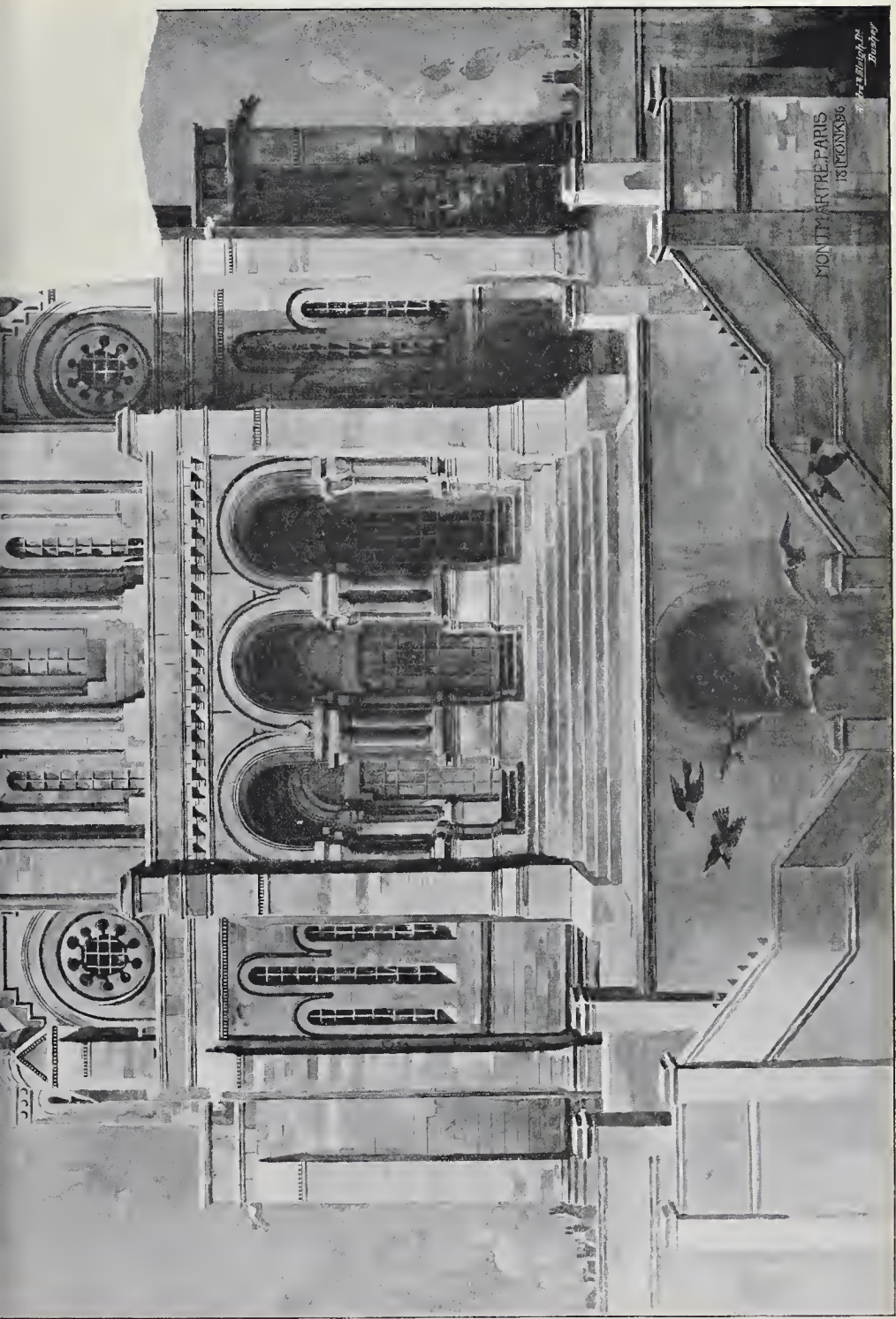
PHOTO-LITHO SPAGOLE & C. 433 EAST HAWKING STREET, FIFTH LANE, E.C.

THE PALAZZO PUBBLICO, PERUGIA.—FROM A SKETCH BY MR. G. C. HORSLEY.

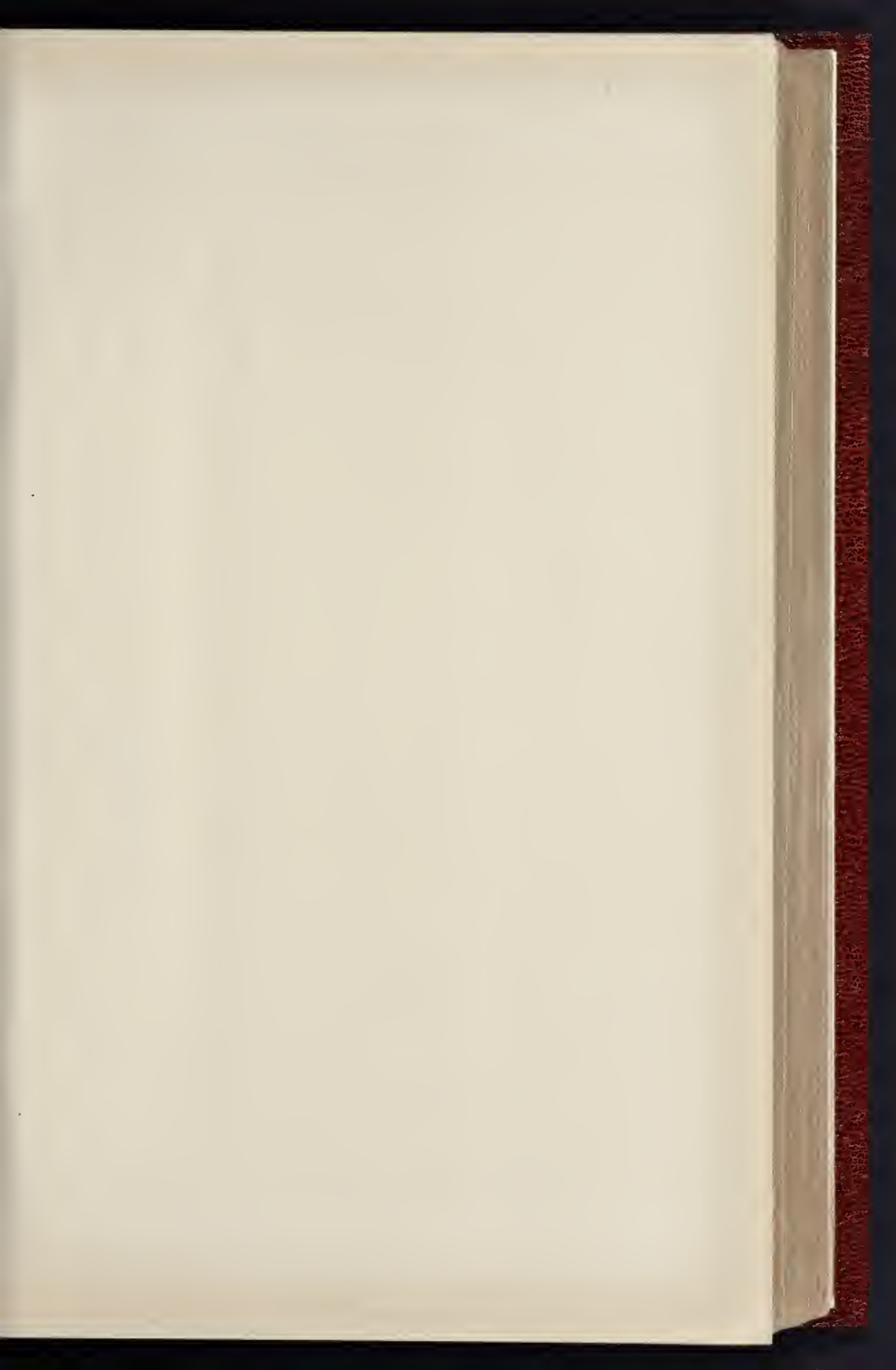


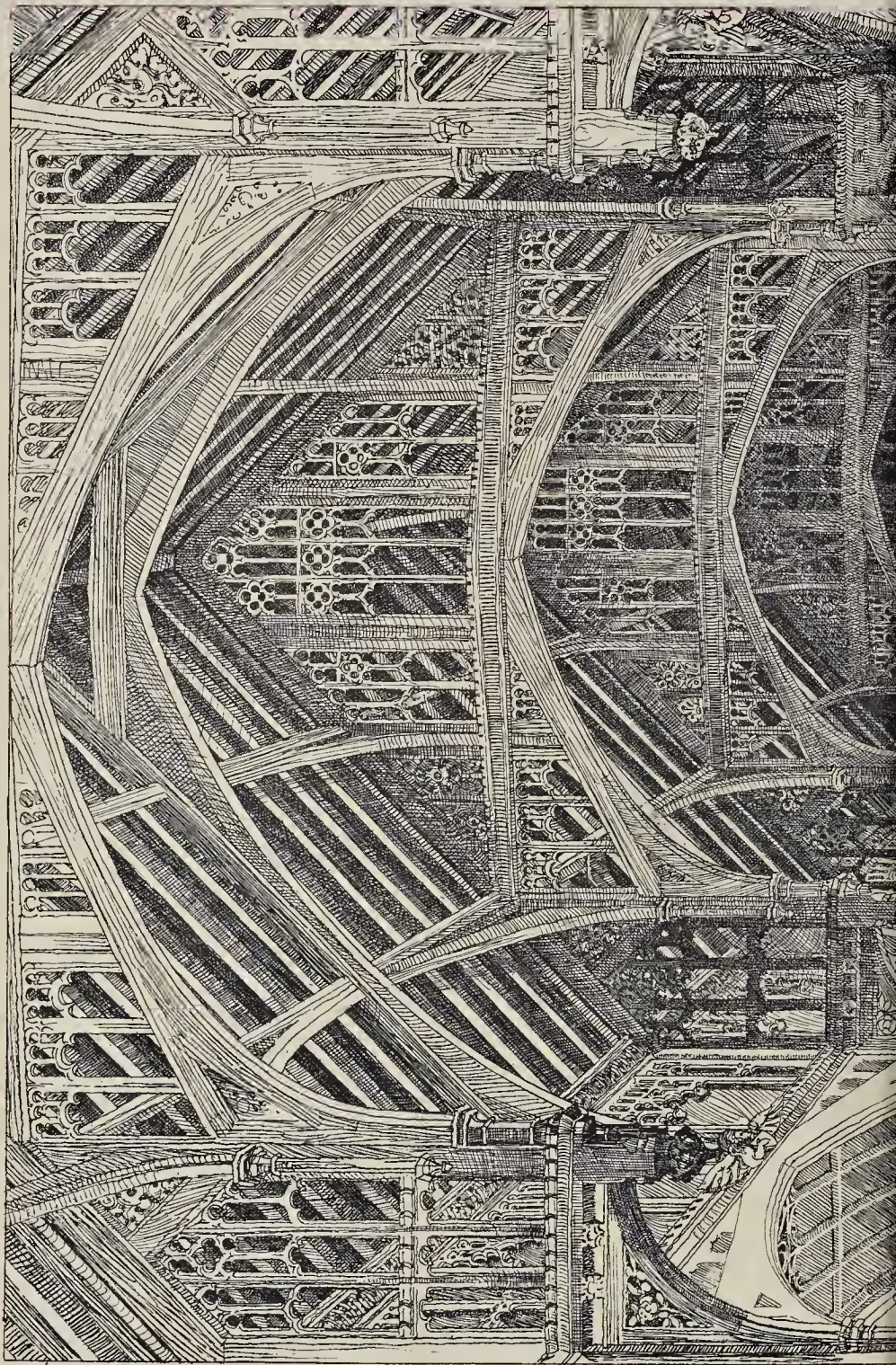
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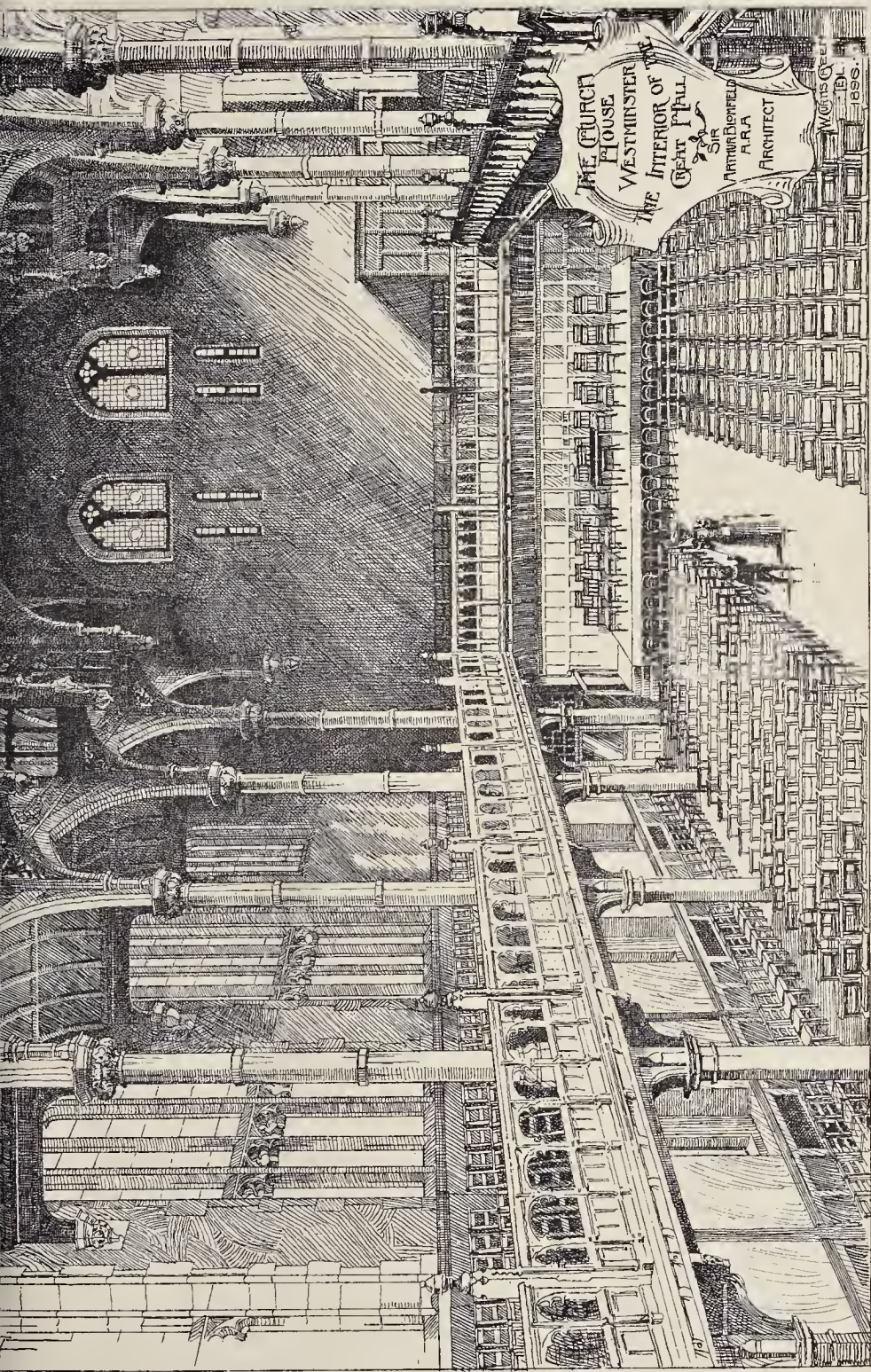




CHURCH OF SACRÉ CŒUR, MONTMARTRE, PARIS.—THE LATE M. ABADIE, ARCHITECT.

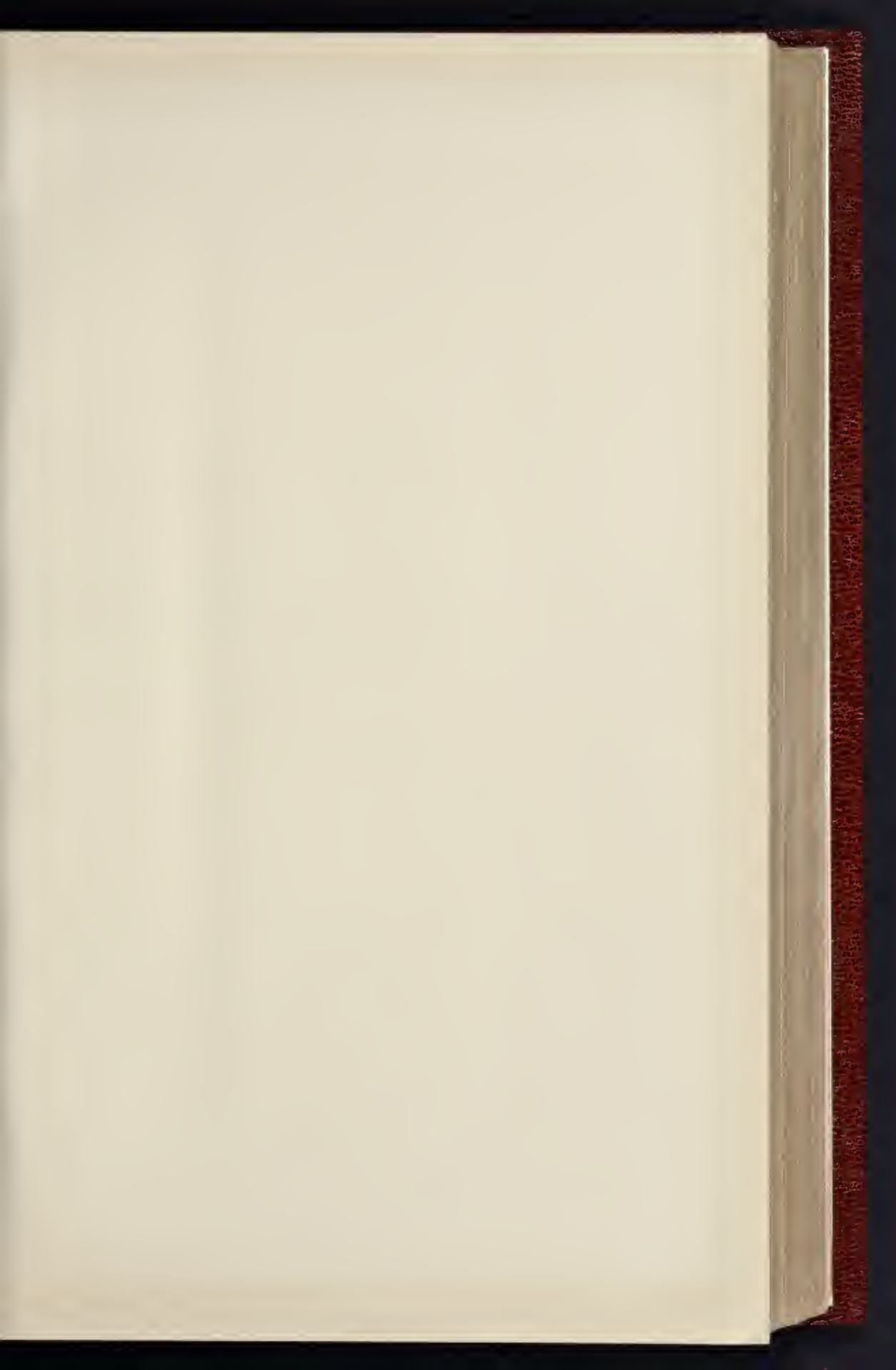


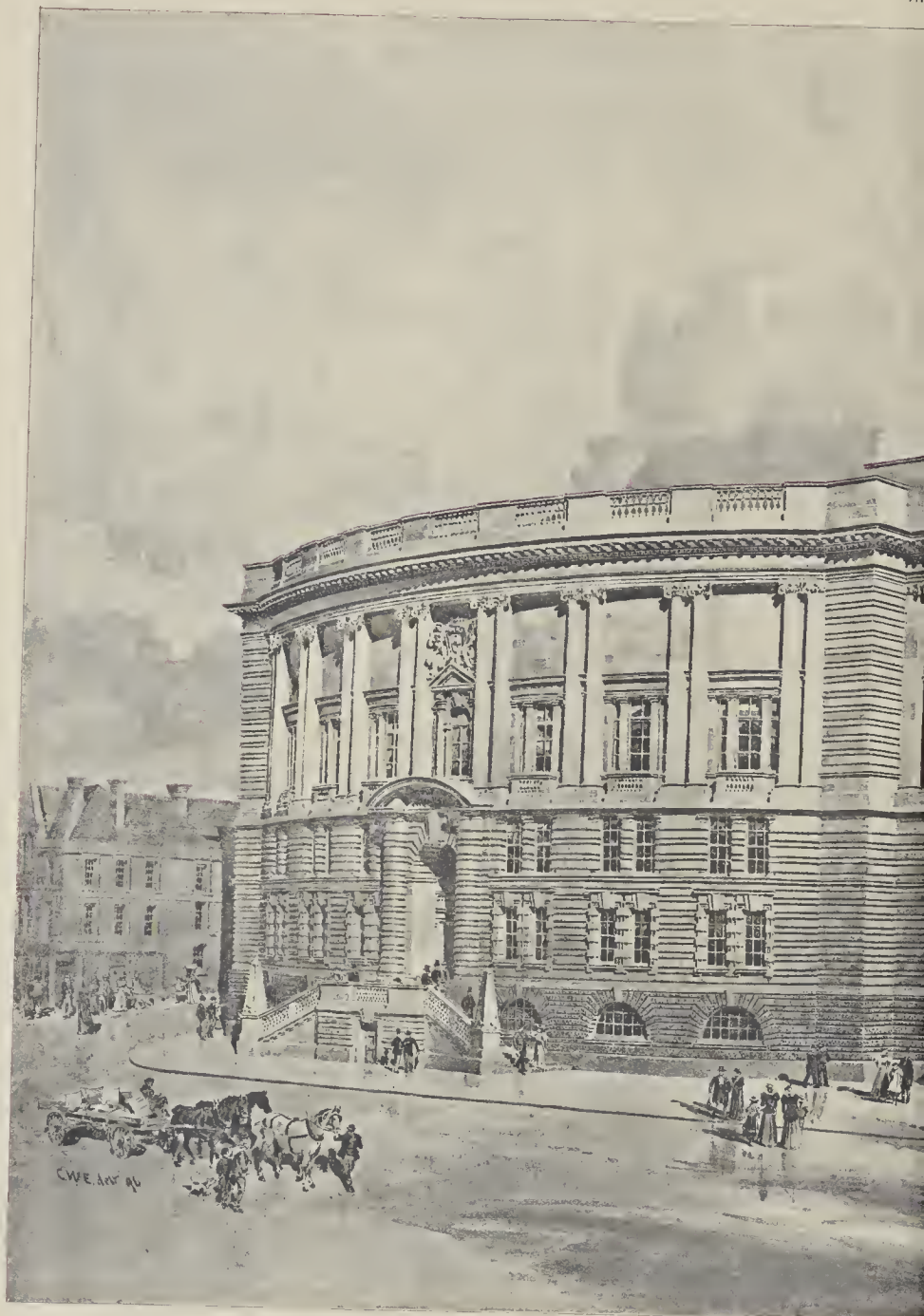




THE CHURCH
HOUSE
WESTMINSTER
THE INTERIOR OF THE
GREAT HALL
BY
ARTHUR BENFIELD
A.R.A.
ARCHITECT
WOLFE & COY
151, N. BROADWAY
N.Y.

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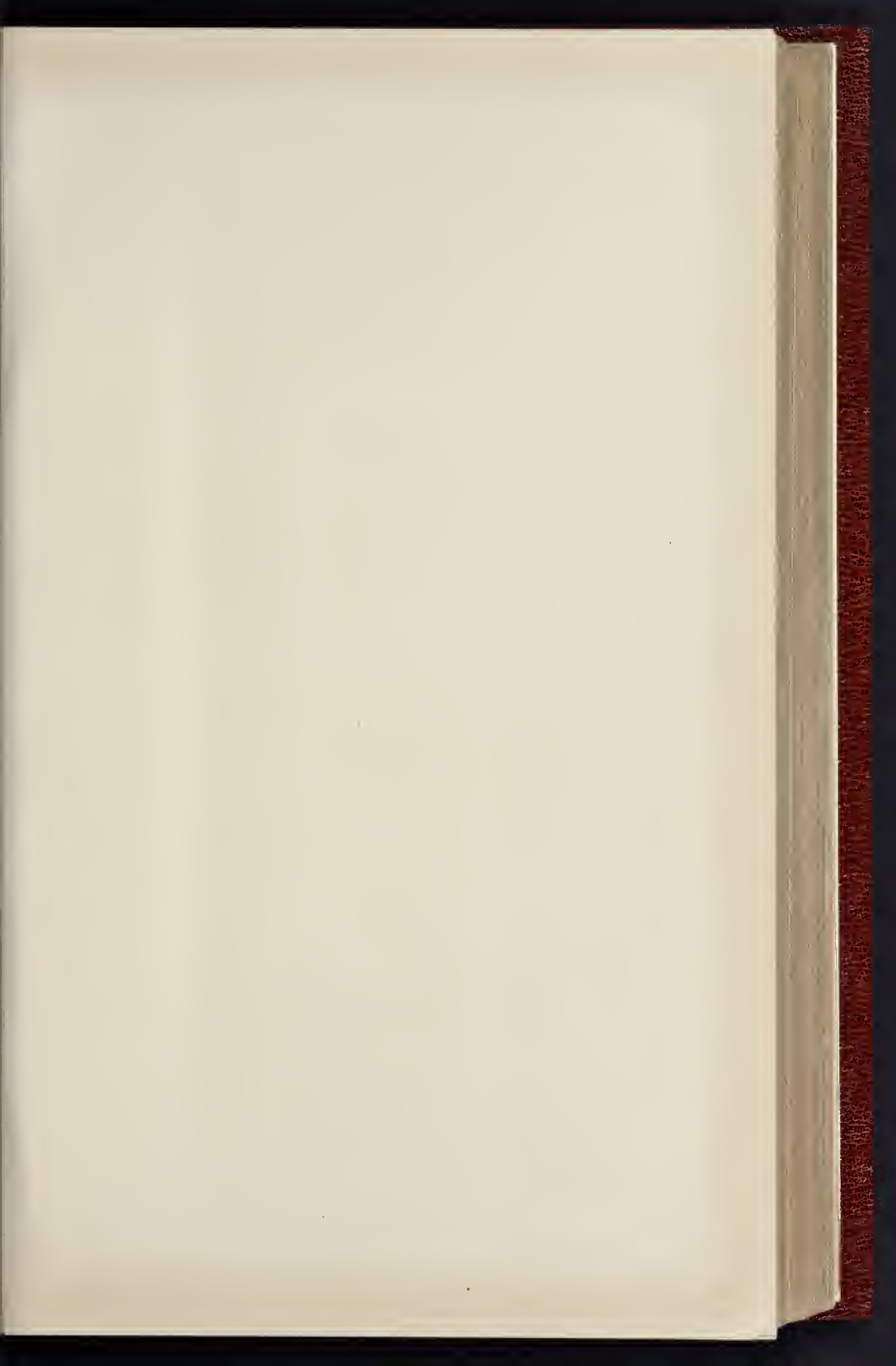


LIVERPOOL TECHNICAL SCHOOL AND ART SCHOOL
DESIGN AS REVISED SINCE THE COMPETITION



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THE LIBRARY AND MUSEUM BUILDINGS
MOUNTFORD, F. R. I. B. A. ARCHITECT



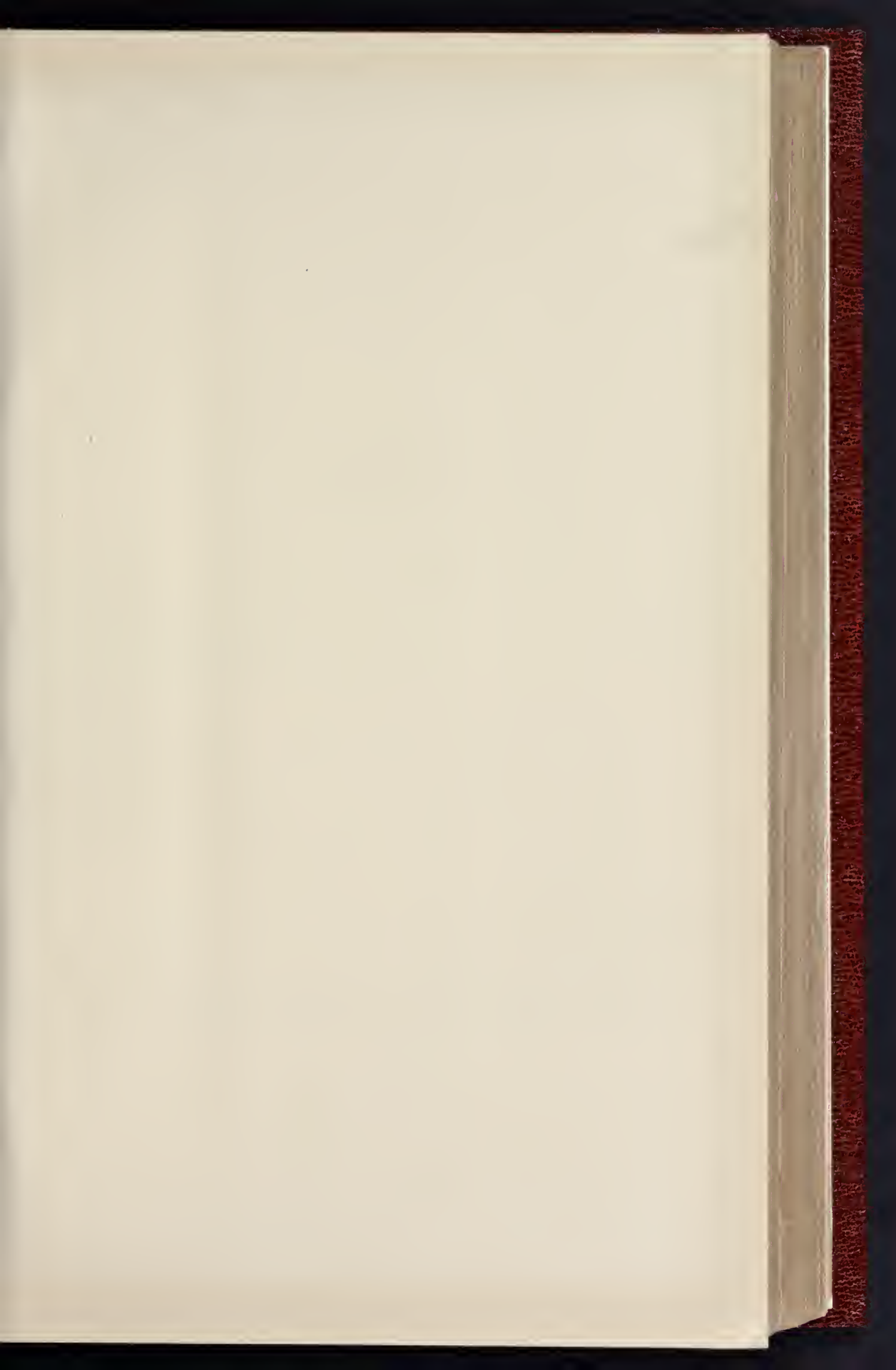


HOUSE, FIFTH AVENUE, NEW



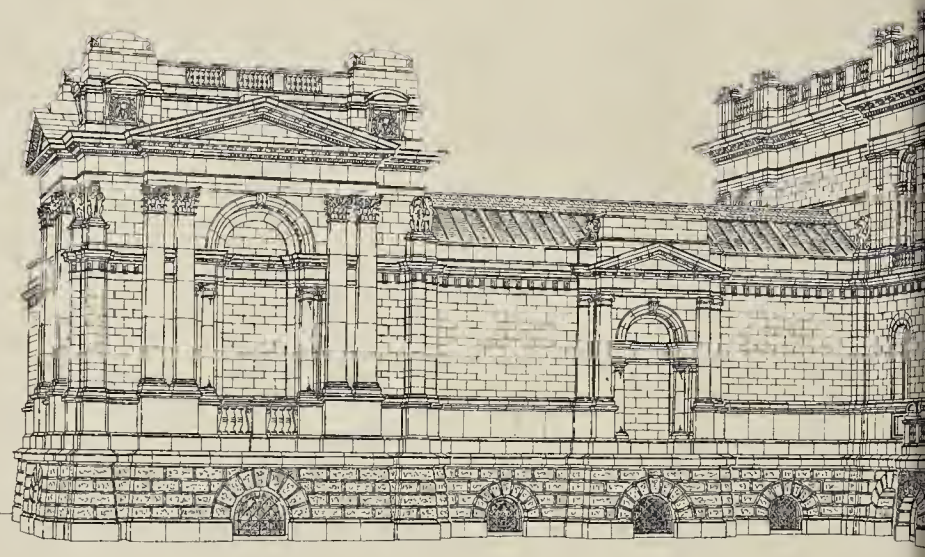
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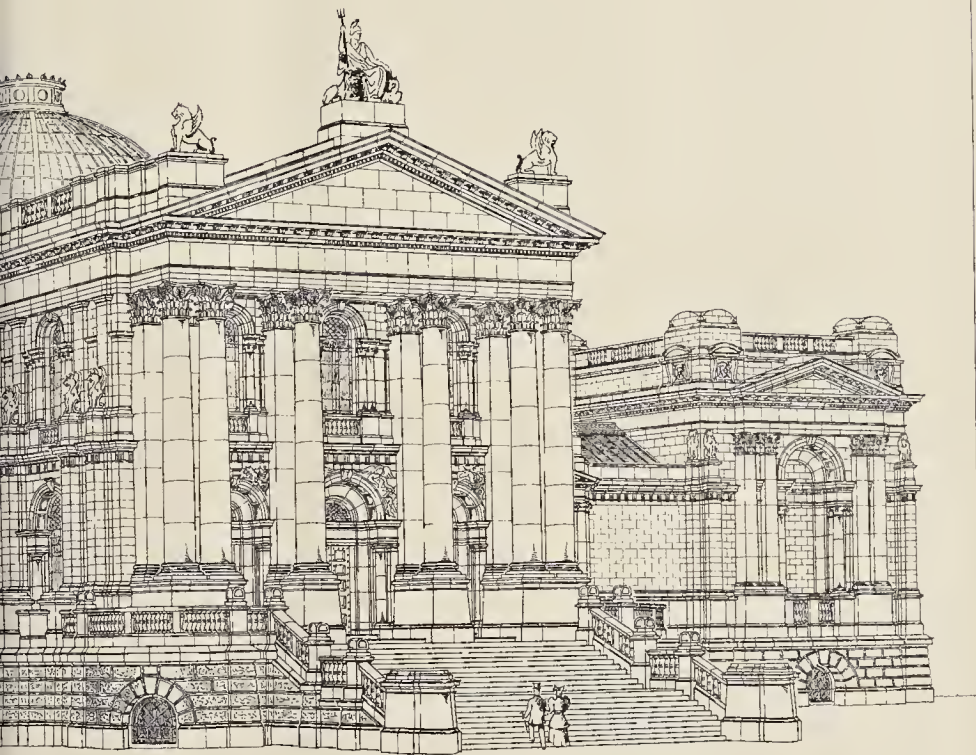
THE RICHARD MORRIS HUNT, ARCHITECT.



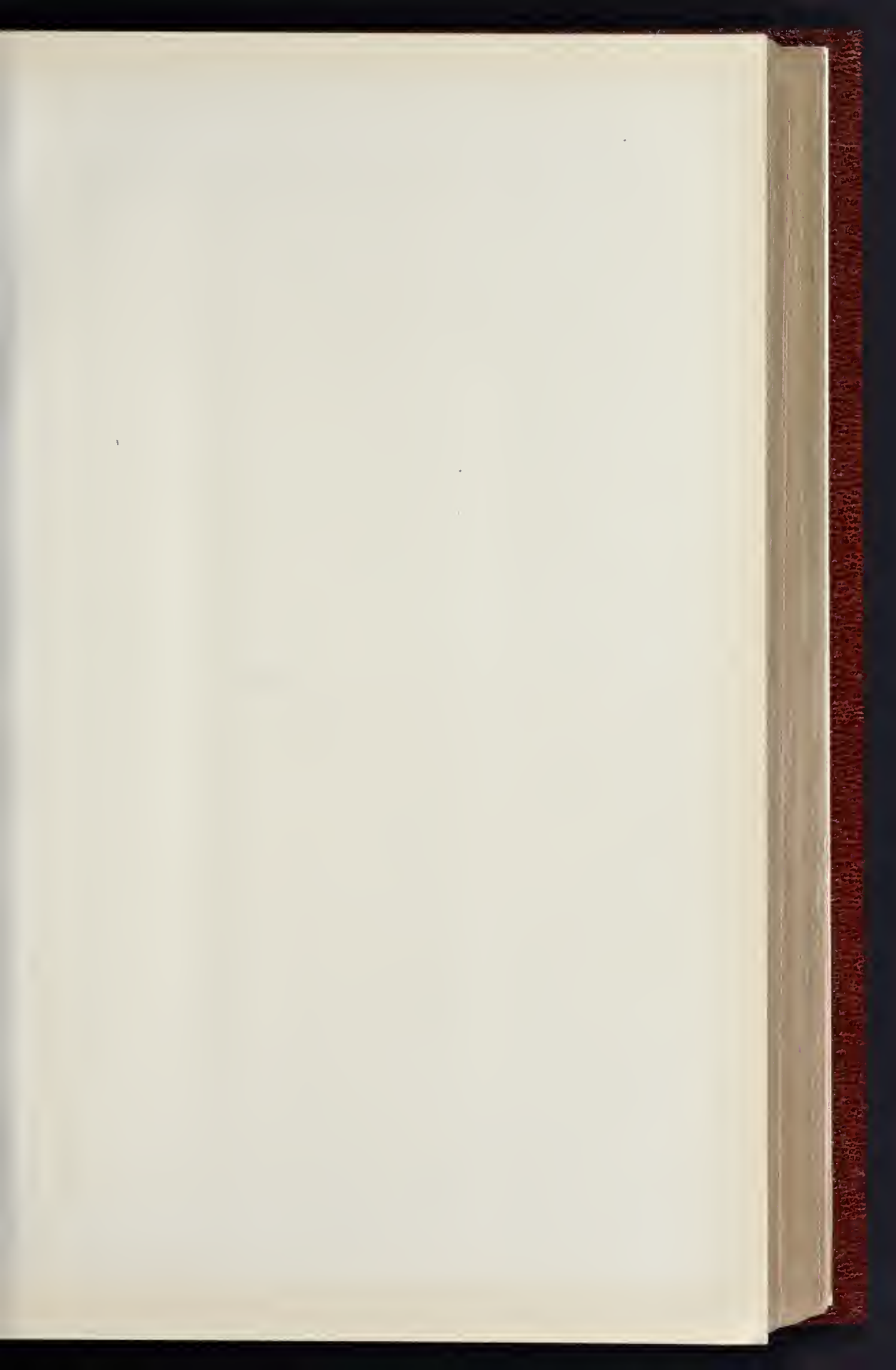
—THE NATIONAL GALLERY of BRITISH ART—
Millbrook:

As being carried out
Sidney R. J. Smith, F.R.I.B.A. Architect



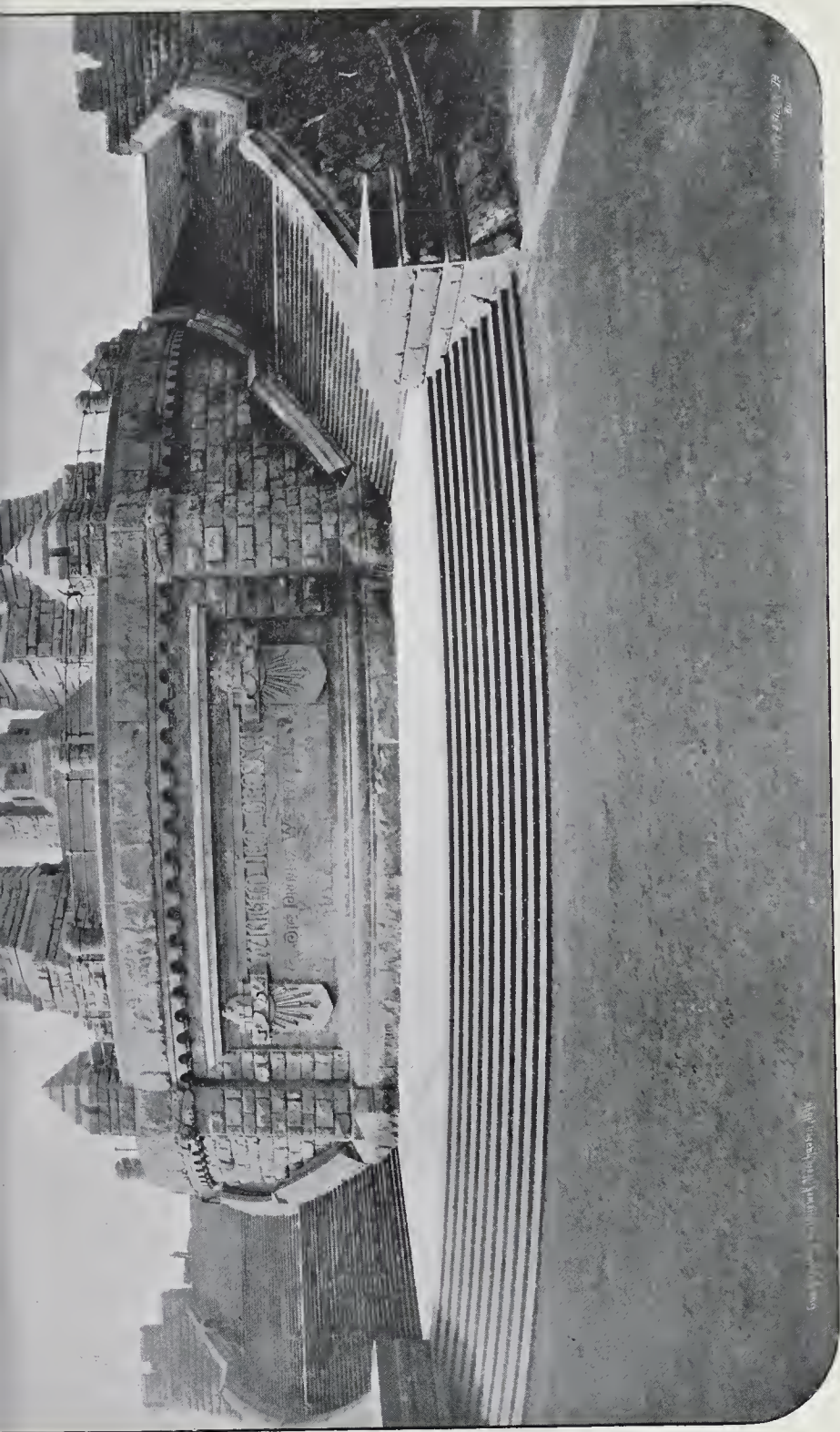


Harold C. Irwin del.
March. 96.



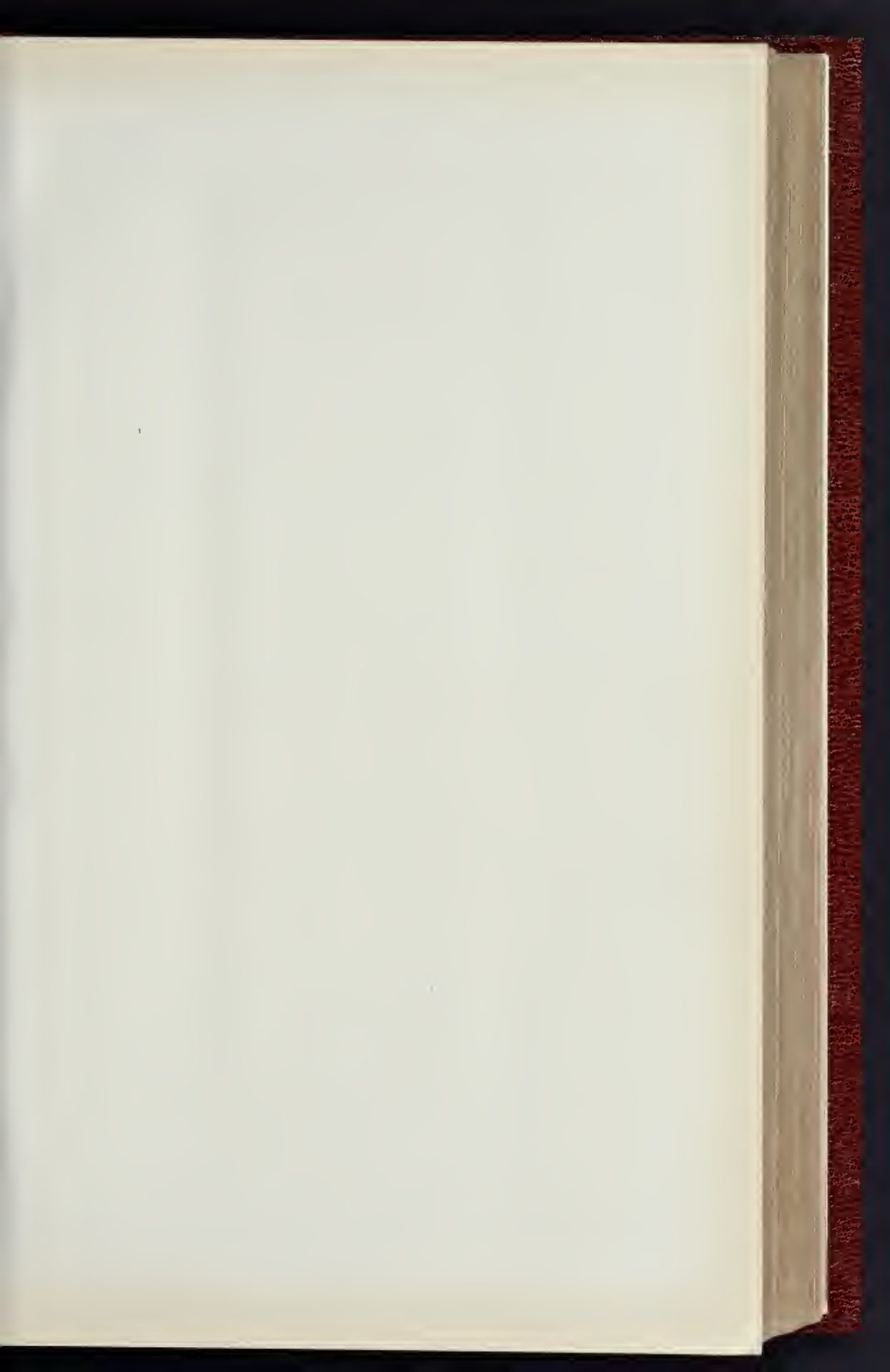
THE BUILDER, JANUARY 2, 1857.





MONUMENT TO THE EMPEROR WILLIAM I, PORTA WESTPHALIA, GERMANY.

PROFESSOR BRUNO SCHMIDTZ, ARCHITECT. PROFESSOR VON ZUMHUSH AND MESSRS. VOGEL & SCHWARZ, SCULPTORS.

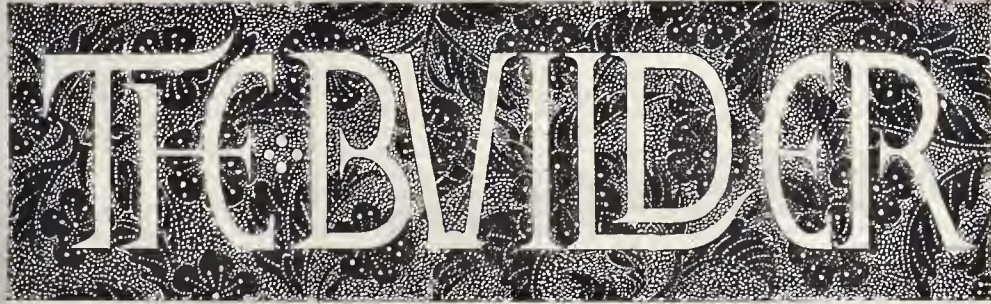


THE BUILDER, JANUARY 2, 1907.





MONUMENT TO WATTEAU, LUXEMBOURG GARDENS, PARIS.
MR. H. GAFFOÛÉ, SCULPTOR.



ILLUSTRATIONS.

Frieze: "Vitre Lampades."—By Mr. John Staines Babbington	Extra Large Page Ink-Photo.
Aldgate in 1531.—Drawn by Mr. H. W. Brewer	Double-Page Photo-Litho.
Sketch for a Corner of the "Palace of Art."—By the Editor	Double-Page Ink-Photo.
The Abbays of Great Britain:—No. 20, Great Malvern.—Drawn by Mr. Roland W. Paul	Double-Page Photo-Litho.
Great Malvern Abbey.—Plan.—Measured and drawn by Mr. R. W. Paul	Double-Page Photo-Litho.
Chelsea Hospital from the Garden.—Drawn by Mr. W. Monk	Double-Page Tone Block
The Palazzo Pubblico, Perugia.—From a sketch by Mr. G. C. Horsley	Double-Page Photo-Litho.
Church of Sacré Coeur, Montmartre, Paris.—The late M. Abadie, Architect	Double-Page Tone Block
Church House, Westminster: Interior of Great Hall.—Sir Arthur Blomfield, F.R.I.B.A., Architect	Double-Page Photo-Litho.
Liverpool Technical School and Addition to Free Library Buildings.—Mr. E. W. Mountford, F.R.I.B.A., Architect	Double-Page Ink-Photo.
House, Fifth-avenue, New York.—The late Richard Morris Hunt, Architect	Double-Page Ink-Photo.
The National Gallery of British Art, Millbank.—Mr. S. R. J. Smith, F.R.I.B.A., Architect	Double-Page Photo-Litho.
Monument to the Emperor William I, Porta Westphalia, Germany.—Herr Bruno Schmidt, Architect	Double-Page Tone Block.
Monument to Watteau, Luxembourg Gardens, Paris.—Mr. H. Gauquie, Sculptor	Double-Page Tone Block.

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The Old and the New Year.

LN offering to all our friends and readers the best wishes for a happy and prosperous new year, it is gratifying to think that there is a reasonable hope that this year may be, for the majority and in a general sense, a prosperous one, and that those who are concerned in architecture and building will have their share in the general prosperity. Not only are there general signs that things, as the phrase is, "are looking up," but the mere fact, which will be present to every one's mind, that this is the year in which we are to have the pleasure of celebrating the attainment of the longest as well as one of the happiest reigns in the annals of the realm, must in itself do much to promote and quicken business of every kind.

The past year has not been architecturally a very eventful one. The most important incidents to record in it, in connexion with

English architectural work, have been the two competitions which, though not for buildings of the first size or importance, attracted more than usual attention and interest; those, namely, for the Royal Insurance Offices and for the Technical School and additions to the Free Library; both at Liverpool. In regard to the latter, we publish in this issue the revised design by the successful competitor, Mr. Mountford, in which some slight alterations have been made from the original competition design published in our issue of August 8, 1896, and in which moreover the merits of the design are done more justice to in a better drawing. The building, when carried out, will be a very fine and effective addition to what is already a remarkable architectural group, though not all that it might have been had the original competition for the Free Library and Museum been carried on as well and ended as satisfactorily as this recent one has ended. In that old competition for the block of buildings of which Mr. Mountford's will form the completion some very fine designs were sent in, but instead of any one of them being selected, the then Borough Surveyor of Liverpool was allowed to

make what use he could of the hints to be derived from the competition designs, to compile a rather commonplace design of his own. Although tricks of this kind are still occasionally played in small competitions, it would be hardly possible now to carry out such a policy with a large and important competition; there would be too much public feeling on the subject, and a large corporation would probably have more self-respect than to act in such a manner,* so that we may be justified in thinking that there has been some advance in the *marale* of competitions.

Two other events, of a very diverse character, will be remembered as occurrences of the past year. One of these is the scandal in connexion with the Works Committee of the County Council, into which an inquiry is now being held, so that any further remarks on the subject would be out of place and mistimed until this inquiry is concluded and the Committee's Report presented. But the circumstances which rendered the inquiry necessary, though happily not characterised

* We do not forget the discreditable affair at Durham; but Durham, though with a great cathedral, is a very small borough, and the affair hardly rose higher than a vestry competition.

by anything so flagrant as those which led to the downfall of the Metropolitan Board of Works, show unfortunately how strong is the tendency in a London official body of this kind, to mingle the proper carrying out of the business for which it was elected with a kind of party policy which seems to lead almost inevitably to the pulling of underhand wires to bring about, not the accomplishment of work, but the triumph of a party system. The London County Council was elected to do the practical municipal work of London; it has got itself more or less discredited, for the time, indirectly through a craze for mingling political and social partisanship with the carrying out of work; and it is to be hoped that the exposure of the incidents which have no doubt indirectly resulted from this policy will not be without a wholesome effect, in inducing the members of the London County Council to recognise the unsuitability of importing political aims into what should be simply an institution for the conduct of public works.

The other event to which we have alluded has been the excitement and discussion in regard to Peterborough Cathedral; indeed, 1896 may perhaps be remembered among architects as the Peterborough year. Looking back to our last year's volumes, we find that it was in the first number of January, 1896, that we went into the subject, and first suggested our opinion as to the possible ultimate outcome of the matter in the following words, which it will be admitted are guarded enough:—

"The mention of this point leads one to notice the possibility, which must be faced, that no way of making the work perfectly stable could be found without taking down the façade and rebuilding with the same stones, but on a proper foundation and with a better system of bonding. One almost dreads even to suggest such a thing, for fear of the opening that would be made for playing "restorative" tricks with the work in rebuilding. At the same time there is the fact that the facing stones are mostly in good condition and they could be numbered and reset, and that with proper care the front might remain in all essentials the old front set up again. To attempt to push the work into position by hydraulic jacks, as was done with the south wall of St. Alhans, is not to be thought of; the mass is too great to be handled in that way, and even if the power could be applied, the first result of it would probably be to crush and bring down all the vaulting between the front and the west wall of the nave. The matter seems to rest between extensive underpinning combined with ties up above, or the radical cure of rebuilding. If only the latter operation were carried out as an honest piece of rebuilding—taking down the old stones and putting them together again, with no "restoration" frolics except the mere putting in of a new stone here and there in place of a decayed one, we are inclined to believe that no other process would be so satisfactory in the end, or give so long a new lease of life to the grand façade."

From that opinion, expressed twelve months ago and before there was any symptom of the outbreak of public criticism and letter-writing on the subject which has recently taken place, we see no reason to depart. The probability is that the piers are badly and hastily built, and the fact that they were on an equally bad foundation has probably been the means hitherto of saving them from worse damage than being pushed out of the perpendicular; the foundations gave instead of the piers cracking. Now the foundations have been rendered immovable; it is proposed to make repairs and rebuilding in the super-

structure which will increase its weight; and if the piers, as is probable, have little or no lateral bond, to do this is to put them between a pair of gigantic nut-crackers, which will crack the nut sooner or later. While referring to the subject, we may remark also on the extraordinary degree of ignorance and intolerance which has been shown in the correspondence and comments on the subject in various daily and weekly papers. It really seems as if, the less people know about building, the more right they think they have to lay down the law on the treatment of an ancient building. Things have got to a pass in this respect which is perfectly ludicrous. As an example of the absurd things that are said we have Mr. Pennell accusing the Dean and Chapter of Peterborough of having obviously intended from the first to pull down the façade, because he found a scaffolding all ready which had been there for months, he being apparently ignorant of the fact that the erection of a scaffolding is a necessary preliminary to the examination of the condition of the building. In a weekly paper (the *Speaker*) it is seriously suggested that if the Dean and Chapter prove contumacious the lesson will be that we must put our ancient buildings under the control of a National Commission, as in France; the writer being evidently unaware that the "Commission des Monuments Historiques" has carried "restoration" further than it has ever been carried in this country, almost obliterating the interest of many of the architectural monuments of France; and that Viollet-le-Duc, to whom the *Speaker* also refers with admiration, was a restorer more drastic even than Scott. The Dean and Chapter of Peterborough have in our opinion shown both firmness and judgment in their action, and a temper which contrasts very favourably with that of some of their violent and ill-informed critics.

In the coming year the most important subject before the Architectural world is that of the proposed New Government offices. Upon the general features of the site-schemes and the block-plans for their occupation, as set out in the Report of the Special Committee, we have already commented—favourably in regard to some, unfavourably in regard to others, especially that for the War Office. Nothing, however, is definitely settled yet; there is opportunity for improvement in the scheme, which it is to be hoped may yet be carried out in a manner worthy of the nation; and we have the satisfaction of knowing that the present First Commissioner of Works is fully alive to the architectural importance of the subject, and desirous that the new buildings should represent fine architecture as well as convenient offices. It is to be hoped that for these new Government offices there will be either a general or a limited architectural competition, and that it will be better managed and more satisfactory in its results than some previous competitions of the same kind.

Amid the various proposals which are in the air for doing something to commemorate this year of the Queen's reign, it is natural to consider whether any architectural monument significant of the occasion can be or should be erected. A new War Office, if adequately carried out in an architectural sense, would be important enough for the occasion, but would hardly form a suitable memorial of the reign of a Sovereign who has always and

consistently wished and promoted peace as far as possible. We have had various suggestions made to us, but none of them worth taking into account. One correspondent suggested that a great building of some kind should be erected, on the ground that the present reign had not been marked by the erection of any great building of the first importance; a building called the Houses of Parliament having apparently escaped his recollection. But the suggestion reminds us that the Houses of Parliament has never been completed according to the architect's design, and we can think of few more suitable architectural memorials of the reign than would be furnished by its completion. Another suitable one might be the realising of the scheme, so often suggested in different forms, of a national Walhalla for the monuments of eminent persons, not in connection with Westminster Abbey, which is complete in itself, and would only be spoiled by a modern addition, but as a separate building. A third course which would be more to the purpose than either, and which is what would be certainly done in France or Germany, would be to carry out an artistic memorial of the Queen and her reign, purely as a work of art in architecture and sculpture, and as a monument only, without considering its practical use. This would be by far the most graceful way of doing it, and the most satisfactory in an artistic sense. We have the Albert Memorial—a remarkable work in its way in spite of some obvious defects; why should we not have the Victoria Memorial?

A NEW MUSEUM OF ANCIENT SCULPTURE.

BY PROFESSOR FURTWÄNGLER.



THE Glyptothek at Ny Carlsberg, near Copenhagen, founded by the well-known brewer, Herr Carl Jacobsen, is the latest Museum of ancient sculpture in Europe, and yet takes rank among the most important. It is, moreover, an outcome of the times, of which we may well feel proud. In past centuries, potentates collected statues for the adornment of their palaces. The practice inaugurated in Italy by princes, Popes, and cardinals, spread, under the influence of later Renaissance and Barocco architecture, to the Courts of France, of Spain, and of Germany, and, not least, to the English aristocracy. But to-day, a rich industrial competes with the grandees of a bygone age. And his collection of ancient sculpture is not destined to adorn a palace, but to minister at once to artistic enjoyment and scientific research. Its aim is to unfold before the visitor, by means of a noble series of well-selected examples, the whole development of Greek art. And this aim has been steadily kept in view. For Herr Jacobsen is enough of a connoisseur to appreciate above all what is intrinsically exquisite and beautiful; but he is also enough of a scholar to estimate at its right value what is significant for the historical study either of the development of form or of the mythological conceptions of the ancients.

To fulfil its aim such a collection must be conveniently exhibited, must be arranged on an easily grasped principle, and be made easy of access to all interested in art—all of which conditions are admirably fulfilled at

Ny Carlsberg. One requisite, however, was till lately wanting; in order that the scholar or the student who cannot undertake the pilgrimage to the collection of Ny Carlsberg might possess trustworthy reproductions of its works of art, a large publication must be started. In fact, the well known firm of Bruckmann in Munich has begun to publish the ancient monuments of the collection.* The three first parts, containing thirty large and splendidly executed plates in heliogravure, have already appeared, accompanied by an exhaustive text in French, itself richly illustrated, from the pen of Paul Arndt, a pupil of Heinrich Brunn.

The first *livraison* contains a selection from works of different epochs. As samples of the comprehensive character of the collection, which extends from Egyptian sculpture of the Old Empire down to late Roman sarcophagi and grave stones of Palmyra, we are given an Egyptian statue, a sitting Anubis of bronze, of uncommonly fine workmanship. An excellent sarcophagus of the later Roman Empire, from Sidon, displays on its front the contest of Apollo and Marsyas, while the portrait of the dead man—a certain Greek, by name Hermogenes, who has all the air of a Professor in a modern Academy of Music, and had probably devoted himself to the art—adorns the centre of the lid. A bronze statue of the youthful nude Herakles, reproduced on three plates, takes us to the efflorescence of Greek art. The statue, save for the bow and arrows once held in the left hand, is preserved intact; even the eyes, which consist of variegated substances, and were let in separately, are not lost, so that the figure preserves the life-like look wanting to so many statues, owing to the loss of the pupil in cases where it was let in, or to the disappearance of the colouring in others. The statue may be derived from a work in the manner and of the epoch of Skopas.

Another plate in this same *livraison* gives a small marble head from Athens, a charming, delicate original, probably by a pupil of Praxiteles.

A large portion of the collection consists of Roman copies after lost Greek masterpieces. In my book, "Die Meisterwerke der Griechischen Plastik," I had already referred to many of these pieces. Since then the indefatigable owner of the collection has acquired many new important works. Not only the villas and the palaces of the Roman aristocracy—of the Borghese and the Sciarra—but also the recent excavations in or near Rome have helped to enrich the Glyptothek of Ny Carlsberg. In the first *livraison* the most remarkable object of the class is the head of a goddess, in the severe style which recalls the figures from the pediments and metopes at Olympia.

In the second number the plates appear in stricter chronological order. Among the archaic sculptures, a place of honour is taken by the Early Attic head of a youth, which once belonged to the French archaeologist

Rayet; it is a work full of the strength and vitality which distinguish archaic art. From the archaic period, shortly before Pheidias, comes a draped female statue, which is closely related to the quiet, standing figures from the Olympian pediments and metopes. But the workmanship is finer and more precise; the ideal which inspired the Olympian figures finds in our statue clearer and purer expression. The statue is evidently an original; unfortunately, the head is missing; it seems to have been already restored in antiquity, probably in Rome where the statue was found; the neck is cut off straight, and shows a dowel hole; but in the period to which the work belongs heads were never adjusted in this fashion—a remark which the editor Arndt fails to make.

Still another original work of this period appears in the same number: the head of an anthropoid sarkophagos from Sidon, of Parian marble. As I have already noted in "Meisterwerke," p. 737, it strikingly resembles the Harmodios by Kritios and Nesiotes. Indeed, all the sculptors of those Parian marble sarkophagi in which the rich Phœnicians of the fifth century B.C. were wont to have themselves buried, were *Nesiotes*, men of the islands, Parian masters *par excellence*.

The third part contains a series of five remarkable terminal heads from Athens or the Peiraeeus, original works from the period shortly before and after the middle of the fifth century B.C., precisely, therefore, from that highly interesting period from which so few originals have survived. The five heads are by different artists, each of whom had his own individuality; a distinction can also be made between the earlier and the later heads. Two are still fairly archaic; two come close to the free style of Pheidias (pl. 13, 14), and one (pl. 15), the most careful in execution, and most remarkable of all, seems to me influenced by the Argive art of the epoch preceding Polykleitos. All five heads represent dignified, bearded divinities. Only one of these can be named with certainty, for he alone wears a distinguishing attribute—it is Hermes (pl. 12), represented with his travelling cap, as on Greek vases. True, the editor, Arndt, believes that the other heads also can be accurately identified, and he attempts to do so in a long disquisition. But herein the editor shows himself somewhat behind his times.

In a manner which is now, fortunately, out of date, he surrenders to the naïve illusion that we can name ancient divinities on the ground of the subjective impression roused by this or that facial form, on the ground of a popular but non-historic presentment of the nature of this or that Greek divinity, without seriously inquiring into the objective sense, the meaning, and the origin of that particular art-form, or into the conceptions and beliefs which really obtained in the epoch to which the work of art belongs. One of the heads, for instance (pl. 15), impresses the editor as mentally limited; he sees in it an "esprit médiocre" "inintelligence," and "stupeur;" and since he has further come to the curious conclusion that Hephaistos must have been conceived as a mentally narrow personage (the god whose cleverness and understanding ancient poetry cannot sufficiently praise!), he feels himself entitled to call that god Hephaistos. The other names are found on the same method, and are equally valueless, for that supposed mental narrowness is merely the result of certain

stylistic habits of the artist. The heads on pl. 13, 14, 15 might, as they probably do, all represent the same personage—a dignified, bearded god or hero; more we cannot say, seeing the numberless possibilities that crowd upon us in such a case. The differences between the heads, however, are those of style, and of artistic individuality, and these are of supreme interest to us, although the editor does not touch upon them. But if Arndt in this case thus abandons historical thought and understanding for deductions from arbitrary, subjective fancies, he is here following the lead of Heinrich Brunn, who in his essays upon the Greek ideals of the gods is not free from the same failing. For this reason Brunn's essays must perforce be looked upon nowa-days as in great measure false, however admirable and brilliant they may be owing to the author's genial and profound understanding of the finest forms of Greek ideal heads.

The Glyptothek of Ny Carlsberg contains still a crowd of important monuments, which will appear in subsequent *livraisons* of the great work. The publication will bear striking witness to what may be accomplished, even in our day, by an intelligent and appreciative collector of ancient sculpture. Side by side with well-known works such as the Anakreon from the Villa Borghese, which I conjecture to be copied from a Pheidian original, or the Hera from the same villa, which apparently goes back to Alkamenes, the forthcoming numbers will contain many still unknown sculptures of great historical and artistic interest.

The text, likewise, in spite of a few weaknesses which we felt bound to mention, has its special strength in the wide knowledge of ancient sculpture commanded by the editor. In a manner peculiarly serviceable to students he illustrates the text with less well-known monuments bearing upon those of the collection.

We here take our leave of the Glyptothek at Ny Carlsberg with feelings of gratitude towards the founder, who not only makes his collection accessible by every means in his power, but who has already made arrangements by which to secure the gallery for all time to his native city Copenhagen. We can only hope that Roman princes and English lords may soon follow the truly noble example set them by a simple burges.

ADOLF FURTWÄNGLER.

ELECTRICITY DIRECT FROM COAL.

IN recent years there have been two favourite scientific subjects for writers of magazine articles, namely, how to get light without heat, and how to get electricity direct from coal. Considerable progress has been made towards a satisfactory solution of the first of these problems, and the second, according to an article by Dr. Jacques which appeared in the Christmas number of *Harper's Magazine*, has now been solved. It is more than a year ago since Dr. William W. Jacques, of Boston, invented his so-called carbon battery, and although electricians, deceived so often, at first ridiculed it, they are beginning to admit that it is a novel and meritorious invention. The inventor's account of it, therefore, even though written in a Christmas magazine, is deserving of serious consideration.

* The full title runs: "La Glyptothèque de Ny Carlsberg, fondée par Carl Jacobsen. Les Monuments Antiques, Choix et textes de Paul Arndt." Munich, Verlaganstalt für Kunst und Wissenschaft, Ancienne Maison Fr. Bruckmann, 1896. Up to December of this year three parts (*livraisons*) have appeared, each containing ten plates. The whole work is calculated to consist of twenty-two parts. The Greek and Roman portraits, although an important part of the collection (it is the most valuable gallery of ancient portraiture in existence) will be omitted from this large publication, since they are appearing separately in another work by Arndt and Bruckmann which is exclusively devoted to portraits.

The battery consists of an iron pot which forms the negative pole, and contains molten potash at a temperature of between 400 and 500 deg. Centigrade. In this is put a rod of carbon with an iron hook suspender, which forms the positive pole, and air is kept bubbling up round this carbon by means of an iron pipe with a rose at the end, through which air is forced by means of an air pump. The potash is kept at its high temperature by means of a fire below the pot, and when the air pump is working it is found that although the electromotive force between the terminals is only a little greater than one volt, yet the resistance of the battery is so small that currents of enormous intensity can be got from it.

The results of a test made of this battery by independent experts show that between 30 and 40 per cent. of the electricity theoretically obtainable from a pound of coal can be got by this method even when the capacity of the battery is only two horse-power. Remembering that the best steam engines give only 5 or 6 per cent. of the theoretical energy, it will be seen how important this result is. Hence an account of this battery by the inventor deserves careful attention to see what are the weak points in this method of obtaining electricity.

Dr. Jacques begins by pointing out the waste of energy in our present methods of generating electricity by combined steam engines and dynamos, and this, of course, is common knowledge. He then gives a slight sketch of the various unsuccessful ways by which he tried to get electricity from natural forces without the intervention of machinery. Amongst others, he tried getting large currents from thermopiles which turn heat directly into electricity. Theoretical considerations induced him to drop this method, as he proved to himself that their efficiency must always be very small. This statement is not correct, for a thermopile which has a difference of temperature between its junctions of 400 deg. Centigrade could easily have an efficiency of 50 per cent. It appears, therefore, that Dr. Jacques is strongly prejudiced against theories of thermo-electric action, and wishes to persuade people that it is impossible to obtain high efficiencies by their means.

Then comes a description of a very feeble attempt to follow what he calls nature's plan, and get electrical energy from artificial thunderstorms. He finishes up the biographical opening with a poetical description of how one day he surprised nature's secret and found out how to convert the stored up energy of coal directly into electricity.

His first successful experiment was to suspend a piece of coal about the size of a nut in a platinum crucible full of melted potash. Into the potash a stream of cold air was blown by means of a platinum pipe. A wire attached to the coal formed the positive pole, and the platinum crucible the negative, and the current developed was sufficient to run a small motor. The inventor says that the current is undoubtedly due to the combination of oxygen in the air with the carbon. We cannot, however, admit the "undoubtedly." The inventor naturally hopes that it is due to this, but he has given us no proof, and personally we prefer the theory of thermo-electric action.

Dr. Jacques then describes the difficulties he encountered in repeating his experiment on a large scale. Platinum, on account of its

cost, was out of the question, so he tried various metals. We wonder how many minutes some of these metals withstood the molten potash. Only one ignorant of chemistry would have tried zinc, tin, and aluminium. Iron, when he first tried it, did not answer, because "most specimens of iron have an oily surface, which, when heated, becomes converted into carbon." This, we are afraid, is nonsense, as we fail to see why a very small quantity of carbon on the anode, which is not acted on, could have any effect on the working of the battery.

We now come to perhaps the weakest point in the whole article, which is contained in the following statement:

"It has been found best to crush the coal and mould it into large sticks of convenient size to handle, and bake them to drive off the included gases and give them good electrical conductivity."

So that it is not electricity from coal, but from purified carbon baked in a furnace. What included gases are driven off is left to the imagination of the reader. Then comes a test made by two experts upon a two horse-power electrolytic generator, in which it is found that the electricity generated is 32 per cent. of that theoretically obtainable from the coal (?) consumed. Apparently the coal consumed in baking the carbon is left out of account. The "efficiency" of new inventions is one thing, the "economy" is quite another, and it is the latter that is important commercially.

We strongly suspect that there must be some fatal practical defect about the method. It has been before the public for nearly a year, and yet no mention is made in the article of the first cost or maintenance. The potash must rapidly become contaminated with the ash of the carbon sticks; how is it cleansed? Again, each cell, having only a very low voltage, must be coupled up by huge copper cables, and joints must be very carefully made. It is not proved that it is a galvanic battery consuming carbon and may be merely a thermo-electric generator, which is a class of apparatus notoriously unpractical.

Dr. Jacques ends his article by pointing out the great boon cheap power would be to humanity, and we cordially agree with what he says. His invention is a very meritorious one from a scientific point of view, and he has written a most interesting magazine article on it.

NOTES.

Dangers of Peat Bogs.

ON the 28th ult. another of those terrible calamities which so frequently overtake those who dwell in the neighbourhood of Irish peat bogs took place. The scene of the disaster was the vicinity of Rathmore, a poor and thinly-populated district some twenty miles to the east of Killarney, and on the confines of county Cork. A foreman quarryman and his family were overwhelmed by the black mud, but no other loss of life is reported. At the same time large tracts of land have been destroyed so far as agricultural purposes are concerned, and quarrying operations have been suspended not only on account of roads being rendered impassable, but because the workings are now filled with peat slime, whilst the bog is still moving and seems likely to do more mischief. The daily papers allude to the occurrence as a landslip, but, of course, it is nothing of the kind—at least in the technical sense. Such great bogs as

we have in Great Britain have been largely made up by mosses, especially species of *Sphagnum*, which, growing on hill tops, slopes, and valley bottoms, as a wet, spongy, fibrous mass, die in their lower parts, and send out new fibres above. Where ponds and small lakes are gradually converted into bogs, the marshy vegetation advances from the shores, and sometimes forms a matted, treacherous, green surface, the lower portions being water-logged, beneath which the waters of the lake sometimes still lie. The decayed vegetable matter from the under part of this crust sinks to the bottom of the water, forming there a fine peaty mud, which slowly grows upwards. Or a thick bed of moss, decayed in its lower parts and being of a spongy nature, absorbs much water. Heavy rains, by augmenting the watery layer, or by over-filling the bladder-like spongy mass, sometimes make the centre swell up until the matted skin of moss bursts and a deluge of black mud pours into the surrounding country. This is what has happened in regard to the recent bog-slide near Killarney. Can nothing be done to prevent such occurrences? Many of the bogs are roughly drained, and a better system of drainage would, no doubt, go a long way to mitigate the evil, but from the agricultural point of view it would not pay, and that is the *crux* of the whole matter.

Open Spaces and the Queen's Reign.

THE suggestions for commemorating the sixtieth year of the reign of the Queen have been added to by an influential proposal that the dedication of open spaces in different localities, the purchasing for the public of historical ruins, and so forth, would be a desirable measure. We do not know that an open space is the best kind of memorial of anything, but any excuse for securing open spaces in perpetuity ought to be welcome. The Corporation of London never did better work than when they secured Burnham Beeches and Epping Forest for the public for ever. Why should not Kensington make a collective effort and purchase Holland House and its park? We give this as an example of the way in which the proposal which has been put forward may be carried out. In every neighbourhood those who are acquainted with it may call to mind some piece of land or some building which it is desirable to obtain and to keep as a public possession, free from all dangers of the future.

Public Works in Germany.

AS usual, the Budget for the German Empire (which, by the way, should not be confused with the Budgets of the Kingdom of Prussia or other minor kingdoms of Germany), contains very large proposals for expenditure on buildings, the total amounting to about 2,300,000*l.* The greatest outlay, as usual, is for military work—approximately 1,200,000*l.* The State Railways require 400,000*l.*, whilst the General Post Office and the Naval Departments each show totals of approximately 250,000*l.* The estimates do not show the same interesting features as was the case some years back when the Imperial Houses of Parliament, the Imperial Law Courts, and other great national works were in hand, and it should, of course, also be remembered that, in many instances, the items shown are only votes on account; there are to be some new Infantry Barracks, for instance,

a cost of 150,000*l.*, of which only 50,000*l.* will be voted at present. Among the items the Naval Estimates we notice a second one for 50,000*l.* to be expended on some docks at Kiel, which will require a total lay of over 400,000*l.* The General Post Office appears to continue erecting its own buildings in every important town, as in England; but some of them at all events are better buildings than our Office of Works is out.

THE Board of Trade has not been so successful in mediation between Lord Penrhyn and his quarrymen as it was in the recent dispute between the London and North-Western Railway and its employees. It appears that on September 30 the Welsh workmen applied to the Board of Trade to take action under the Conciliation Act, 1896, and the application was acceded to by the Department. The President of the Board of Trade and Mr. Young, Lord Penrhyn's lawyer, appear to have had an informal interview early in December, and arrived at a verbal understanding. Thus far everything had gone satisfactorily if slowly, but on December 9 Lord Penrhyn himself wrote the Board of Trade a letter harsh in tone and apparently contrary to the terms arranged between Mr. Young and Mr. Ritchie, since the former had agreed, it would appear, that Lord Penrhyn should receive a deputation of his men if one were appointed. The result is that matters have come to a deadlock, entirely, it would seem from the recently published correspondence, through the irremediable position taken up by Lord Penrhyn. It is obvious—we say nothing in regard to the merits of the dispute—that the Board of the quarries should have met the opposition from the men, and should have secured a representative of the Board of Trade to be present at the interview, as was suggested by the men. Lord Penrhyn has put himself in the wrong in this respect, and has shown once again that there are some employers who appear to act without tact or reasonableness.

It is very rare for the Court of Sanitary Authorities and Appeal to grant a new trial of a case. But they have done so in the action of Digby *v.* The East Ham Sanitary District Council which was tried before Mr. Justice Cave and a special jury in October. The action arose out of the death of one of the defendants' workmen, who was suffocated by poisonous gases as he was descending a manhole in a sewer. Mr. Justice Cave at the trial non-suited the plaintiff (the widow of the workman) on the ground that there was no evidence of negligence because the plaintiff had not shown that any Sanitary Authority adopted the precautions which it was suggested should have been taken by the defendants, and that as testing the air of the manhole before workmen were allowed to descend into the sewer. In a note upon the case we pointed out that the result of the trial was unsatisfactory, since, according to the judge's ruling, a Sanitary Authority could not be considered negligent for not taking a perfectly reasonable precaution, if other and similar Authorities had not previously done so. The circumstances of the case must be considered without reference to the conduct of other people. When the case comes on for a new trial, we hope that the

judge will leave it fairly to the jury to say whether or not the Sanitary Authority took reasonable precautions for the safety of their workmen. If they did not, then they must pay damages, and their misconduct will be a warning to others.

It appears that a "Remonstrance" is in course of signature in regard to Peterborough Cathedral to the following effect:—

"We, the undersigned, wish to express our sorrow at the proposal to rebuild a portion of the west front of Peterborough Cathedral, the beauty and value of which it is impossible to over-estimate. We earnestly hope that the Dean and Chapter will see their way to reconsidering their decision."

To this are appended a number of names of persons mostly more or less distinguished in Art, science or literature, but not a single one of whom probably knows anything about building construction, or has any special right to form or express an opinion on the subject. The question is one of practical structure simply; the Dean and Chapter do not want to move a stone of the front if it were not structurally necessary; they have the advice of one of the first and most practical architects of the day, who thinks the partial reconstruction necessary; on what ground are they to listen to a party of ladies and gentlemen who know nothing about the practical side of the subject, and who announce that the beauty of the front of Peterborough "can hardly be over-estimated," as if that were a special discovery of their own, and no one else were conscious of it?

THE exhibition of Mr. Watts's pictures at the New Gallery is not only a very fine one itself, but some additional interest is given to it by the painter's own preface to the catalogue, in which he imparts to us some of his own thoughts as to the aim and purpose of his pictures. The conventional preface to a catalogue, to which we are so constantly subjected now, is an addition we could generally very well spare; but the artist's own preface is a different matter. We defer any detailed notice of the exhibition, however, because we propose to consider it next week in connexion with the collection of Leighton's works at Burlington House. The collected works of two artists who were both idealists, yet with such very different ideals, must gain an additional interest when considered in relation to each other.

In his "Intermezzi" Dr. Furtwängler publishes a paper on the "East Pediment of the Parthenon," in which he claims to have discovered the original central figure of the composition. Dr. Furtwängler, with many other archaeologists, had gradually arrived at the conviction that the central place on the pediment was occupied by a full-length figure of the goddess Athene dominating the whole. This figure he claims to have rediscovered in the well-known torso of Athene, known as the Minerva Medici, in the Ecole des Beaux Arts at Paris. In his "Meisterwerke" Dr. Furtwängler pronounced this statue to be a marble copy from a bronze original. On a closer inspection he believed it to be an original Athenian work of Pentelic marble, and closely allied to the Parthenon figures in general

conception and the technique of details. From the rough condition of certain parts, and from the general pose of the figure, it seems likely that, as Karl Bötticher long ago conjectured, it was intended as a pediment figure to be seen at a high elevation and from a distance. M. Bulle has also pointed out that the dowel marks in the plinth are just such as are used for the attachment of pediment figures. Dr. Sauer, in his examination of the pediment marks of the Parthenon, had arrived at the conclusion that a certain central ridge in the east pediment (a Randbank) precluded the possibility of a single central figure. Dr. Furtwängler thinks this can be otherwise explained. It will be interesting to see what Dr. Sauer has to say. A further difficulty is that the plinth of the torso shows clear traces of dowel marks. The front of the east pediment shows no corresponding marks. Dr. Furtwängler explains this by a theory that the figure was carried off to Rome, and there used to decorate some temple pediment, and the dowelling marks made at that time. The whole theory is an interesting one: and whether the actual Athene is now found or not, we believe that a figure of the goddess did dominate the east pediment, thereby marking the temple as her own. The "Intermezzi" contains several other papers of great interest. A beautiful bronze head of Apollo from the Chatsworth collection is published, and its recognition is due to the acute eye of the Duke's new librarian, Professor Strong.

THE number of ancient Greek roadways that have been recently discovered is distinctly noticeable. The course and structure of the old Panathenaic Way at Athens is now known in detail, and the same may be said of a considerable portion of the Sacred Way at Delphi. During the autumn months two other important roads have been laid bare: one by the Americans at Corinth, noticeable from the fact that it has a paved footpath at each side; the other road discovered is the road that led from the Dipylon Gate to the Academy. This was, of course, one of the most important roads from Athens; its direction has been much disputed, and turns out to be somewhat different to what had been conjectured. Along this road lie, as is well known, some of the most important public grave monuments of Athens. Long ago, Dr. Schliemann tried to find the tomb of Perikles, but prohibitive prices were asked for the land. Let us hope that the Greek Archaeological Society now at work may be more successful.

THE General Council of the Seine, on the suggestion of "Mairies." M. R. Brown ("Inspecteur-en-Chief des Beaux-Arts") has voted money for some new decorative work on buildings in the suburban district of Paris. M. E. Michel Lançon and M. Ferry have been commissioned to decorate the new Mairie of Suresnes, one of the most graceful buildings in the environs of Paris, of which we published an illustration some time since. M. Lançon is to execute three large ceiling-paintings in the Council-room, and M. Ferry is to paint two landscapes with figures on the grand staircase. M. Eugene Simas is commissioned to paint a large decorative landscape in the Mairie at Créteil. M. Hercule, a sculptor who has produced some excellent

Peterborough Cathedral.

The New Gallery Exhibition.

East Pediment of the Parthenon.

Ancient Greek Roads.

Decorative Work in Paris "Mairies."

work, is to execute a marble bust of "The Republic" for the Mairie of Maisons-Alfort; and four decorative vases in bronze, after an ancient model in the possession of the Paris municipality, are to be erected at Clichy-la-Garenne, in a large square recently completed in the centre of that Commune. In commissioning landscape subjects, which are not in a general sense the most suitable for decorative painting, for the suburban Mairies, the General Council aimed both at securing some variation from the constant succession of allegorical subjects in decoration, and also at making some of these paintings a topographical record of the original aspect of the neighbourhoods concerned, which are constantly undergoing change from year to year.

WE understand that the proprietors of the Alhambra Theatre are about to extend their premises by rebuilding No. 28, Leicester-square, and the house at the rear in Castle-street. In 1768 John Hunter moved from Golden-square into a house in Jermyn-street in succession to his brother, William. Upon the expiration of the lease, 1783, he purchased a twenty-four years' lease of No. 28, Leicester-square and what was then No. 13, Castle-street, with the ground abutting upon Leicester-court, entered from Castle-street, between the two. On that ground he erected, at a cost of 3,000*l.*, a large museum for his collections, and lecture and dissection rooms. The museum, latterly used as a workshop, rises through two stories, with a wide gallery midway, and is lighted by three cupolas in the roof. A plan of the two houses, museum, &c., drawn by his assistant and curator, William Clift, we have seen in the collection of papers and drawings deposited by Sir Richard Owen's executors in the Royal College of Surgeons. At Leicester-square, Hunter (like Sir Joseph Banks in Soho-square) held his Sunday evening receptions, gave courses of lectures, set up a printing press and book-warehouse, and, in 1785, instituted with Dr. Fordyce the Lyceum Medicum Londinense. Hunter died in 1793, and was buried in St. Martin's-in-the-Fields. His remains, found after a long search in the vaults (1859) by Dr. Frank Buckland, were re-interred by the College of Surgeons, near Ben Jonson's grave in the north aisle, Westminster Abbey. His pictures, drawings, and library were sold "by Mr. Christie, at his Great Room in Pall Mall," January and February, 1794. In the auctioneer's catalogue (Stone Collection) of the sale of his household effects, including a set of painted hangings by Zucarelli, on September 24, 1806, the house is described as "his residence, No. 28, on the east side of Leicester-square"; yet it appears that it had been previously known as No. 12, Leicester-fields. The materials of the house he built at Earl's Court, Kensington, in 1763, were sold at auction, February, 1886, when the ground, two acres, was taken for Barkston-gardens.

**New System
of Railway
Signalling.**

THE electrical system of railway signalling, invented by Mr. W. S. Bout, which is now

being tested in daily working on the Manchester, Sheffield, and Lincolnshire Railway near Dinting Station, promises to be of great importance. Although many electrical systems of communicating with trains in motion have been devised, few of them can be de-



Brass of Sir Nicholas Hawberk (A.D. 1407), in Cobham Church, Kent.
From a rubbing by Mr. C. W. B. Bradon.

ended upon in actual work. The weak point about most of them is the mechanical method adopted of making electrical contact with the train. No mechanical method can be absolutely relied on in all weathers and in all conditions of the line. Mr. Boul's system is a very simple one, an electro-magnet on the road actuating two needles in a box below the engine, and each of them completing a circuit works two miniature semaphores in front of the driver and at the same time rings a bell. The use of two contact-making needles is to avoid all risk of a danger-signal failing to be received.* The signalman is thus enabled to have direct communication with the driver and guard even when the train is at full speed. If this system stand the test of further experience, it will make semaphores and coloured lamps superfluous, and do away with the present barbarous system of fog signalling.

We observe from a notice in the *Centralblatt der Bauverwaltung* that the Supreme Court at Leipzig has refused to endorse the verdict of a lower Court punishing the theft of electrical current, owing to the laws of the country having restricted the punishment for theft to "tangible objects," whilst an electrical current cannot be considered as such. The decision of the Supreme Court no doubt exhibits the legal mind in its most conscientious and strictly logical aspect. Whether the verdict is equally in accordance with justice and common-sense is another question.

BRASS OF SIR NICHOLAS HAWBERK (A.D. 1497), COBHAM, KENT.

The brass here illustrated lies in the chancel of Cobham Church, Kent, in commemoration of Sir Nicholas Hawberk, the third husband of Lady Joan de Cobham, who was his second wife. This is considered the finest military brass of the period.

The figure is surmounted by a handsome triple canopy, containing in the centre the Holy Trinity, on the right the Blessed Virgin and Child, and on the left St. George and the Dragon. Sir Nicholas Hawberk's head rests on his tilting helmet as a cushion, a common occurrence in monuments of all description. This helmet is crested with a fish in a circle. At the foot, on a pedestal, stands the figure of his son, John.

Sir Nicholas died at Cowling Castle on October 9, 1497.

Surrounding the brass is the following inscription, written in Latin:—

"Here lies Sir Nicholas Hawberk, Soldier, formerly husband of the Lady Joan de Cobham, relict of Sir John de Cobham, founder of this College, which Nicholas died at the Camp of Cowling on the 9th day of October, 1497, on whose soul God have mercy, Amen."

C. W. B. B.

THE LONDON COUNTY COUNCIL INQUIRY.

THE Special Committee of the London County Council, appointed to inquire into the organisation of the Works Department, met again on the 23rd ult., at Spring-gardens, when the Chairman of the Council, Sir Arthur Arnold, presided. Before the examination of Mr. Blashill, the Architect to the Council, was resumed, two documents were put in, one containing a statement by the Assistant Solicitor, showing the clauses added to the old Metropolitan Board of Works' form of contract, by the London County Council, and the other a report by Mr. C. J. Stewart, Clerk of the Council. The new form of contract besides prohibiting the contractor from underletting, requires him to pay the Trades Union rates of wages, and

to observe the hours of labour and conditions recognised by the Trades Unions. Mr. Stewart's report deals historically with the Works Department from its formation and the appointment of a Manager in January, 1893.

Up to March, 1893, the Council entrusted all works for general repairs to contractors, London being divided for this purpose into four districts, and the work was carried out under schedules of prices which were prepared by the Engineer and the Architect respectively; tenders were obtained for a fixed period on the schedules referred to, and the contractors were asked to state in their tenders at what percentage above or below they were prepared to carry out the work. After that date jobbing works were carried out by the Works and Stores Committee; a clause being added in October, 1895, exempting jobs of the estimated value of less than 5*l.* when they had to be carried out at a distance of more than three miles from the central works, and another added in 1896 giving the option to the Fire Brigade Committee to get executed, either by contractors or by the Works Department, any jobbing work required at Fire Brigade stations. If the Works Committee was satisfied as to the sufficiency of the estimate it proceeded with the work at once, and if the estimate was deemed insufficient, a report to that effect was made to the Council, and the estimate was then referred back, for revision, to the originating Committee. There had been two cases in which works had been refused by the Works Committee, and, tenders having been invited and found to be in excess of the estimate, they had been referred to the Committee on a revised estimate. These works, which are still unfinished, are (1) alterations to Pimlico River-station, and (2) paving work at Mill-lane, Deptford. On the Pimlico estimate of 700*l.* the only tender received was 1,171*l.* This estimate, on being revised to 950*l.*, was accepted by the Committee. For the paving at Deptford the tender received was 1,988*l.*, the original estimate 1,854*l.*, and the revised estimate accepted by the Committee 1,968*l.* Statistical tables appended to the report show that the total cost of works supervised by the Architect was 232,222*l.* upon final estimates amounting in the aggregate to 224,417*l.* The jobbing works executed by the Committee on a schedule of prices show an actual cost of 27,410*l.* upon a scheduled value of 29,372*l.*, showing a profit of 1,962*l.*

The examination of the Architect was resumed by Dr. Longstaff, who brought out the point that the objections to important works being carried out by the Committee were not so great in the case of engineering contracts as in that of architectural contracts, on account of the much greater complexity of the latter than the former. In illustration of this, Mr. Blashill stated that in the contract for Blackwall Tunnel, an engineering work which cost 800,000*l.*, there were only 935 items, while in the contract for a Weights and Measures station, an architectural work costing but little over 6,000*l.*, there were 2,175 items, or at the rate of 150 items to 1, in proportion to cost. Dr. Longstaff (recurring to the extraordinary bill of charges for repairs to a lamp at Blackheath, at a cost of sixty-eight shillings, when the estimate was only eleven shillings) asked: "What could the carpenter have to do with repairs to a lamp? Does not this look like another 'bogus transfer'?"

Mr. Blashill: I should not like to say that. It might have been so. The witness added that he should have thought it only a case of waste of time by workmen had these been merely excessive in number; but when men who could not have been employed on the job were charged, he owned that it looked like another case of transfer. Other cases of extraordinary bills of costs having been elicited, Mr. Blashill said the quantity of the work done by direct labour of the jobbing class was satisfactory, but not the cost. Questioned on the allegation of carelessness of some of the workmen of the Works Department, the Architect instanced a 6-in. drain 160 ft. in length where the cement had not been properly wiped from the inside at the joints. This defect, which was only discovered by a fortunate accident, was a serious one, which would eventually have stopped up the drain, and would have caused considerable expense if it had not been discovered at once. With respect to the charges made against members of the Works Committee of interference, and consequent insubordination on the part of the workmen, the witness said he had heard of such interference, but it was only hearsay and not evidence. With regard to getting the proper amount of work out of the men, he said he did not see why, with proper supervision, the same

work should not be done for the Department as for a contractor. The complaints were not against materials, as a rule.

Mr. Beachcroft: Is it the fact that needlessly superior materials are used, and that the supervision is needlessly stringent?—No. In answer to further questions from Mr. Beachcroft, the witness said the Department tried to get materials as cheaply as possible in order to complete their jobs within the estimate, and that delays had taken place in consequence of the search after cheap materials. He thought it impracticable for the Department to tender, and it was not necessary. Even if the Works Committee were continued, it would always be advisable to get tenders from contractors. He believed the Admiralty and the Ordnance Department did so, and thus got a good test whether they were being well served by contractors. With regard to extras, he must say, in justice to the Department, that it was very solicitous to have his opinions. He made no complaint of the Department for not letting him see their estimates. The Committee was friendly—at arm's length. With regard to work done at New Cross on an estimate of 16,000*l.*, which was higher than any of the seven tenders sent in, the Architect said he did not want to criticise the acts of the Council; besides, one of the good tenders was as high as 14,587*l.*

Mr. Beachcroft: Can you account for the remarkable disparity in tendering? Yesterday, for example, we had some tenders on work estimated by you to cost 100*l.*, the lowest of which was 71*l.* 5*s.* 3*d.*, but one was as high as 1,500*l.*!

—They always found tenderers who did not know how to estimate, and some would send in a tender merely in order to get back the deposit money paid on obtaining the bills of quantities. Sometimes a high tender would be sent in by a contractor who wanted to get his name before the Council, but did not want the job. If from a number of tenders they took off two or three of the lowest and two or three of the highest, they would usually get very good average tenders. In reply to a question whether he would like to put the manager in the same position as the contractor, Mr. Blashill said: No; he only proposed that he should be like himself. He would be in the same way as other officers, responsible to, and controlled by various spending committees. Questioned with regard to the advantage derivable by the ratepayers from the direct employment of labour by the Department, the Architect expressed his opinion that the financial result would not be great. They might get certain kinds of work done more cheaply, but with regard to works generally if it were left to him he should think it better, if there was no other disadvantage, to deal with one set of persons rather than with twenty sets of persons. He thought none but economical reasons should be considered in employing workmen. The employment of labour for the good of the labourer was not to be considered.

Replying to Mr. Davies, the witness said he did not know that lack of technical knowledge made the work done by the Department cost more. Want of proper supervision was the reason why certain works were too costly. With regard to his method of estimating, Mr. Blashill said he went on the ordinary lines of the architect.

Mr. Davies: Do you consider that the abolition of the Department would make any difference to the rate of wages in London?—No.

The witness, in answer to questions, gave further explanations with regard to the bad wood used for doors, iron, used at a fire brigade station, which did not stand the test, and the 60 tons of spent lime used as sand.

In reply to Mr. Torrance, the witness said that the work done by the Works Department had been well done, as a rule. They might carry out a number of works better and more cheaply than contractors, but there had been no great economy. The whole thing was still in the experimental stage, though a number of difficulties had been surmounted. He believed that ultimately the Council would attract superior workmen to its service.

Responding to Mr. Fletcher, the witness repeated his former statement that he had not been more severe against the Works Department than against contractors, nor *vice versa*, except where it was necessary to consider the interests of the spending Committees. When he made the Works Department do work over again, his spending Committees had to suffer, and sometimes it became a question whether he should insist.

Replying to a suggestion to try an experimental tendering by the Committee, he said he was averse to trying experiments where the pro-

* If one of the needles fail, a fault indicator at once points it out to the driver without interfering with the working of the other needles.
+ For reports of previous sittings see our issues for December 19 and 26.

bability was that they would fail. It would certainly be a disadvantage to the Council if contractors refused to tender. He had heard of workmen in the suburbs complaining that they could not get work from the Council. Those complaints would continue so long as the work was given out from one central place.

Dr. Collins, referring to a statement made some time ago by Sir John Lubbock, on the authority of the Architect, asked whether variations of the method of preparing the estimates took place from time to time? Mr. Blashill, in reply, said that for a long time the practice had been uniform, and that since 1893 a more scientific method had been adopted, four quantity surveyors, who were architects, being employed for the purpose. Since 1892 the profit had been lower on account of strikes, and the rise in prices. The recent tables of statistics presented were nearer the mark.

The inquiry will be resumed on Wednesday, January 13th, when it is expected that the Comptroller will be examined.

ENGINEERING SOCIETIES.

INSTITUTION OF CIVIL ENGINEERS.—At the ordinary meeting of this Institution, on the 22nd ult., Mr. John Wolfe Barry, C.E., F.R.S., the President, in the chair, the paper read was on "Steel Skeleton Construction in Chicago," by Mr. E. C. Shankland, M.Inst.C.E. The congested area of the main commercial district of Chicago, confined as it was by the lake, river, and railways, had brought about the erection of high buildings. The compressible nature of the soil, however, had made it necessary to build thin walls, carried on a steel frame, with isolated footings, spread so as not to exceed the safe pressure on the clay, namely, about 3,500 lbs. per square foot. After a brief historical account of the earliest high buildings, a description was given of the mode of designing the steel frame, the disposition of the columns, and the framing plans of the roof, attic, and each floor being respectively dealt with. In a typical case, the Fisher Building, eighteen stories high, the live load, made up to the weight of the tenants, the furniture and the partitions, which were constantly being changed, was taken at between 60 lbs. and 75 lbs. per square foot for the upper floors, and from 75 lbs. to 100 lbs. per square foot for the first and second floors, which were generally used for shops and banks. The weight of the tenants and furniture of a typical office was found by experiment to be only 6 lbs. or 7 lbs. per square foot. The average weight of the partitions was 25 lbs. per square foot. Having ascertained the live and dead floor-weights, the weights of the outside walls, the lifeloads, the weights of the lift and house-tanks, and of the water-closet floors, window-panes, glass, mullions, &c., a column sheet was drawn up showing the weight supported by each column at each floor. The live load, except that for the partitions, was then deduced and the remainder was used in designing the foundations. The unit stresses commonly employed were 16,000 lbs. per square inch per fibre strain in steel I-beams, 15,000 lbs. per square inch for plate girders, and 15,000 lbs. per square inch for short columns in compression. The roof was made up of beams and girders supporting tee-bars, spaced at 18-in. centres, between which book-tiles were built. Over the book-tile was spread a layer of cement, and on this a six-ply tar and gravel roof was laid, and the beams supporting the tees were fire-proofed. The types of columns in general use were mentioned and their relative merits discussed. The steel smoke-stack had supplanted the brick chimney, special arrangements providing for expansion and contraction of the steel where the stack passed through the roof. The author's practice was to construct the frame to withstand a horizontal wind-pressure of 30 lbs. per square foot over the whole side of the building, the resulting stresses were supposed to be taken up by all the columns in each row. If the maximum stress in any column from live, dead, and wind stresses exceeded 25,000 lbs. per square inch the column was enlarged to bring the stress below this limit. The various kinds of wind bracing employed, including roofs, portals, knee braces and plate girders between outside columns were illustrated, and the effectiveness of each discussed. Different portions and connexions of the steel frame, as well as the cover column connexions, spandrel sections, cornice and roof construction, bay win-

dows and balcony construction, &c., were illustrated and described. The most recent floor arches and column fireproofing were also discussed and drawings of different methods given. It had been stated that there was no such thing as fire-proof construction if the phrase were taken in a strictly literal sense, no known substance being able to resist a change of state when subjected to intense heat; but the Chicago high buildings were absolutely fireproof in the sense that they would safely resist any fire which could occur in or around them. This had been shown by severe tests to which certain buildings had been exposed, accounts of which were given. For best practice was to thoroughly scrape off the scale and apply a coat of oil at the mill, and a coat of red lead, graphite, or asphaltum after erection. This sufficed for the beams, but all outside columns were filled with Portland cement concrete. The steel beams used in the foundations were always embedded in Portland cement concrete, without being either oiled or painted, as the concrete adhered better to the unpainted metal. In the case of internal columns, when the fireproofing was well fixed and covered on the outside with plaster, the column was surrounded with a nearly air-tight space and the danger from corrosion was small. Spread footings formed the typical Chicago foundation. Foundations had in some cases been sunk into the hard pan so as to give greater basement height. Experience had, however, shown that it was safer never to descend below the top of the hard pan. If the borings showed any sand pockets or soft spots, the contractor was required by the specification to excavate them, and fill the cavity with concrete. A typical boring was shown, and the results of two tests, to determine the bearing capacity of the clay, were tabulated. The design of a spread footing, on the assumption of a given load per square foot to be used on the clay, was described in detail, and, as an example, a layer of beams in a large footing under the Masonic Temple was computed to show how the number and size of the beams, and their length, were determined. The reason for not using the live load in designing the footings was stated, and a prominent building was mentioned to show the bad effect of using the live load in calculating the foundations. Cantilever construction used in foundation work was described and illustrated. The foundations were only used under a few office buildings, and tubes filled with concrete, were referred to as unsatisfactory. The author considered the settlement was caused by the water being squeezed out of the clay, and that it gradually diminished, and finally stopped. This was illustrated by an occurrence during the construction of the Masonic Temple, and was further shown by the settlement curves of the same building, extending over a period of four and a half years. The amount of settlement of the high buildings amounted to nearly one foot, and the footings were raised, when construction was begun, in anticipation of it. The weight of the steel frame in an office building from sixteen to twenty stories in height was very uniform, ranging between 1½ lbs. and 2 lbs. per cubic foot of the building. The cost was between 49 cents and 6 cents per cubic foot, being from one-seventh to one-ninth the cost of the building. The length of time required to completely finish a high building was between seven months and one year. The paper was also illustrated by lantern-slides, showing typical buildings in various stages of construction.

THE INSTITUTION OF JUNIOR ENGINEERS.—At the meeting of this Institution, held at the Westminster Palace Hotel on December 18, the Chairman, Mr. H. B. Vorley, presiding, a paper was read by Mr. P. W. McDougall, A.I.E.E., on "Electric Central Station Working." With reference to the choice of a suitable site for an electric light station, the author stated that it depended upon two questions—1, whether the system to be adopted be high or low pressure; 2, the relative cost between any proposed sites of obtaining the daily supplies of fuel. Low-pressure stations had to be close to the consumers, but those of high-pressure could be placed right away on inexpensive ground, and with a river frontage. This was a great advantage, not only from the fact that any quantity of water could be obtained for condensing purposes, but also on account of the facility with which sea-borne coal could be brought to the station. As to boilers, the marine type was most suitable for an electric supply station, where quick steaming was an essential quality. Electric light engines used to drive alternators should have as even a turning

moment on the crank shaft as possible, so as to ensure satisfactory parallel running. The latest addition to the Deptford station of the London Electric Supply Corporation, which was designed by Mr. P. Walter d'Alton, engineer-in-chief, had this quality in a very high degree. It was a direct-coupled plant. The engine consisted of three separate compound engines with cylinders tandem fashion on a three-throw crank shaft with cranks at 120 deg. The alternator was of the Ferranti type and generated 100 amperes at 10,000 volts, at a speed of 150 revolutions per minute. The design of the armature, which was built on to the rim of a wheel 16 ft. diameter, was very open, and therefore gave plenty of ventilation and ensured cool running. The governors were either of the throttle or expansion type. The expansion governor was, perhaps, more generally the practice in electric light stations, but although the throttle governor was often considered not at all suitable for electric light engines, where steady governing and economy were such important matters, it had been adopted in some stations with very satisfactory results, especially when the engines were non-condensing. Whatever the type of governor used, it was a matter of first importance that all the governors should have as near as possible the same range of sensitivity. If an engine had a governor which allowed a variation of 1 per cent. another of 2 per cent., then when put into parallel, the one would work against the other, and the load would not be divided evenly, and great unsteadiness of the light would result, and perhaps failure of the dynamos. Alternators could be excited either by small continuous-current dynamos driven by separate steam engines, or by ropes from the alternator shaft, or by rectified current from the alternator. The rectifier method had not proved an unqualified success, the regulation not being satisfactory, a slight variation in the speed of the engine producing a very considerable variation in the voltage of the alternator. The exciters were often a weak part of an alternating station. There should be one for each alternator, driven by ropes off the alternator shaft, and made of ample size, so that the exciting system might not need any special attention on the part of the engineer in charge. With regard to the mains and their insulation, paper saturated with Oookerite (tarb wax), or resinous oil, had given very satisfactory results in high-tension work. The switching gear of a large central station was generally rather complicated, and in a high-tension station the switches had not only to be sure in their action of "breaking" the current, but great care had to be taken that they were well insulated, so that the operator was not endangered. The high-tension switches at Deptford which had been redesigned by the Company's own engineers, consisted of a long, light gun-metal arm worked by a lever of the signal-box pattern. The "break" was 4 ft. 6 in., and being high up overhead, perfect safety was assured. There had been no difficulty in "breaking" the current with the machine working at full speed, i.e., 100 amps. at 10,000 volts, and also on a short circuit. Owing to certain effects due to the capacity and length of the trunk-mains from Deptford it had not been possible to put on a main or withdraw it suddenly by pulling off a plug, without producing a variation in the voltage of the system. But this had been successfully overcome by an arrangement suggested by Mr. G. W. Partridge, of the L.E.S. Company. The main was connected to the bus bar through a high inductive resistance, and was gradually charged to the required potential by reducing the induction. As soon as the potential on the main was equal to that of the bus bar, then the main plug was inserted and the discharger disconnected. The reverse operation was performed when it was necessary to withdraw the main from commission. Arc lamps supplied by Ferranti rectifiers were, perhaps, the most practicable and efficient method of lighting in alternating current systems. Very satisfactory results had been obtained in several provincial towns with street lighting carried out in this way.

SKETCHES OF LONDON STREET ARCHITECTURE.—IX.

HOUSE IN CHEYNE-WALK, CHELSEA.

This is a house designed by Mr. C. R. Ashbee, and erected on the site of the old "Maggie and Stump" at Chelsea. It is built chiefly in red brick, the basement, the porch, and the cornices being in stone. The windows of the projecting bay are constructed in wood, and all the wood-work is painted white.



Sketches of London Street Architecture.—IX. House at Chelsea. Mr. C. R. Ashbee, Architect.

The cornice presents a curious example of indifference to the usual proportions of architectural detail, in the abnormally large size of the egg-and-dart ornament; but the incident is in

keeping with the *naïveté* of style characteristic of the Georgian era and especially of Chelsea architecture, and the house keeps up the traditional local character, besides being picturesque in itself.

PREMISES, EDINBURGH WORKING MEN'S CLUB.—The new premises of the Edinburgh Working Men's Club and Institute in Infirmary-street were opened recently. The architect was Mr. J. Breingan.

Illustrations.

FRIZEE: "VITE LAMPADES."

THIS frieze, under the title "Vite Lampades" ("Life's Torches"), is a design in water-colour which was exhibited at the Liverpool Autumn Exhibition of 1896. Love lights the torch of Life; Sleep and his elder brother Death confront and stay all mortals in their course, taking from each his torch; and these they forthwith quench. The idea was primarily suggested by the lines of Lucretius, bk. 2, 78:—

"Inque brevi spatio mutantur secula animantum,
Et, quasi cursuros, vitali lampada trandunt":—
the allegory being treated in its general significance, and without any attempt to reduce it to the exact terms of an ancient torch race.

J. S. B.

ALDGATE IN 1531.

DOWN nearly to our own day Aldgate was comparatively rich in medieval remains, as it and Bishopsgate were the only portions of the City proper which escaped the catastrophe of 1666; recent "improvements," however, have cleared off almost every ancient landmark, except the two churches of St. Andrew Undershaft and St. Catherine Cree. It must be admitted that both are interesting structures and have been carefully preserved. St. Andrew's is an excellent example of a late "Perpendicular" City church, and is moreover the burial place of the great City chronicler, John Stowe. St. Catherine's was, with the exception of the tower, which dates from 1498, rebuilt by Archbishop Laud, and is, internally at any rate, a graceful example of the Gothic of his day; it contains a monument to Sir Nicholas Throckmorton, who was a man who had "the courage of his convictions," for he was a Protestant under Mary and a Catholic under Elizabeth.

In Medieval times the glory of this neighbourhood was the magnificent Priory of Holy Trinity or "Christ Church," which was founded and most generously endowed by the Empress Matilda, who gave to the Canons-Regular not only their vast church and convent, but the whole ward of Parsoke, four parishes, and the City gate. This last seems to have proved rather a white elephant to the religious community, as it brought them frequently into collision with the civic authorities. It will be seen from our view that the monks were allowed to carry their buildings right across the main thoroughfare, so that the only access for the citizens was either through the courtyard of the Priory, or round by the narrow lane called the "Poor Jewry." This right over the City gate was upheld in favour of the monks by every English Sovereign until the suppression of the monastery by Henry VIII. in 1531. The buildings were shortly after handed over to Sir Robert Audley, who pulled down the greater part of the church and converted the monastic buildings into a dwelling-house. In the time of James I. the place seems to have become a kind of "rookery," and a good Alderman of London built a brick church amidst the ruins of the ancient building, which was called "St. James's, Duke's-place." Old views show that it was a Gothic edifice, of small dimensions, probably built of old materials; it was rebuilt in the eighteenth century in a perfectly plain manner, and was finally pulled down in 1878.

At the present time nothing, except a small arch at the back of a shop, is to be found of all this great monastery; though no longer back than the year 1876 the present writer made sketches of two beautiful vaulted apartments which existed beneath a house on the site of Messrs. Moses & Sons' Aldgate establishment. One of these stood north and south, and the other east and west, in the shape of a letter L. The vaulting, and, in fact, the whole structure, was early fourteenth-century work, 14 ft. in span, and very carefully constructed, with richly moulded ribs, carved bosses, and corbels adorned with foliage and grotesque heads. The walls had originally been pierced by large windows, so that it could not have formed a portion of a crypt; it was on the opposite side of Aldgate to the main structure of the Priory, and probably formed a portion of the Prior's house. It may here be noticed that the ground floors of the Bishop's palaces at Wells and Norwich are vaulted, but not so elaborately as this, and I am inclined to think that one

of these may have been the Prior's Guest Hall; they evidently formed the angle of a courtyard, but what was their original length or height it was impossible to say, as they were walled off and filled almost up to the "springing" with earth. In the year 1851 another beautiful building existed behind the houses facing Aldgate pump. It consisted of a hall, vaulted in two spans, supported by lofty and extremely elegant clustered columns. The sides of the building were not at right angles and, no doubt, it stood between the gates which led from the courtyard of the Priory to Aldgate-street-Within and Leadenhall-street. Numerous plans, elevations, and perspective drawings by Sewell and others are to be found. True writer remembers the building well, and often saw it. The tradition in the neighbourhood was that it was formerly "the Church of St. Michael, Aldgate," but it could never have been a church, and was in all probability the refectory for poor pilgrims, which was always attached to the gates of the greater monasteries. It was only 45 ft. long by about 24 ft. wide, so that the little space of ground might have been spared for one of the most beautiful architectural remains in the city.

The principal gate of the priory, in Cree-lane, existed in 1816, and is shown in drawings by Smith, Sewell, and Schnebele; it had a large and a small arch, and was of good Early English work; one of these drawings shows picturesque old gables adjoining. Plans and elevations by Wilkinson and Schnebele, dated 1823, show the plan of part of the cloister court on the site of Duke's-place, and the building forming the western side of that structure with a great hall on the upper story, 120 ft. long by 27 ft. wide. The lower story was pierced by large irregular arches, one looking like a kind of bridge. Audley's alterations, in the latest Tudor style, can be distinguished, and there would appear to have been an external stairway leading up to the great hall, which was probably the dormitory for "externs." To the north was a gateway which led to a public passage on the site of the north walk of the cloisters, and attached to this was a fragment of the west front of the church, with an arch which was probably the head of the window at the end of the south aisle of the nave. In Aggas' view of London (certainly published after 1571) the refectory is shown (partly in ruins) lighted by a range of Gothic windows; it was on the south side of the cloister court parallel with the church. In the so-called "view of London, by Van Wyngaerde," the church is shown entire, with a great centre tower like that of St. Saviour's, Southwark; the ends of the choir and transepts flanked by large turrets. The square east end is, at first, a little puzzling, because the etchings and drawings of the ruins in Mitre-court, by Smith & Sewell, in 1802 and 1803, show a Norman chevet and radiating chapels, but probably the east end of the choir had been rebuilt square in the fifteenth century (as was the case of St. Bartholomew the Great, an almost contemporary church of the same order) leaving the old Norman chevet and eastern chapels. The church was a favourite burial place for City worthies, and the first Lord Mayor of London, Alwyn Childe, was interred here. There are numerous drawings and engravings of the ruins of this noble monastery, but hunting them up has been a work of several years, as they are in portfolios and books in several of the London museums, and some of them in a History of London in twenty-seven volumes without index, arrangement, or pagination!

The old City gate, at Aldgate, was singular in plan; it was, in fact, a double gate, the inner one possessing two archways, one leading into the Jewry, and the other into the court of the monastery, so that it may almost be said to be at right angles to the City wall. The outer gate had lofty towers, upon which were exhibited those ghastly trophies, the amputated heads and arms of those who had suffered the "extreme penalty of the law." The gate is shown fairly distinctly in Aggas, and in the old view in the Bodleian Library, wrongly attributed to Van Wyngaerde, and incorrectly dated 1550.†

The old parish church of St. Botolph, down to the year 1754, stood just outside the gate, a little to the north, on the site of the present building; there are several views of it extant; perhaps the most reliable is one by R. West, dated 1737. It appears to have consisted of three naves of almost equal height and width,

with a fine lofty tower to the south, a singular porch on the same side quite close up to the west end, and a building, probably a vestry, to the north-east. The windows were very large, but the tracery had disappeared, and the roofs were high-pitched; it looks like fourteenth century work, but the tower was probably Perpendicular.

Just inside the Wall was the small old parish church of "Saint Augustine-upon-the-Wall," with an institution called "The Papey" attached. I have been quite unable to discover any reliable drawing of these buildings. The church is, however, indicated in Aggas' view as a very diminutive structure with a low square tower, but, as it is shown in a garden quite isolated, the college attached to it had probably been pulled down at its suppression by Edward VI.

Aggas also shows a large house with numerous gables, and a garden just at the point where Bury-street joins Cree-Church-lane, and opposite to Henegate-lane. This was probably the town mansion of the Abbots of St. Edmund's-Bury, which after the Reformation passed into the possession of the Henegate family, hence the names "Bury" and "Henegate" lanes. There is, however, another street about here, the derivation of the name of which is not so easily accounted for. That is "Bevis Marks," which all historians of London tells us is a corruption of "Bury Marks," but is it in the least likely that "Bury," a word which enters into the composition of some two or more thousand names of English localities (not a few of which are in London itself), could get corrupted into "Bevis" road, after all, what is the meaning of "Bury Marks"? It is much more likely that Bevis is simply the old English word "Beaves," and "Marks" is market, or "Mart." In other words, the place was in early times a meat market, which is extremely likely, as it is close to the town gate, just as Newgate market was.

The distant portion of our view is composed of the following places: Whitechapel, The Minories, Houndsditch, near which will be found the walled garden and farm of Holy Trinity Priory with its "Dove's house," and "Storge gate." The "Dove's house" is shown in the old Bodleian view as a very respectable tower, looking as though it might have belonged to a church. In the extreme distance the villages of Bow, Bromley, West Ham, and Hackney, are indicated by their church towers, which for the most part still exist. The churches of East Ham and West Ham, by the way, are the most interesting and probably the oldest in the whole neighbourhood of London. H. W. B.

SKETCH FOR A CORNER OF TENNYSON'S "PALACE OF ART."

The allegorical palace of Tennyson's poem, as most readers will remember, was built on a "huge crag-platform" (the poet adds "smooth as burnished brass," which crag-platforms never are) where the soul was to "live alone unto herself" and look down in pity, from her isolation, on the common herd who dwell in the plains below.

The idea of this palace on the crag with its solitary occupant always fascinated me, though the present sketch of it can only be considered "as an essay in the intervals of business," having been planned and carried out between Christmas Day and Monday morning, which is short space for designing even a palace in the air and built without contractors.

It is probable that the palace in Tennyson's mind was Gothic, as he speaks of "deep-set windows, stained and traced;" but then the poem was written before the neo-Classical revival.

H. H. S.

GREAT MALVERN.*

The monastery of Great Malvern—more correctly a priory—forms one of a group of churches formerly attached to Benedictine foundations lying within a few miles of each other in the valley of the Severn. Two of these, Gloucester and Worcester, have already appeared in our Cathedral Series, and a third—Tewkesbury—in the present series of Abbeys. A fourth—Pershore—will be illustrated and described later in the present year. Of all these monastic churches Malvern is the smallest, though not by any means less in interest. It has one point of similarity with its neighbours—that of retaining some portion of its Norman structure. Though inferior in scale to the great Norman naves of Gloucester

* The arch is said to have formed a part of the Refectory (?), but more probably it belonged to the infirmary, as it is too far east to have been part of the former building.

† Some of these are preserved in the Guildhall Museum.

* Reproductions are dated 1896, but the date is certainly incorrect. See article upon "London in the Time of Henry VIII."—*Builder* for January 7, 1898.

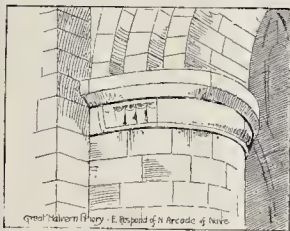
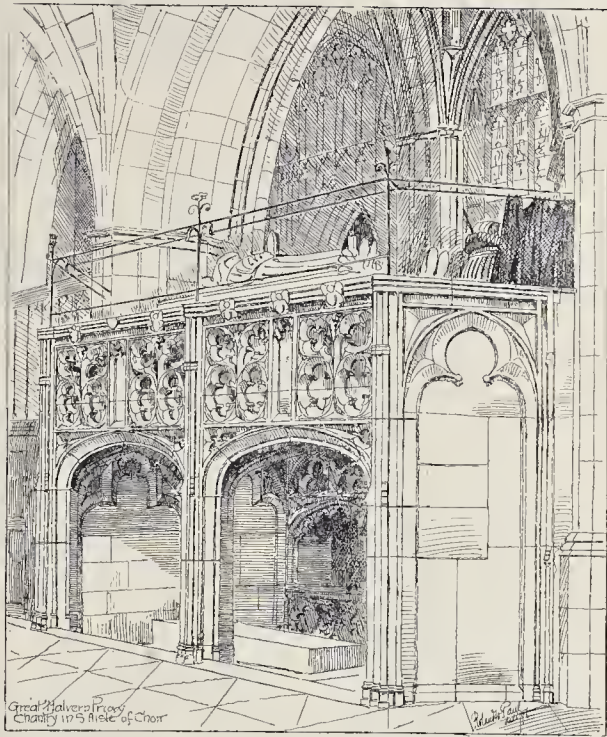
† The reasons for believing this view to date from the year 1522 are given at length in the article in the *Builder*, January 7, 1893.

* The series of the "Abbeys of Great Britain" is continued this month with illustrations of "Great Malvern." The next of the series (Sherborne) will appear in the number to be published on April 3, 1897.

and Tewkesbury, it bears evidence of being the work of the same period. Later work—of the Perpendicular period—has, as regards the exterior, obliterated nearly all traces of the earlier work, and the apparently late character of the exterior causes something akin to surprise when the comparatively low and simple treatment of the nave arcade is seen on entering.

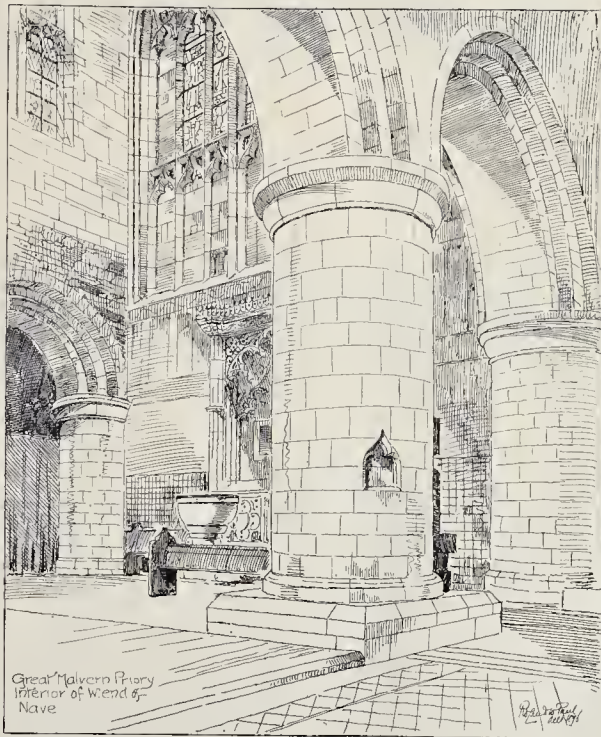
In the "Archæological Journal" of March, 1845, an interesting paper on the legend of St. Werstan, by Mr. Albert Way, gives many points which should be taken in connexion with an examination of the building. According to Leland, the church was erected by the hermit Aldwin about 1084. There was already in existence apparently a hermitage or oratory dedicated to St. Michael, situated between the present church and the beacon, and which may be said to have been the origin of the larger monastic establishment. The spot now known as the "Hermitage" may mark the site of this earlier chapel, and the present church is dedicated to St. Michael as well as to the Virgin.

By reference to the ground plan it will be seen that sufficient remains of the Norman work to mark the extent of the nave and its aisles, and also the position of the piers of the central tower. There were doubtless aisleless transepts—perhaps with small apsidal chapels on their east sides as at Tewkesbury and Gloucester—and an apsidal presbytery, but although much of the later planning bears evidence of having been framed on earlier work, there is nothing at present existing which enables the exact extent of the eastern portion of the church to be determined. Whatever additions or alterations might have been made during the three succeeding centuries, nothing at present is visible, and the almost entire remodelling of the church in the fifteenth century has obliterated everything of subsequent date to the Norman work already described. This restoration—or rebuilding—was commenced by



Prior John, of Malvern, about 1450, the presbytery being first dealt with, and the nave was not completed until 1476-1486—during Bishop Alcock's episcopate at Worcester.

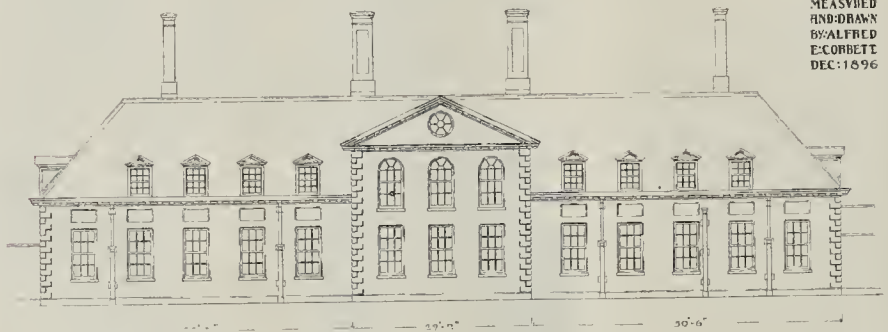
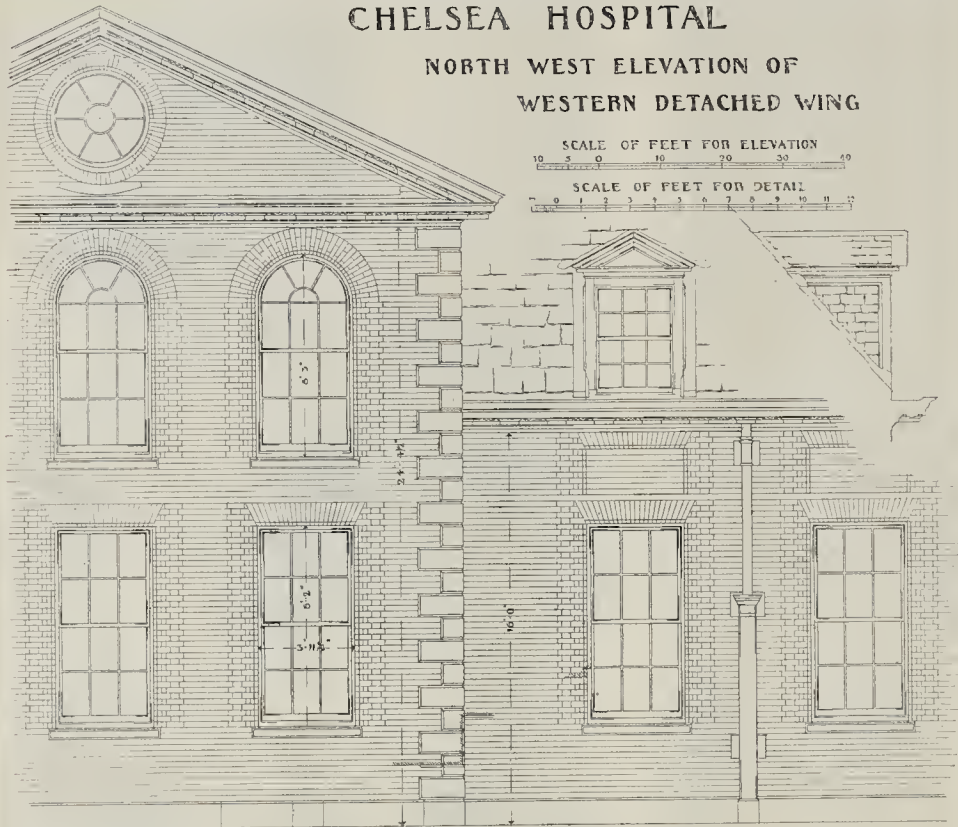
These Perpendicular works consisted in the entire rebuilding of the presbytery and its aisles, with a Lady Chapel projecting beyond, as at Gloucester and Tewkesbury; the rebuilding of the transepts, central tower (the Norman piers being strengthened), the clearstory of the nave, north aisle of nave and north porch, and a portion of the west front. The original width of the south aisle was, owing doubtless to the monastic buildings and cloister on that side, retained; two doorways being, however, made at its west end. The church as at present existing thus consists of a nave of six bays with aisles and north porch, a tower over the "crossing," two aisleless transepts (the south partly destroyed) and an eastern arm of three bays with aisles, two bays of the centre alley forming the presbytery, the eastern bay, an ambulatory connecting the aisles and, before the destruction of the Lady Chapel, forming the approach to it through an open tracered stone screen below the great east window, as now to be seen at Gloucester Cathedral. The nave columns are about 5 ft. in diameter, and 9 ft. in height between plinth and cap. The caps resemble those at Tewkesbury and Gloucester, and, with the exception of a small portion of the north-east respond, are plain (see illustration). The arches are semicircular, and of three orders, without mouldings or labels. The responds at either end are half columns. The bases are circular throughout, but the three western columns on both sides stand on square plinths. This, doubtless, places the position of the rood screen at the second column from the east, and a recess or niche (now occupied by a modern monument) on the west face of the column marks probably the site of one of the lesser altars. Another small niche with ogee cusped head is on the north-east face of the first column from the west end of the north arcade.



CHELSEA HOSPITAL

NORTH WEST ELEVATION OF

WESTERN DETACHED WING

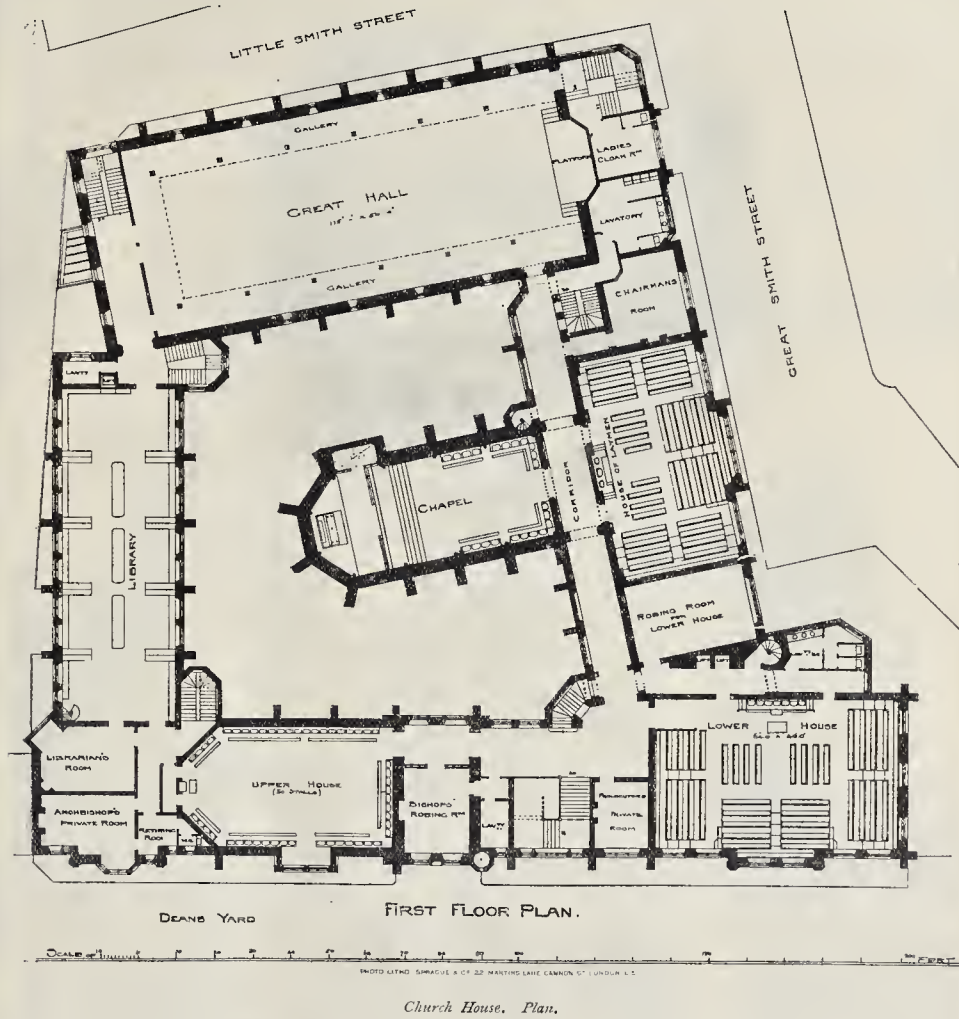


This should be compared with a similar recess at Tewkesbury, near the north porch (see plan of Tewkesbury Abbey in *Builder*, December 1, 1894). The original Norman masonry exists for some little distance above the arcade (see illustration of interior of west-end), and near the site of the rood-screen, already noted, there are evidences of its superstructure in the rough Norman walling. In the south aisle, near the junction with the transept, is the original doorway that led to the cloister, and nearly all this wall is Norman. The north aisle is Perpendicular, with a three-light window in each bay, separated by buttresses, and finished on the exterior by pinnacles, and stone vaulted, with a room over approached by a stair in the thickness of the west wall of the aisle. Both nave and aisles are covered with wooden panelled ceilings. The west window is

a fine Perpendicular one of seven lights, with a transom. The north transept (formerly the Jesus Chapel) has a six-light window on the north side, and a three-light window and doorway in its west wall. Two recesses for effigies, now empty, are in the north wall. Two recesses for effigies, now empty, are in the north wall. Near the floor level on the east side are traces of rougher masonry, possibly the remains of the Norman transept, but the Thompson monument, now at the east end of the north choir aisle, formerly stood here, and it is difficult to say whether the roughness of the stonework is original, or caused by its removal.

The south transept has been almost entirely destroyed, and a later wall with three buttresses has been built up to support the south wall of the tower. A portion of the jamb of its east window, close to the angle with the choir aisle, shows it to have been included in the rebuilding in Perpendicular times.

The ritual choir formerly extended at least one bay westward into the nave, and the inner faces of the tower piers were kept flat to receive the choir stalls. Some of the seats and misericords, with quaint grotesques, are still used as choir stalls, and placed in two rows on either side in the bay east of the crossing (see plan). Over the crossing rises a fine panelled tower of two stages, crowned by large angle pinnacles, and an open embattled parapet. The belfry windows are of two lights, set between pairs of pinnacled buttresses finishing under the main cornice. In the ringing stage are openings with trefoiled heads, the masonry set back at an angle to give the effect of deep shadow. The north and south sides differ slightly in treatment from the east and west sides, owing to the lower level of the transepts. All these features are shown in the exterior view, taken from what is now the kitchen garden of the Abbey Hotel. The design of this tower will recall the larger one



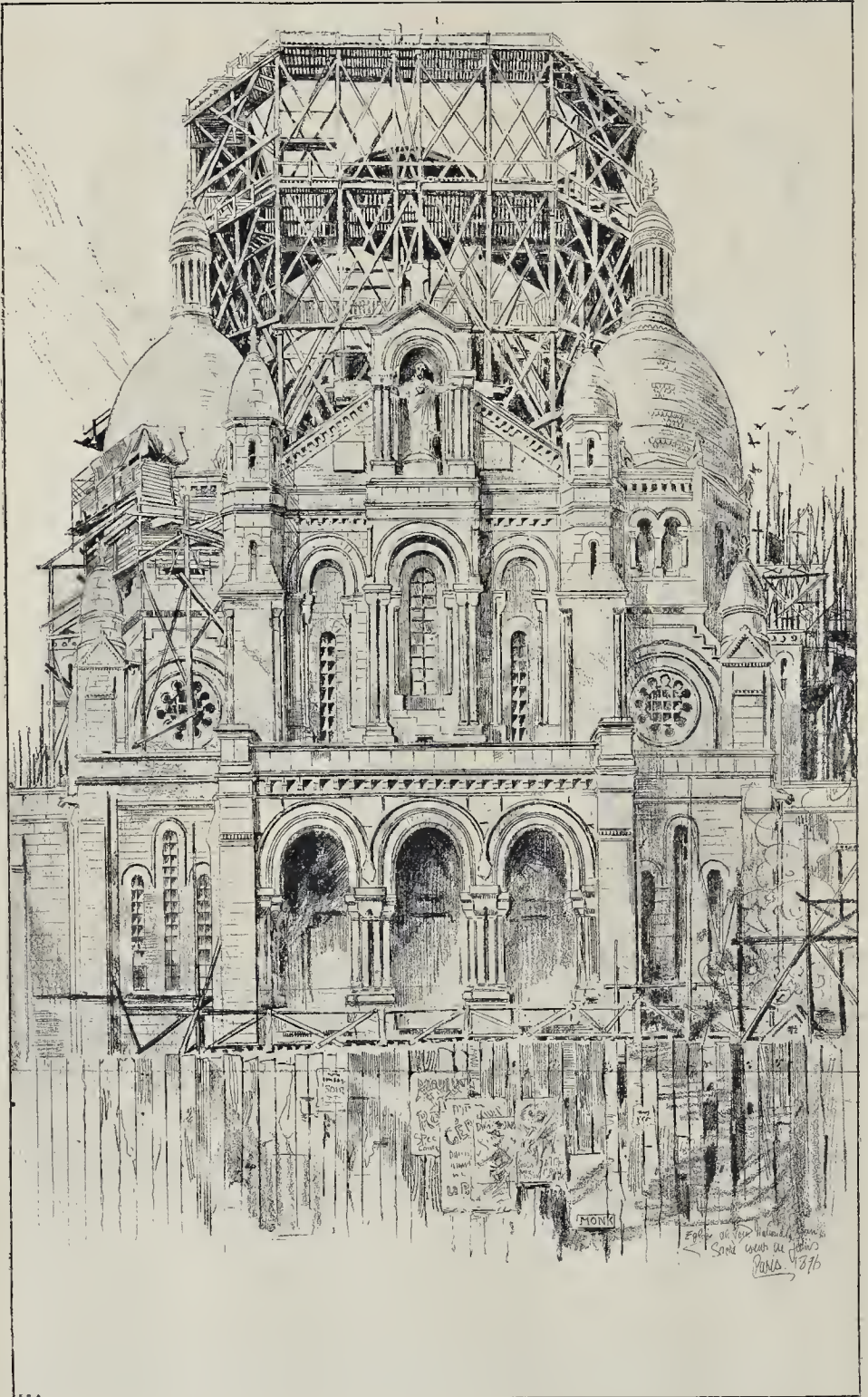
at Gloucester, which in a simpler form it strongly resembles, many of its features, in fact, being identical.

The presbytery of three bays is undoubtedly the earliest portion of the remodelled church. It has holdy designed piers, the mouldings carried round the arches and a shallow cap, or, rather, continuous moulding marking the springing level. At the second pier from the west is the altar screen, with two doorways leading to a space behind, divided from the ambulatory by a curved wall of some height (the altar is approached by four steps, and the side aisles are two steps below the presbytery, thus increasing the height from the ambulatory). It is finished with a moulded cornice, pierced with four small triangular cusped openings. This curved wall is generally considered to be original, and perhaps its form was in some measure due to the apsidal form of the Norman church. Without careful examination of the pier foundations and the space below the altar it is impossible now to say how far the original foundations were utilised, but bearing in mind how much of the early work was retained and recased both at Tewkesbury and Gloucester, it is possible that the form of this wall, and even the position of the piers, might have been fixed by the lines of the Norman Presbytery. The aisles have four-light windows in the side walls, and three-light windows at the east end, and the Presbytery is lighted by clearstory windows of four lights transomed, and a fine east window of eight lights. The south aisle was St. Ann's Chapel. Both

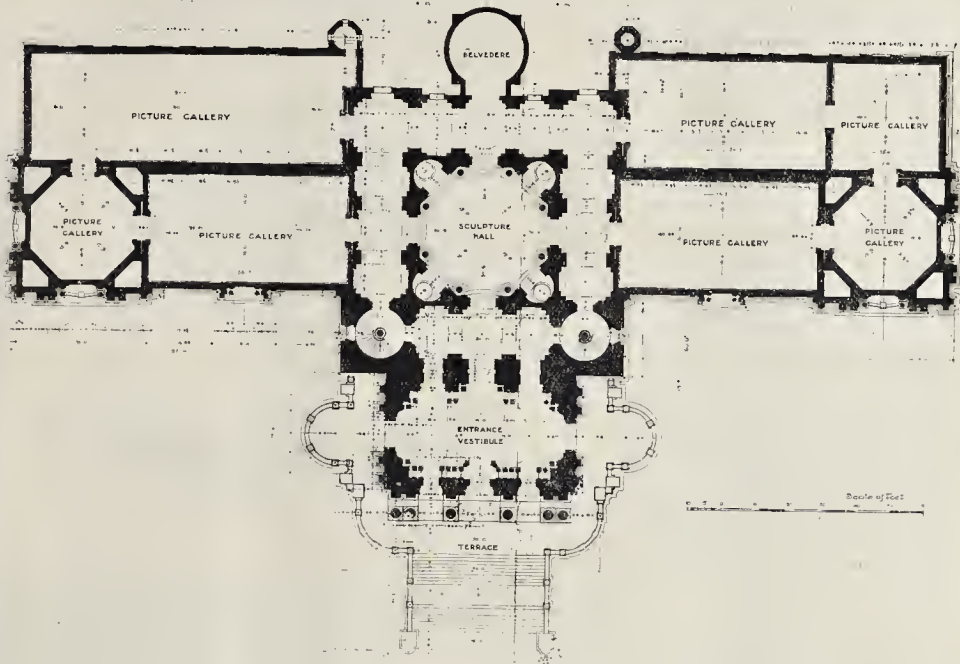
aisles are vaulted in stone, but the Presbytery has a panelled ceiling of wood. Some remains of the side walls of the Lady Chapel are left at the east end, showing it to have been about 23 ft. in width. It is said to have been 50 ft. in length.

The monuments, though not numerous, are interesting. North of the altar is an early effigy of a knight holding a circular shield and a battle-axe. It is well illustrated and described in Stothard's "Monumental Effigies." On the opposite side is a tomb of John Knotsford and his wife Jane, 1589. The tomb stands on a vaulted chapel of two bays, open to the south aisle. This contains two arched recesses for tombs, and on its floor lie two early slabs, one commemorating Prior Walchere, of Lorraine, 1113. The floor of this chapel is much below that of the aisle. The view of it from the aisle forms a picturesque feature of the interior (see illustration). In the space behind the altar are some monuments of the Lygon family, and two modern monuments, one at the east end of the north aisle in memory of Mrs. Sophia Thompson, and another to Sir Henry Lambert, designed by Sir Gilbert Scott, at the west end of the nave, complete the list. Malvern Church is, above all, justly celebrated for its encaustic tiles and stained glass. The tiles are mural, and cover the face of the altar screen, the side screen walls, and curved wall of the Presbytery, towards the aisles and ambulatory. They consist largely of a very interesting series of armorial tiles, including those of Edward the Confessor, and the families of De Clare, De

Spencer, and Beauchamp, and others. A few of the tiles seem of early date, but the majority are of Perpendicular character, and one or two patterns bear the date of 1453 and 1456, showing them to be coeval with the rebuilding of the church. There are two curious tiles with inscriptions—both from the same mould—one attached to one of the columns of the north arcade of the nave, and the other in the screen wall of the sanctuary on the north side facing the aisle. Most tiles have the emblems of the Passion. Other tiles have the emblems of the Passion. Most of the windows in the church retain some portion of their old glass. The great east window, the side windows of the clearstory, those on the south side of St. Ann's Chapel, the north and west windows of the north transept, and the tracery of those in the north aisle of the nave and choir all have very interesting glass of fifteenth century date. Figures under canopies and a series of events in the life of St. Werstan occupy the windows of the choir clearstory. The east window is filled with various fragments of glass, and in the north window of the transept are the kneeling figures of Sir Reginald Bray and Prince Arthur, eldest son of Henry VII., two only of a larger series. In the west window of the same transept are figures of St. John the Evangelist, John the Baptist and Paul, and the Annunciation, Nativity, and Presentation. St. Ann's Chapel has curious representations of the Creation, while the west window of the nave, said to have been given by King Richard III., has figures of St. George and the Dragon, St. Michael, St. Christopher, St. Lawrence, and St.



Church of Sacré Coeur, showing its present aspect with the scaffolding for the central dome.



National Gallery of British Art. Plan.

gathering, one or two coats-of-arms, and various fragments, brought from other parts of the church. A good deal of the glass, except that in the north transept, the clearstory, and St. Ann's Chapel, is not in its original place, but all is of the greatest interest and value. With the exception of the stalls, all the fittings are modern. The font is partly ancient, and stands on modern steps at the west end of the nave, in front of the Lambert Memorial.

Of the monastic buildings nothing now remains except the entrance gateway, a few yards west of the church. It has lately been extensively restored, and has a small oriel window over the archway and a panelled front.

The buildings formerly adjoined the west end of the nave, and communication with the church was obtained through two small glazed openings in the lower part of the west window. The refectory has been removed during the present century and the cloister garth is now the garden of the Abbey Hotel, and the hotel itself stands on the site of a portion of the monastic buildings. The ground falls rapidly to the eastward, and adds much to the dignity of the exterior as seen from the east and south-east. The elaboration of the tower contrasts well with the comparatively simple treatment of the nave and choir, the solidity of the plain wall forming in its turn the best setting for the elaborate windows, especially those at the east and west ends. In 1895 a violent storm destroyed some of the details of the exterior, and one of the pinnacles of the central tower fell through the Presbytery ceiling somewhat damaging the floor of that part of the church. At the present time restoration of the destroyed parts, and renewal, where necessary, is being carried out under the able direction of Mr. T. G. Jackson, R.A.

CHELSEA HOSPITAL.

It has been stated that this time-honoured foundation is about to give way to a scheme for new barracks, a revised system of out-pensions for military service, and a new hospital. In that case we shall lose yet another masterpiece of plan and design by Sir Christopher Wren, who, shortly after Charles II. had laid the foundation-stone on February 16, 1682, was made surveyor-general of the works, completed in 1693. The exterior of the buildings, with gardens extending to the new

embankment, is familiar to our readers. The grounds cover 65 acres, lying for the most part south of Queen's-road, which was formed by continuing the way from Stone Bridge, across the West Bourne (at the end of Pimlico road) to Old Paradise-row, thus separating the Great, now Burton's, Court (14 acres) from the site (7 acres) of James I.'s College, founded by Dr. Matthew Sutcliffe, Dean of Exeter, the Thames Shot (29 acres), and Arnold's Mead (21 acres) on the West Bourne's right bank, and sundry smaller parcels of land. The site of the College was bought from the Royal Society for 1,300*l.*, contributed by Sir Stephen Fox, Paymaster to the Forces, who, according to Evelyn, may justly be considered to have taken a large share in establishing the hospital. The other plots were purchased of Lord Cheyne (Burton Court) and Sir Thomas Grosvenor. Subscriptions of 20,000*l.* to the fund were made by the general public; Tobias Rustat, Gentleman of the Backstairs, and Archbishop Sancroft gave 1,000*l.* apiece; the Army gave a day's pay; and the King resolved, *teste* Evelyn, that "he would settle 5,000*l.* per annum on it, and build to the value of 20,000*l.* for 400 men to be as in a college or monastery." In the result 150,000*l.* was expended. Wren received 1,000*l.*, and in the accounts "an entry of 10*l.* paid, in 1687, to Hawksmoor "for drawing designs for the hospital." Mr. Beaver says in his "Memorials of Old Chelsea" (1892) that by 1872 a total sum of 289,580*l.* had been spent on buildings and lands. In that amount must be included the sum paid by the Crown for the ground—about 22½ acres in all—on the east side, which the governors had leased in 1690, and later to Richard, Earl of Ranelagh, who in 1698 obtained a grant of the two parcels in fee at an annual rent of 5*l.* per annum. On that land he built a house, and in the grounds was afterwards built the Rotunda, described in our "Note" of February 2, 1895. The Ranelagh site is now part of the hospital gardens, and lies south of the burial-ground, along the west side of Chelsea Bridge-road. The infirmary, formerly Walpole House, to which additions were made in 1809 by Sir John Soane, was originally built on the plot known as Great Sweet Court, leased in early times by the governors to one Jephson, whose house was occupied by the Earl of Orford in 1696-1707, and in 1723-46 by Sir Robert Walpole; its dining-room is now

No. 7 Ward. Walpole erected a summer-house and a green-house, designed by Vanbrugh, in a part of his garden, subsequently leased, 1810, to General Gordon. In Gordon House and grounds were held the Military and Naval Exhibitions of 1890-1; their site has been taken for the block of houses designed by Mr. Delius & Josephs.*

In the chapel are Sebastian Ricci's painting of the Resurrection and carving by Grinling Gibbons; the interior is paved in black and white marble, and has Dutch oak wainscot; there is a west gallery, the ceiling is coved in compartments. The organ, by Gray (1817), retains the original case of that presented by Major Ingram; the communion plate is by John Rogers, who in 1687-92 was paid 542*l.* 8*s.* for it. Rustat presented the bronze statue, by Gibbons, of Charles II., in the big court; he defrayed the cost of James II.'s statue, also by Gibbons, at Whitehall. The gardens were at first laid out after the Dutch mode, by William III., yet their formality, since modified, was in keeping with the general style and character of the hospital. Dr. Durney was appointed organist, through Burke's offices, in 1783, and was there visited in 1791 by Haydn. He is interred in the burial-ground belonging to the hospital. The chapel and great hall each measure 110 ft. by 30 ft.; between them is the saloon, octangular, and lighted by a dome and lantern; the east and west wings of the main court are 365 ft. by 40 ft.; at their ends are the officers' houses. In the long room is an interesting view of the hospital by Peter Tillemans, who came to England from Antwerp in 1708. The general design of the building has been compared to those of the Ospedale dei Mendicanti at Venice, and the Invalides at Paris. The proportions are just, the composition is dignified, and admirably proclaims its purpose by a stately simplicity which nowhere deviates into monotony of expression. Many of the details are highly characteristic, such as the beading around the edges or outlines of doorways, windows, compartments, and niches; we may instance, too, the brick and stone piers, capped with vase-necks and balls, at the several entrances about the courts, and the pyramidal iron lamp-standards over the pumps having large perforated pedestals

* *Builder*, March 28 last, "Architectural Association Spring Visits."

and circular columns enriched with wrought foliage. The particulars we give of the site are taken from surveys made by James Hamilton, circa 1680. Burton's Court, on the north side of Queen's-road, opposite the hospital main gates, was converted into a recreation ground for the Guards' Brigade seven years ago. In addition to the general view of the building, we are able to add measured drawings of the detached west wing, by Mr. Alfred E. Corbett, who has kindly lent them to us to assist in illustrating the building.

THE PALAZZO PUBBLICO, PERUGIA.

THE "Town Hall" of Perugia is not the least important of those buildings which meant so much to the mediaeval cities of Italy. Although this Palazzo Pubblico has not so graceful a tower as that of Siena, nor so formidable an aspect as the Palazzo Vecchio at Florence, it has a dignity of its own, and an appearance of strength sufficient to illustrate in its day the important position held by the great city of Perugia amongst its fellows. The view shows the entrance from the Cathedral-square, opposite the famous fountain. The chains and iron bar which hang from the two animals or "supporters"—one of which is the Griffin of Perugia, and the other perhaps intended for the Wolf of Siena—are said to be the chains and bar of the principal gate of Siena taken by Perugia as a trophy of victory in a mediaeval quarrel. Perhaps some day these chains will be returned by the city of Perugia to Siena, like those which once belonged to the Gates of Pisa, and which were taken by the Florentines some time in the fifteenth century, and lately returned by the city of Florence to Pisa, and are hung now on the walls of the Campo Santo.

GERALD C. HORSLEY.

CHURCH OF SACRÉ CŒUR, MONTMARTRE, PARIS.

WE have said so much about this church at different times that it is hardly necessary to repeat the information here, beyond reminding our readers that it was the design of the late M. Abadie, who died however before the building was very far advanced, and has been carried out in the main from his design, though with some modifications which are not all improvements.

The drawing was made on the spot for our pages by Mr. W. Monk, the central dome only, which is still unfinished, being obtained from other sources. We subjoin Mr. Monk's sketch of the building precisely as it appears just now, or appeared two months ago, the scaffolding for the dome having a very picturesque effect.

THE HALL OF THE CHURCH HOUSE, WESTMINSTER.

THE hall of the Church House is the first portion of a group of buildings which, when completed, will enclose an irregularly-shaped quadrangle and occupy nearly the whole space bounded on the north by Dean's-yard, on the east by Tufton-street, and on the west and south by Great and Little Smith streets.

The plan of the first floor as originally designed and adopted shows the general disposition of the various parts, which with certain modifications of detail will, it is hoped, be ultimately carried out.

The arrangement of the Assembly-hall has, in execution, been reversed, the platform being transferred to the east end and another staircase added; in other respects it remains as planned.

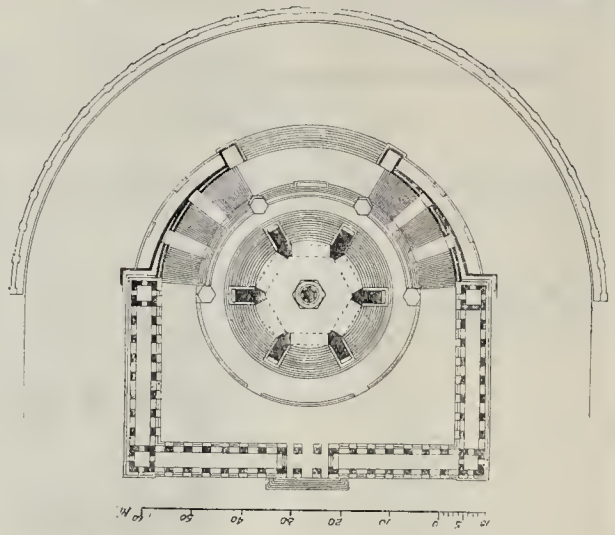
The leading idea is that the three Houses of Convocation, the Assembly-hall, the Chapel or Oratory, and the Library, should all be on the same floor and with easy means of inter-communication. The lower floors are occupied by committee rooms, offices, &c.

Under the new hall on the ground floor and basement are sets of offices for letting, but for the present, by the temporary omission of certain walls and partitions, the ground floor is now being used for meeting-places for the Upper and Lower Houses of Convocation, and for the necessary rooms in connexion therewith.

The next section of the buildings to be undertaken is that facing Great Smith-street, which will include the permanent quarters of the Lower House, with committee-rooms, &c., and sets of offices for letting below. These, it is hoped, will shortly be begun.

The Hall needs no description, except to state that the walls are of red brick, with dressings,

* It is, we hear, the present intention to omit the chapel altogether, but it is to be hoped that this decision is not irrevocable.



Monument to the Emperor William I., Porta Westphalia. Plan.

&c., of Portland stone, Ancaster stone being used internally. The fittings of the Hall and the roof are of oak, the latter being covered with Whitland Abbey slates.

The contractor was Mr. John Thompson, of Peterborough; and the architect Sir A. Blomfield, A.R.A.

It should be added that when the Hall was designed five years ago, an organ was promised by an intending donor, which was to be placed in the Eastern gallery—that end which now attracts attention by a great extent of bare wall. The organ, however, is not yet forthcoming.

LIVERPOOL TECHNICAL SCHOOLS AND MUSEUM BUILDING.

THE drawing here published represents the building as it will be carried out, the only important alteration in the design, as compared with the original competition design, being the omission of the small dome above the principal entrance, which the architect (Mr. E. W. Mountford) considered would break the curve in rather an unpleasant manner.

There is another reason however for the publication of this view of the building, as Mr. Mountford considered that the perspective drawing submitted in the competition and published in the *Builder* of August 8, 1896, did not show the design in the most favourable point of view.

RESIDENCE, FIFTH AVENUE, NEW YORK.

THIS illustration, which is reproduced from a photograph, represents one of the last of the large houses designed by the late Mr. R. Morris Hunt, and is a good example of his work of this kind, besides being one of the largest and in some respects the most splendid city residence in New York.

As will be observed, the design shows strongly the impression made on its architect's mind by his Parisian education; indeed, but for one or two details which are not according to the "Ecole des Beaux-Arts" standard, it might pretty well pass for an illustration of a Paris "Hotel."

NATIONAL GALLERY OF BRITISH ART.

WE have before illustrated the original design for this building; the view here given represents the building as it is actually being carried out, with some modifications from the original design; and the revised form of the plan is also given.

The principal entrance doors open into a rectangular vestibule, with an Ionic order 13 ft. high of columns running round the sides, with handed rustication between them for wall surface,

all in Portland stone. The ceiling is a plaster-barrel vault, with panelled stone ribs springing from the entablature over the columns. The height from the pavement to the crown of the vault is 25 ft. 6 in. From the vestibule is entered a corridor 12 ft. wide, which surrounds the central (octagonal) sculpture hall. From this central corridor all the various picture galleries are entered, and they have been so arranged that there is no necessity to retrace one's steps.

There are seven picture galleries, three of them being 59 ft. by 32 ft.; a long gallery, 93 ft. by 32 ft.; a square gallery, 32 ft. by 32 ft., and the two before-mentioned pavilions, shaped internally as octagons, and having a breadth of 32 ft. The picture galleries are all top-lighted, the ceilings being formed with elliptical panelled plaster ribs and ornamental spandrels. The pavilions are lighted from the top by a glass dome, with panelled and ornamental plaster ribs and cornices. The glazing used for lighting the galleries has been W. E. Rendle & Co.'s patent throughout.

The stairs are entirely treated in white marble. The central sculpture hall is open at the first floor, and has an arcade of coupled Ionic columns, with curved balustrades, dividing it from the upper sculpture gallery (which runs all round). The basement of the building is divided up into rooms similar to the galleries, and will be used for picture receiving and cleaning, students' easels, store rooms, and boiler house.

The basement is entered from the ground floor by circular staircases, which also lead to the lavatories and cloak-rooms.

The whole of the carving has been executed from models made at the works, from full size drawings by the architect for every part, which have been given to the modeller, the general treatment being Greek in feeling.

The floors of the central portion will be in Sicilian marble and marble mosaic, and the galleries will have polished oak floors.

The warming and fire appliances are being carried out by Messrs. Z. D. Berry & Sons; the drainage and sanitary fittings, &c., by Mr. Geo. Jennings; the whole of the ironwork was executed by Messrs. Handyside & Co.; Mr. Stone has supplied all the casements and window fittings, the glazing for them being by Mr. W. Ramsey; roof glazing, as before mentioned, by Messrs. W. E. Rendle & Co.; Messrs. Dennett & Ingle's fireproof construction is used in all floors; Messrs. Waygood supplied the lifts, and Messrs. Hayward the prism lights; the carving has been carried out under the direction of Mr. Christopher Smith; and Messrs. Drake & Gorham and Mr. Russell are responsible for the electrical lighting.

The contractors for the building are Messrs. Higgs & Hill; Mr. C. Coggin represents the architect, Mr. Sidney R. J. Smith, on the works. In addition to the building, Mr. Tate, the donor

of it, is presenting also a fine collection of British paintings of great value.

The perspective drawing was made by a pupil of the architect, under his supervision.

The building is now nearly all roofed in and the picture galleries (except floors) practically completed, so that it is hoped that the formal opening will take place the middle of next year.

The Trustees of the National Gallery will have the charge and care of this building, and arrangements are already being made as to the pictures, of which Mr. Tate's fine collection (which he will present) forms the nucleus. The original design prepared by Mr. Sidney Smith showed a lofty central dome, but at the wish of many artists (more particularly that of the late Sir Frederick Leighton), who were afraid of a shadow being cast by this circular feature on the galleries themselves, he was obliged to eliminate it, and the design, after many revisions, is now being finally carried out as shown.

MONUMENT TO EMPEROR WILLIAM I.

We have frequently had occasion to refer to the many monuments which have been erected throughout Germany in memory of the Emperor William I., and have in many instances given particulars of the competitions which were opened with a view to obtaining suitable designs, in many of which Herr Bruno Schmitz was the successful competitor, and his competition successes have often been followed by commissions to act as architect where the schemes have been carried out.

The design here illustrated may be said to be one of Bruno Schmitz's typical monuments, which are primarily architectural memorials. As in other monuments by the same architect, the advantage of a prominent position has been given, coupled with the requirement that the memorial should be essentially a land mark, the actual statue of the deceased monarch being only of secondary consideration.

The small plan which is appended sufficiently explains the design, which in its execution presents an admirable piece of masonry work. The cross at the top is about 50 metres above the terrace. The situation is on the side of a hill. The cost, exclusive of the statue, has been about 25,000*l.*, and with all expenses, levelling and the statue, about 40,000*l.*

The idea of having a monument for the province of Westphalia dates back as far as 1800, but there were great difficulties in finding a suitable site. Work was not commenced until 1892, and the monument has only lately been inaugurated. Herr Bruno Schmitz—who has now been made a Professor—had sole charge of the execution; the sculptors who participated being Professor Caspar von Zumbusch, of Vienna, for the statue, and Messrs Vogel and Schwartz, of Berlin, for the bas-reliefs. The statue, which measures seven metres and stands on a pedestal five metres high, is of bronze, and comes from an Austrian foundry.

MONUMENT TO WATTEAU, PARIS.

This monument has been recently erected in the garden of the Luxembourg, as the result of a public subscription. The pedestal, in white stone, was executed after the plans and under the direction of M. Henri Guillaume, architect (son of the former architect to the Louvre). The pedestal takes in plan the form of a painter's palette, forming in elevation a semicircle with steps attached. The figure of the woman in Louis XV. costume, seated on the balustrade, is the work of M. Henri Gauquié, who is also the sculptor of the bust of Watteau which surmounts the stone stele forming the extremity of the balustrade. The bust is in pewter, the silvery lustre of which forms an effective contrast with the rest of the work and with the surrounding foliage.

THE "BUILDER" ALBUM OF ACADEMY ARCHITECTURE.

This publication, which we have issued annually for some years back, is now ready, and will be in the hands of those entitled to receive copies in a few days. We may here call attention, however, to the improvement which has been made in it by the addition of plans and descriptions of the buildings or designs illustrated, so that it is now no longer only a collection of drawings of buildings, but affords the opportunity also for studying their plans.

A copy of the Album is presented to every architect or artist who has contributed to its con-

tents. The price of surplus copies to non-contributors, which was formerly a guinea, has now been reduced to half a guinea.

ALMANACS AND DIARIES FOR 1897.

MESSRS. HUDSON & KEARNS, of 83, South-wark-street, S.E., have issued their well-known diaries and blotting-pads for 1897, the merits of previous issues of which we have referred to on former occasions. While not presenting any new features, the diaries and pads are as well arranged as ever, and their get-up leaves little if anything to be desired. "The Architect's Diary," which is issued in two sizes, Nos. 12 and 13 (one and two pages to a day respectively), is not only valuable as a diary, but also for the information likely to be needed by architects which is published in it. The issue contains a list of cases decided in the superior courts of justice during the legal year from November, 1895, to August, 1896; revised regulations under the London Building Act, 1894; the Metropolis Management and Building Acts Amendment Act, 1878; names and addresses of district surveyors, &c., as well as the usual postal and other information. The section entitled "Architecture and Archaeology"—i.e., a list of some London and provincial architectural and archaeological societies—which is apparently complete as far as it goes—does not go far enough, seeing that several provincial societies are omitted from the list. A little more revision of this section in future issues would be desirable. "The Builders' Diary," No. 11, and "Diary and Note Book," No. 9, contain much of the special information to be found in the Architects' Diary. "The Builders' Diary" contains some useful practical tables. The same firm have sent us some of their date-indicating blotting-pads in various styles and sizes. "The Bankers' Pad" is a specially good form.

"The British Almanac and Family Cyclopaedia of Useful Information for 1897" (Charles Letts & Co., Royal Exchange, for the Stationers' Company) is the seventieth issue of a very useful annual. The publication is illustrated, and the aim of the publishers appears to be to produce the most popular annual of this kind.

"The City Diary and Almanac for 1897" (Messrs. W. H. & L. Collingridge, 148 and 149, Aldersgate-street, E.C.) is the thirty-fourth issue of this annual. It is interleaved with blotting-paper, and is a handy and neat little work, containing a large amount of information in regard to the City and City affairs.

"The Railway Diary and Officials' Directory for 1897" (London: McCorquodale & Co., Limited) is a work likely to prove of value to some of our readers, as it contains information as to traffic returns, accounts, dividends, lists of officials, &c. The "Railway Almanac," issued by the same publishers, is an interesting sheet.

We have referred before to the many excellent features of "The Indian and Eastern Engineer" (Calcutta, and London, 28, Victoria-street, W.), and the issue for 1897 is as well arranged and as useful as previous issues. The publication is presented to yearly subscribers to "The Indian and Eastern Engineers." It is to be regretted that the cover of the issue and the interleaved blotting-paper are covered with advertisements.

"The District and Parish Councillors' Diary and Guardians' Manual for 1897" (Messrs. Hazell, Watson, & Viney, Limited) contains the full text of the Local Government Act, 1897, a concise digest of its provisions, and most of the enactments incorporated with or referred to in the Local Government Act, the members of the Local Government Board, and a mass of useful general information. It also contains a diary of two days to a page, with memoranda for the guidance of Guardians and others. The work is handy in size and admirably got up.

Messrs. Dargue, Griffiths, & Company, Limited (specialists in warming and ventilating, 15, Lord-street, Liverpool), have sent us a handy little diary for 1897; and from the Limmer Asphaltic Paving Co. (Moorgate-street, E.C.), and the Rugby Portland Cement Company, we have received their respective almanacs for 1897, which are illustrated and mounted on cardboard.

"The Gloucester" Diary and Directors' Calendar for 1897 (W. H. Bridgen & Company, Gloucester, for the Gloucester Railway Carriage and Wagon Company, Limited), is the second issue of a handy little diary.

"The Gardening Year Book, and Garden Oracle for 1897" (W. H. & L. Collingridge, Aldersgate-street, E.C.) is the thirty-ninth issue of a valuable little work for gardeners.

Books.

The Preservation of Open Spaces and of Foot-paths and other Rights of Way. By SIR ROBERT HUNTER, M.A., Solicitor to the Post Office, formerly Honorary Solicitor to the Commons Preservation Society. London: Eyre & Spottiswoode. 1896.

THE time was when commons and footpaths were of no interest to the dwellers in towns, they were of importance only to those who lived in country places, often very remote from the centres of life. But this is now changed. The extension of the towns of England has brought them into contiguity with various open spaces, so that the commons which at one time were simply places where some few people pastured their cattle, or from which they cut gorse or bracken, have now become important as places of recreation and refreshment. The pathways, which at one time were traversed only by agricultural labourers on their way from the fields to the cottages, are now of importance to men who spend their days in city life. The railways, too, have brought the townsman into close touch with rural life, and he values the woodland footpath perhaps more than the tiller of the soil.

A work at once practical and legal, which can be read by the layman, and is also useful to the lawyer, has thus for some time been needed. It is satisfactory to find that a competent writer has taken up the matter, with the result that the hook at the head of this review will for a long time to come clearly remain the standard work on the subject of which it treats.

It is obvious that the modern interest in commons is in them as places of recreation, at least so far as readers of this journal are concerned. We do not propose, therefore, to touch on rural rights of common. What we are concerned with are rather rights of recreation over open spaces, whether they are what are commonly called commons or village greens.

The first point to bear in mind so far as recreation is concerned is that, in order to justify the playing of games on a common or a green, a custom must be proved to this effect. Moreover, a custom so proved does not extend to strangers, but only to persons who live in proximity to the open space. In these days the popular idea of commons and greens is that they are essentially places for recreation. To some extent this may be true of village greens, but certainly the object of commons was that they might be employed for purposes of utility as for example, that the commons might feed their sheep on them. The world at large may obtain rights of way over them, but more than these they cannot claim, and these only when they are proved by distinct usage.

It is well, however, to bear in mind that the commons near London are now on a different footing to those in the country; for three Acts, beginning with the Metropolitan Commons Act, 1866, are applicable to commons within the Metropolitan Police District, which extends for a long distance outside London proper. In any scheme for the regulation of commons under these Acts the governing body is empowered to set apart portions of the commons for games, to form cricket grounds, and to enclose such parts for their protection. Thus in the Metropolitan area the essential character of commons has totally changed from what it was in the past. They have ceased to be places for use for agricultural purposes, and have become places useful to the neighbourhood for purposes of health and recreation. There can be no doubt that the tendency of legislation and of public opinion is running in the same direction in regard to other commons than those near London. It is indeed a serious question whether the provisions of the Metropolitan Commons Act might not well be extended to all commons within a radius of twenty-five miles of Charing Cross. The protective Act, for what may be called provincial commons, is the Commons Act, 1876, which declares "that it is desirable that enclosure in severalty as opposed to regulation of commons should not be hereafter made, unless it can be proved to the satisfaction of the Commissioners, and of Parliament, that such inclosure will be of benefit to the neighbourhood, as well as to private interest and to those who are legally interested in any such common." The difference, however, between the policy of the Metropolitan Commons Act and this Act is that regulation under the former can be carried out without the consent of the parties actually interested, but under the latter it requires the consent of persons representing two-thirds in value of the legal interests in the common, and

gives the lord of the manor, in the case of a manorial common, a veto upon regulation. The difference in theory is obvious: in the Metropolitan area the public interest is held to be paramount, in provincial districts the public interest is to be considered, but private interests are held to be of higher importance. Sooner or later the former theory will have to be extended beyond the present narrow extent, and it should for some reasons be done promptly. There are now to be found commons outside the Metropolitan area which are becoming surrounded by houses; these commons are undrained, and frequently tend to cause ill health; their open character is more than counterbalanced by the sodden nature of the soil.

We do not propose to state the technical steps by which a common can be placed under the care of a local authority. It is sufficient to say that under any such scheme provision is made for draining, manuring, or levelling a common, planting or improving it, making by-laws for the prevention of nuisances or the preservation of order, for general management, and for the appointment of conservators. There is no doubt that any such scheme is most desirable in the interests of residents near a common, though it is to be hoped that good sense will prevail in one particular, viz., that no attempt will be made to *improve* the natural beauty of a common, which is still in an untouched state. On the other hand, there are some commons round the edges of which some planting of timber would be for the benefit of future inhabitants.

The subject of footpaths is, in many respects, of no less importance than that of commons; it is in the public interest that they should be kept free and open, and any one who wishes to know how this should be done may well read what the author of this treatise says on the subject. The main point to bear in mind is that once a right of way is established, it cannot be lost except by means of certain public measures, and after it has been shown that such way is useless, or that some equivalent is given for it. No footpath can now be destroyed where the local public is reasonably vigilant, and we hope that in every part of rural England these important rights will be kept intact.

Der Bau des Reichsgerichts zu Leipzig. By VOLKMAR MÜLLER. Berlin: Georg Siemens, 1896.

We have much pleasure in calling attention to the excellent series of descriptions of well-known modern public buildings in Germany issued by Mr. Georg Siemens, of Berlin, of which this guide to the Imperial Law Courts at Leipzig is a second number, the first having been the guide to the new Houses of Parliament at Berlin. The guide-book under consideration is well written and shows the sound architectural knowledge of the author—Herr Müller. It is illustrated by five views in photo-lithography and two plans. The frontispiece is a photograph of the architect, Herr Ludwig Hoffman, who now occupies the office of City Architect in Berlin. The book commences with some notes on the general requirements of German public buildings, followed by a description of the plan from an architect's point of view, and the guide proper, which then follows, is written in such sequence as to conduct the visitor through the whole building in an easy and intelligible manner. The pamphlet ends with some criticisms, which are, of course, written from the German point of view, and some historical and technical notes as to the construction of the building. It would be well if similar guide-books were available for our modern buildings, and for the matter of that for older buildings, for the guide-books offered for sale in this country are generally beneath criticism.

Practical Hot-Water Heating, Steam, and Gas-fittings. By JAMES J. LAWLER. New York: Excelsior Publishing House.

THIS is short, practical treatise on each of the three above-named subjects by an American. We do not quite like his tone, and the following paragraph gives an idea of it:—"And since Americans pay well for American brains, the wonderful improvements made in the line of sanitary appliances for domestic purposes within the last ten years show that they have lost no time, and have outstripped every other country on the face of the earth, no matter how old it may be." And again:—"How much we thought the customer would pay where we had the inside track." These are not necessary remarks in a book which is essentially one for fitters and the trade. There are some useful tables and advice to those about to set out lines of pipes, but there

is nothing above the average. We highly approve of the advice given, that all mechanics engaged in the special branches should study their own trade journals at least, if not some of those outside their own line in addition, as nowadays it is necessary for a man to be able to take advantage of all the latest improvements if he wishes to do work which shall be up to date. A great portion of the book is taken up in descriptions of the various sorts of fittings used in the States; and very useful will be in that part of the world; but only one short chapter is devoted to the "one pipe" method of heating by hot water, and we should have liked some information as to steam heating from large centres.

Hints to Plumbers on Joint-wiping, Pipe-bending, and Lead-burning. By JOHN W. HART, R.P.C. Smith, Greenwood, & Co. 1893.

THIS work is stated to be a collection, in book form, of a series of articles which have appeared in the *Decorators' Gazette and Plumbers and Gasfitters' Review*, suitable for students joining practical plumbing classes, and as such should fulfil its object, as the information given is clear and to the point, although, of course, some advance has been made in the methods since 1893, notably in pipe-bending. For pipes of large bore a new machine by which a bend on a 4-inch pipe can be made in about ten minutes will take the place of the laborious system in use heretofore, which occupied at least a couple of hours. Almost all the types of joints are treated in detail, and a study of them should be of great advantage to the young plumber. Very good advice is also given on a burning subject on works, viz., the reckless way in which plumbers damage all the surrounding work to carry out their particular object, their capacity for doing damage being only equalled by the electric light fitter. It is to be hoped the students will profit by the advice of Mr. Hart, and exercise more care in future. A very great improvement in this class of text-book would be to employ a good man to design the few sketches where an opportunity for such occurs. One of the difficulties of the craftsman is that he is not brought into contact with good design, which would tend to elevate his taste, and an opportunity has been lost in the few sketches of heads and tacks on rain water pipes. It is no excuse that the book is a purely practical one, that the sketches should not show some good design where possible.

A Practical Guide to Warming Houses from the Kitchen Fire by Low Pressure Hot Water on the One-Pipe System. By THOS. POTTERTON.

MR. POTTERTON'S work is of the trade catalogue nature, giving diagrams of a boiler which he has invented to be used in place of the ordinary range boiler, giving a large heating surface and so more power, the flame being made to take a zig-zag course up the centre. With this increased power it is proposed by the inventor to heat portions of houses by means of radiators, as well as supply hot water for domestic purposes. Various diagrams are given showing the best means of carrying this into effect, nearly all on the one-pipe system, and the general idea of economy in making the one fire serve the two purposes is a good one, and would no doubt answer under some circumstances. We are not sure whether it is to be recommended in cases where the water leaves a large amount of deposit, as in that case the whole of the pipes would have their interior more or less coated, reducing the heating capacity largely. This is obviated in the ordinary hot-water system by using the same water over and over again, adding only enough to make up for evaporation and other slight losses. As giving information upon the "one-pipe" method of heating, the book is well worth study. No doubt Mr. Potterton's system would be useful in careful hands, and his hints to fitters as to the best methods of running pipes and such like technical points will be greatly appreciated by the trade in general.

Unsere Kirchen und Gruppierter Bau bei Kirchen. By OTTO MARCH. Berlin: Ernst & Sohn. 1896.

THIS publication, which has been well illustrated, is practically the reprint of various articles which have appeared in the *Centralblatt der Bauverwaltung* and in the *Bayreuther Blätter*. Its purpose is to advance the methods of church building in Germany, especially for small provincial towns and rural districts, and there is much in the arguments and illustrations of the church architecture recommended by Herr March

that reminds one of the principles adopted in many of the small American townships, where, with due regard to purpose, we find those interesting combinations of church, vicarage, school-room, &c., all contained in one block. At a time when church building has become exceedingly popular throughout the German Empire, owing to the influence of the Emperor, the publication should be of considerable service to the communities or to those in authority in the localities concerned. In this country we do not think Herr March's proposals would find much favour, as church building on a small scale and for small parishes has already developed to such an extent as not to necessitate reference to a study of this description. The book, which includes twenty-four pages of text and five plates of illustration is, however, in every way a pleasing one, and the literary portion shows much thought and a thorough knowledge of the requirements of the country for which it is intended.

Mittheilungen über das Verhalten Hydraulischer Bindemittel. By GERHARD HERFELDT. *Notizblatt des Deutschen Ziegler- und Kalkbrenner-Vereins.* By FRIED. HOFFMANN. Berlin. 1896.

THESE two publications particularly call for the attention of our building trades and manufacturers, as they are excellent examples of descriptions of research work carried out in connexion with the testing of cements, mortar, bricks, and other artificial materials. Throughout Germany the subject of the manufacture of building materials is receiving the serious attention of the respective Governments, the Local Authorities, and the trade societies, and the result is that a very considerable amount of literature on the various sub-sections of the subject has been already put together. The *Notizblatt*, in particular, refers to the work of the brickfields and the limekilns, whilst the *Mittheilungen* makes particular reference to the various kinds of mortar. The issue of these publications will be at irregular intervals. The present number of the *Notizblatt* treats of a very interesting discussion at a Trades' Congress on "The Preparation of Lime," and on "Brickmaking"; whilst in the *Mittheilungen* the subject chosen is the "Effect of Sea-water on Mortar." The latter publication contains very extensive statistical details.

TRADE CATALOGUES, &c.

ONE seldom has to complain that firms do not advertise their names sufficiently large on the cover of their catalogues, but Messrs. O'Brien Thomas & Co. (London) go to the other extreme in sending us a volume of more than a thousand pages without any name on the back, or any title page, and it was only after some search through its pages that we succeeded in discovering the name of the firm, incidentally occurring in a specimen of a form of letter for making complaint to a railway company about damaged goods. This is much better taste, no doubt, than the prominent display of the name that we often see; but its entire omission may lead to mistakes as well as to inconvenience. The catalogue itself is a large and important one, including everything in the way of general ironwork—stoves, mantels, lavatories, railways and gates, sanitary and hot-water fittings, electric bell fittings, garden furniture, gaseliers, laundry machinery, kitchen utensils and household ironmongery generally. It is well and clearly arranged and printed.—Messrs. Robert Jenkins & Co. (Rotherham) send us a catalogue of wrought-iron and steel boilers, with exceedingly well-executed and practical illustrations, not merely pictures of the articles, but constructional sections. The Instructions for Telegraphing orders, so as to ensure getting the type and fit of boiler required, are clearly worded and useful. In a note accompanying the catalogue they draw attention to the fact that the heating powers have been altered to what may be expected under average conditions.—Messrs. W. Richardson & Co. (Darlington) send us their illustrated catalogue of conservatories; these illustrations are entirely pictorial; they serve to show that some pains are taken to give the conservatories as good an aspect as possible.—Messrs. Jessop & Appley (Leicester and London) disguise what is really a trade catalogue under the semblance of a practical treatise Appley's "Illustrated Handbook of Machinery"; the book does contain a good deal of useful and practical information besides the diagrams and prices of various machines; but it is a priced catalogue all the same, and we like things called by their right names.—The Crittall Manufacturing Co. (Birmingham) send a handsome and decoratively

ot-up hook of their metal casements and other metal work, such as stays, handles, &c., as well as party-wall doors. The metal stays are well designed, the arrangement of the catalogue is exceedingly good, the drawings large and clear, and the whole gives an impression of representing the best class of work.—Messrs. Oates & Green (Halfax) send a catalogue of sanitary specialties, gullies, pipes, salt-glazed sinks, &c.; and the several forms of latrine shown, made of highly glazed "Naletric" stone ware, appear, as shown in the drawings and described, to be among the best forms of latrine for working with automatically applied waste water that have been devised, from their simplicity and the nature of the materials.—Messrs. Ames, Barrard & Co. (London) send a set of sheets of design for electric light fittings, as specimens of the kind of fittings they are prepared to design for each client, instead of keeping stock patterns, a system which we entirely approve of, and the examples sketched here, for execution in wrought iron, are graceful and in good taste. They are all arranged to be used without unscrewing or taking to pieces.—

Messrs. W. Richardson & Co. (Darlington) send another example of what we may call the essay-catalogue, being really illustrations and descriptions of work done by the firm, under the title, "Hints on Heating," though the compilers do admit that methods are employed which they do not describe; but within its own limits their pamphlet is useful to intending purchasers.—Messrs. A. C. Wells & Co. send the description and illustrations of their plant for painting by machinery, both by compressed air and steam, a process exceedingly useful where large areas have to be painted.—Messrs. R. H. & J. Pearson (London) send an illustrated catalogue of what they term the "Rumford Teale" and Rumford Armstrong fire-places, which are intended to combine the principles of Rumford and Mr. Pridgin Teale. They are made with a preponderance of fireclay and with little iron; we may add that the fire-places are much better designed and much better drawn than we generally find them in trade catalogues.—The Swan Electric Engraving Co. (London) send an illustrated catalogue of specimens of drawings &c. reproduced by their excellent process, which has occasionally been employed in our own pages. The drawback to it from our point of view, is that the size of the plates producible is somewhat limited, but otherwise we have nothing but praise for the results.—

Mr. W. F. Stanley (London) sends us the new edition of his catalogue of drawing instruments, which contains several alterations, and the addition of a telegraphic code for ordering the principal articles.—Messrs. T. Bagshaw & Co. (Bulley) send us a catalogue of wrought iron pulleys, shafting, and friction clutches and couplings, with some practical rules for transmission of power by shafts, wheels, ropes, and belts.—The Universal Sewage Purification Company (Derby) send a descriptive and illustrated pamphlet of their important system of chemical precipitation through upward flow tanks, which should have the attention of those who are about to carry out work on sewage farms.

Correspondence.

To the Editor of THE BUILDER.

PETERBOROUGH CATHEDRAL.

SIR,—It is difficult for one who has not inspected the Cathedral to form any absolute opinions on the controversy, but on one point I think most architects will cordially agree, and that is in deprecating the very absurd suggested reference to an engineer.

On a question of strains in ironwork, or of pure science and mathematics, an engineer's opinion is valuable, but on a question that is almost entirely one of experience and of judgment founded on practical knowledge, there is no one with any public claim to competency to compete with that of an architect.

Most of us are, I hope, quite as well able as an engineer to make any small calculation necessary as to the question of weight to be placed on stonework, although a small section of architects wish to rid themselves of such responsibility; but in this case no powers of calculation can be of the slightest use. An engineer has less experience than any one connected with building in the repair and patching up of old buildings, whereas very few architects are unfamiliar with such matters. Those who invoke the aid of the engineer might do well to remember the fate of

that British Prince who, to resist the inroads of the Picts and Scots, called in the assistance of Hengist and Horsa.

I cannot agree with Mr. Thackeray Turner that the increase of weight on the piers will be but small. On the contrary, it must surely be very considerable, and the danger to the piers that you have yourself pointed out must be great. Neither does Mr. Webb's plan of joggling long-stones on to the facing commend itself to me at all, since of all material stone combines the maximum of weight with the minimum of tenacity. The best material for the purpose, if it be feasible at all, would surely be Portland cement concrete imbedding iron or copper bars. The cement must, of course, be well slaked, and the aggregate should be ash clinkers or gas breeze, so that the weight may really be reduced, as well as perfectly distributed. I have used this material pretty constantly in repairing old walls, since it can be conveniently packed into all sorts of places.

I can hardly help thinking the method might be used in this case and save the destruction that we all deplore. I find a good many architects share my regret that those in charge have not agreed to meet so general a wish as has been expressed to give time for a further and fuller consideration of the matter, even though the original plan has to be eventually carried out.

RALPH NEVILL, F.S.A.

"BRICKWORK TESTS."

SIR,—As one who was present at the reading of papers by Messrs. W. C. Street and Max Clarke on the above subject, I should esteem it a favour to be permitted to make a few remarks suggested by the discussion arising thereon.

In the first series of tests, the papers and resulting discussion and correspondence played round the question of the kind of bricks used in the tested piers, coupled with the use and position of the closer, in which all agreed, as far as one could learn, that the closer constituted the real source of weakness in the initial line of cleavage or fracture (a conclusion which I fail to see has yet been upset). And this would be more especially so in practice as compared with the tests. For, in the one pier yielding the greatest result in the second series of tests, Mr. Max Clarke told the meeting that all the queen-closers were cut by himself (doubtless true and workmanlike), whereas on the building—unless under strict supervision—any brick spawls often serve for interior closers, with an abundance of mortar to make up the deficiency of brick. The President, in dealing with the subject of supervision, and the great difficulty of carrying out the same conditions on the building as in the case of the testing, remarked that the bricklayer has to do a day's work, a sentence into which may be read more than one meaning; and for that reason any ultimate conclusions arrived at from data obtained by these tests must, to be of any value, be based on a large margin of difference between the conditions of testing and the conditions of building in actual practice.

In the second series of tests the subject has been dealt with more as a whole—especially so with respect to the all-important questions of sand and supervision; and if architects would always specify the use of river sand, failing which, that pit sand shall be sharp and clean washed, free from loam and other impurities, we should be working on lines that make for good results. The engineer is no less concerned about the quality of his sand than that of his cement. He bases this faith in methods and conditions, knowing that if these be good, satisfactory results must ensue.

It would be interesting to know whether the piers tested were built with bricks (not the Staffordshire blues) wetted to saturation and allowed to drain; or whether they had been wetted at all. Whether the mortar (lime or cement) was mill-lime (ground) or hand-made; conditions which materially affect results in practice; it being generally accepted that hygro-metric conditions of atmosphere affect the ultimate strength of brickwork in course of erection; or, in other words, that a wet building makes a dry house, and *vice versa*. The best results (as far as strength goes) being obtained in water-bound brickwork where crystallisation has been induced by the continued presence of moisture.

Another interesting experiment would be with similar piers, built with mortar newly made up, which one so often sees specified, and which my own personal experience teaches me to believe is wrong in principle and practice, except during the winter months—and with mortar that had been made up some time, and retempered before use.

Though the frog in a brick be a source of weakness in the brick itself by reason of the diminution of material substance, yet the frog is necessarily one of the conditions which make for the production of a good brick and for good brickwork, on account of the facility of manipulation and easy, solid bedding which it affords; and should, therefore, as a builder, be considered a source of strength rather than of weakness. We are, of course, speaking of the ordinary-sized frog of the stock brick, for

instance, not of the double frog, intended to reduce the cost of freighting. The whole question of brickwork requires overhauling, and in this, so far as the tests go, the Royal Institute of British Architects is conferring a benefit upon the British public.

F. WALKER.

THE CHEMICAL DEPARTMENT OF THE UNIVERSITY OF ABERDEEN.

SIR,—My attention has been called to a letter headed "Ventilation of Marischal College, Aberdeen," which appears in your issue of December 19, and in which the writer, Mr. William Key, says:—

"The Professor stated that it was admitted that these chemistry classrooms at this university are the finest in the world. . . ."

My actual statement was more modest. All that I said was that one or two experts had inspected the new chemical department, and had expressed the opinion that it was "the finest they had seen."

So far from claiming that the laboratories were the finest in the world, I expressly said, in my opening address at the beginning of the present session:—"They will not compare with many of the palatial laboratories now erected on the Continent, especially in Germany." F. R. JAPP. Chemical Department, University of Aberdeen.

LISKEARD CHURCH TOWER.

SIR,—Seeing the announcement in your columns that designs are invited for a new Tower at Liskeard Church, Cornwall, may I be allowed to state a few facts as to what has lately passed in connexion with the existing tower of this Church, so that any who think of competing for this work may know how matters stand.

Early in the present year I was asked to inspect and report upon the condition of the present tower. Before making my inspection I was told by some gentlemen interested that it was generally hoped that my report would be favourable to the removal of the tower, as a certain lady had left a considerable sum of money for its rebuilding if the work was undertaken before a stated date, otherwise the money was to go to Truro Cathedral.

I made a careful inspection of the old tower, and sent in my report on April 4, 1895. Now, sir, one would think that a report bearing on so vital a matter in the history of the parish as the retention or destruction of a tower that linked the present with a past of over 700 years would, at least, receive the careful consideration from those into whose hands the care of this ancient structure is temporarily placed. Some consideration it may have had, but the views expressed in the report were evidently not in sympathy with the wishes of the majority of the Committee. The report was not even acknowledged, no intimation was given me that the report had been considered, or acted upon in any way, nor was I further consulted in the matter; and not until hearing of the advertised competition for a new tower was I made aware of the serious step taken by the Committee. To many, one would think, the most ordinary courtesy would have dictated another course. But, needless to say, the report sent in was entirely adverse to the removal of the fine old tower, which, although it has been allowed to fall into a shameful state of dilapidation is, with its Norman details and carving, by far the most interesting part of Liskeard Church, and which, with careful restoration, would stand to hand on the Church history of this ancient borough for centuries to come. It is surprising that its destruction should ever have been contemplated, and it will be a crying shame if this ancient landmark of the Church in Cornwall is removed simply to satisfy the craving for something new, and the passing whim of a few local townsmen who by chance have the temporary stewardship of this tower.

GEO. H. FELLOWES PRYNNE.

THE NEW HOLBORN POST OFFICE.

SIR,—If not too late, I should like to suggest to the authorities a considerable improvement in New Oxford-street, and one that would secure a Government building an adequate facade.

It is proposed, I understand, to build a new West Central District Post Office, and a site has been partially cleared with that object. This is bounded, on the north, partly by New Oxford-street and partly by a little narrow by street, Hyde-street; and on the west by Museum-street. The piece of Hyde-street might well be abolished, and the small triangle of houses—which will else stand in front of the Post Office—be cleared away. It consists of some six or seven shops, &c., only.

A fine frontage would thus be secured to the new building on New Oxford-street, extending from its eastern boundary to the corner of Museum-street; thus continuing the real line of New Oxford-street, and removing a somewhat stupid and very long break caused by the entering of Hyde-street into it in a very oblique direction.

A glance at the map, or better still, at the actual site, will, I think, show what a real improvement this would be. The Civil Authorities might well join in the scheme, and by setting back the line of houses on the west right up to the (very awkward)

angle of Shaftesbury-avenue, the throttling of the traffic outside Mudie's would be avoided, and the new building he well seen on approach either from east or west. The hock of traffic opposite Mudie's is really becoming serious. C. H. BRODIE.

MORLEY PUBLIC BATHS COMPETITION.

SIR,—I enclose a copy of correspondence which has passed between myself and the Borough Surveyor, as it may be a useful warning to those who may wish to compete. It would seem, from the advertisement in your last issue, that the Borough of Morley is offering the net sum of 15*l.* for sketch plans of Public Baths, the work to be carried out by some one who is incapable of designing it.

December 29, 1896.

ERNEST HERBERT.

37, Bedford-row, London, W.C.,

December 24, 1896.

PUBLIC BATHS COMPETITION.

DEAR SIR,—Kindly send me particulars of above and plan of site as advertised, for which I enclose 10*s.* deposit, to be returned if the conditions are such that it is impossible to comply with them. If there is any doubt as to the successful competitor being employed, to carry out the work, you can return my deposit without the particulars, &c.

From the wording of the advertisement, I should imagine that you have to pay the premiums out of the deposits forfeited, which does not seem a liberal treatment to offer to competitors.—Yours faithfully,

ERNEST HERBERT.

Mr. M. H. Sykes, Borough Surveyor, Morley.

Borough Surveyor's Office,

Town Hall, Morley,

December 28, 1896.

RE PUBLIC BATHS.

DEAR SIR,—I beg to acknowledge receipt of your letter of the 24th inst., together with postal order for 10*s.* As the Corporation cannot give a guarantee to employ the successful competitor to carry out the work, I return you your postal order as requested.—I am, dear sir, Yours truly,

M. H. SYKES,

Borough Surveyor.

Mr. Ernest Herbert,

37, Bedford-row, London, W.C.

The Student's Column.

SPECIFICATIONS.—I.

BEFORE commencing to write a specification the student should endeavour to obtain a clear comprehension of the object and uses of such a document, and then proceed to consider how he can best fit his work for its purpose. The primary object of a specification is to supplement and elucidate the drawings, so that the workmen who have to carry out his designs may completely understand the architect's intentions. It, therefore, especially deals with the quality of materials and workmanship, and describes the sizes and forms of those items which cannot be conveniently shown on the drawings. It may include a description of what is shown on the drawings, but, speaking generally, it is not advisable to repeat or attempt to repeat one document in another. Some things can be far better shown on drawings than described verbally in a specification, and the attempt to include in the latter what is already better expressed in the former, is liable to confuse rather than to inform the mind of the workman. Although the specification universally forms part of the documents on which the contract is founded, it should be remembered that the specification is rather for the use of the foreman either on the works or in the shop, than for the master builder in his office. The conditions of contract are therefore better omitted from the specification, and made a separate document, which can be kept in the contractor's office.

The predominant characteristic of a specification should be precision. Every item which it deals should be so clearly defined and explained that there can be no possible doubt as to what are the intentions of the architect in respect of every detail, and hence what is included in the contract. Precision can only become the characteristic of any particular specification through the exercise of that quality by the writer. He must therefore possess a thorough knowledge of construction, and be able in his mind's eye to see into the innermost recesses of every part of the building, and to follow the consecutive processes by which the work arrives at completion. He must have a competent knowledge of materials, so as to be able to express precisely the quality that he expects. He must know completely the full intentions of the designer in respect of every particular. The right man, therefore, to compile the specification is he who makes the design, and the practice of deputing this work to another, be he quantity surveyor or assistant, is one that is discreditable to any architect worthy of the name, and must

result in a loss of efficiency, and often breeds future trouble out of all proportion to the relief that appears to come from shirking the initial duty. If he would attain precision, let the student be very chary of using terms of general but indefinite meaning, such as "best," "necessary," "sufficient," "proper," and the like, which are but too common in many specifications, and usually indicate clearly nothing but the ignorance or indolence of the writer.

Equipped with the necessary knowledge and the determination to be precise, clear and accurate, the student should look carefully through his drawings and jot down, as memoranda, the headings of the various items in each trade which he is to specify. Then he can take these memoranda and, after numbering them in the order in which he intends them to follow in the specification, proceed to deal with each item in turn. To facilitate reference, each item should have a marginal note or heading, and if the specification is a long one, it is worth while to make an index of these headings. It is advisable to adopt the same order, both of trades and of items in each trade, in all one's specifications; and it is just as well to adopt the order of trades usual in specifications and bills of quantities; whilst, for the individual items, as good an order as any is to arrange them, as nearly as may be, in the order in which they are executed. As materials have to be provided before work can be done on them it follows that in each trade a commencement will be made with a description of the materials for that trade. Then comes a general description of work, and following this the special items in proper order. Where a general requirement stands for all the items of a class it is well to place this general requirement before the description of the particular items, thus: "All frames to external doors to have iron dowels, &c.," should precede the detailed account of the various external doors. The adoption of this practice makes for brevity, and brevity, as far as is consistent with precision and thoroughness, is a desirable feature in a specification, rendering it easier for reference, and more likely to be thoroughly read and remembered.

Although the arrangement of the various items in a specification will naturally be grouped under the different trades, it is advisable not to follow such a division with the literal exactness observed in a bill of quantities, but rather to keep together the description of all the adjuncts of each part. Thus, for example, in describing a door, the linings, architraves, and ironmongery should be included. Indeed, it is quite possible to write a good model specification, totally ignoring the usual division into trades, and grouping the various items under headings of the various parts of a building, as walls, roofs, floors, ceilings, windows, doors, fireplaces, water supply, sanitary fittings, &c. In such a system the heading of "roofs," for example, would comprise a description of carpenter's work in the timbering, battening, and boarding; slater's or tiler's work; plumber's work in gutters, flashings, &c. The adoption of this system implies, of course, that there is one contractor only for the whole of the work, and that the Scotch practice of letting out the work in different trades to different contractors is not followed, but as the single contract system is practically universal in England, and sub-contracting is out of favour both with architects and trades unions, there is little advantage in favour of the older system of specifying by trades.

To facilitate reference between drawings and specifications, it is a good plan to number all the openings on the plans, doors, windows, fireplaces, &c. In this numbering no great attempt should be made to keep the sequence full. Let the doors begin with, say, number twenty-one, the windows with fifty-one, and fireplaces ninety-one, even if there be no more than, say, a dozen doors and a score of windows. The rooms of which there are no special names, as bedrooms, may be lettered bedroom A, bedroom B, and so on.

The student is now prepared to commence the actual work of writing his specification and will head it thus: "Specification of works required to be done in the erection of a house at for in accordance with drawings numbered 1 to prepared by Mr. of the architect referred to in this specification. January, 1897."

Then begin with

"PRELIMINARY AND GENERAL."

Under this heading include:—

Notices and Fees.—Give all requisite notices to Local and other Authorities, obtain all licences, and pay all fees.

Setting-out.—The contractor is to set out the whole of the works in accordance with the plans, and he will be responsible for the correctness of the setting-out, and is to amend the same if it shall be found by the architect to be incorrect.

Dimensions on Drawings.—Figured dimensions are, in all cases, to be taken in preference to scale, and large scale details to be followed in preference to small scale general drawings. In the event of any apparent discrepancy between the drawings, or between the drawings and this specification, the contractor is to ask for an explanation from the architect before proceeding.

Drawings to be Returned.—If this is desired, stipulate accordingly.

Hoarding.—Specify what height of hoarding is required, with its fans, gates, planked footway, and rail, to be to the satisfaction of Local Authorities, and removed at completion. State whether advertisements will be allowed.

Roads and Footways.—State whether the contractor is to take up paving and form temporary roads or footways, and reinstate, or whether he is to pay Local Authority for doing the work.

Temporary Enclosure.—If it is desired to keep building operations within limited space, state how much of site is to be temporarily enclosed with post-and-rail fence, to be removed at completion.

Scaffolding.—The contractor is to supply all scaffolding and plant required for the works, but is not to bring on to the site any other building material or plant not required for these works.

Old Drains, Cesspools, &c.—Carefully search for and open all disused drains, cesspools, &c.; empty cesspools, remove drains, and fill up with concrete.

(N.B.—As this is a very speculative item, it is well to provide a definite amount of digging and concrete to be so used if required.)

Watching and Storage.—Supply all requisite watching by day and night for the whole of the building and works till the completion of the contract, also the requisite storage and safekeeping of all stores and other fittings during and after delivery.

Water and Lighting.—Pay all charges for water and lighting required for the works during the erection of the building, and supply, alter, and remove, as may be required, all pipes and fittings, and pay fees for the necessary connexions. The contractor will be required, before receiving his final certificate, to produce receipts for water and gas.

(N.B.—This last clause is desirable to prevent the employer being dunned by water and gas companies after the completion.)

Attendance.—Each trade is to attend upon, cut away for, and make good after all others, and to perform all work in the nature of jobbing work that may be required. The contractor is to afford facilities to any other tradesman employed by the architect in the building, and to provide scaffolding and attendance as may be required.

Provisional Sums.—In all cases of provisional sums of money and of any specific quantities of work which are included in this specification, the architect shall be at liberty to direct the application of the sum or to deduct all or any portion as the case may require.

The amounts included in this contract as provisional sums are exclusive of contractor's profit, carriage and fixing, unless specially included.

(N.B.—Provisions are frequently a cause of trouble at the final settlement. Instead of the clause given, it may be stated that the p.c. amounts include a certain profit of 10 to 15 per cent. for the contractor, or that they are list prices, but this does not always save the trouble. The specification should define the basis on which p.c. amounts are to be treated, and the architect should adhere rigidly to the basis he lays down in his specification.)

Protection of Work and Materials.—Protect all materials and finished work from damage by weather, carelessness of workmen, or other cause, and make good any damage that may occur. This stipulation is to apply to materials and workmanship of any person employed by the architect as well as that of the contractor.

Latrines.—Provide latrines for the use of workmen, taking the necessary precautions to prevent same from becoming a nuisance; empty, remove, and disinfect with hot lime their site at completion.

Office.—If desired for clerk of works or architect, this should be specified with a stipulation that the contractor is to provide firing, light, and attendance, and remove at completion.

Sand and Gravel.—State whether the contractor is to be allowed to use this on the works, and whether or not he may remove any from site.

Curiosities.—A similar stipulation should be made.
Removal of Rubbish.—Remove and cart away all superfluous earth and rubbish as it accumulates and at completion, together with all plant and superfluous materials.

OBITUARY.

MR. DANIEL BRADE.—We regret to have heard, rather late in the day, of the death on December 11 of Mr. Daniel Brade, the architect who gained a reputation as the only English competitor placed among the successful twelve in the Milan *Exposition* competition. Mr. Brade was born in or near Liverpool, and was articled in an architect's office there, and subsequently went to Sir Joseph Paxton's office for some years. He was in practice in London for two years, after which he bought a practice in Kendal, where he remained for twenty years. He was architect to Lord Beaufort, for whom he built a fine bridge, and also some churches. Since 1850 he had lived in London. Besides his success in the Milan Competition, he won gold and silver medals for two designs for the Victor Emmanuel memorial, and was second in the Leeds Municipal Buildings Competition. He was sixty-seven at the time of his death.

GERMAN ARCHITECTS RECENTLY DECEASED.—We regret to have to record the death of Dr. Paul Spieker, of Berlin, at the age of 77. Herr Spieker was Director-in-Chief to the Prussian Ministry of Public Works, and was hence the leading building official at Berlin; and for a considerable number of years he held the post of Technical Councillor to the Education Department. He was appointed Director-in-Chief at the Ministry of Public Works in 1861, and only died last year. Besides the prizes obtained in his professional career we would add that his popularity was such as to make his resignation felt by all classes of officials throughout Germany. His geniality to the younger members of his profession was particularly noticeable. Of other prominent German building officials who have died in the course of the last month we have to record the death also of Bau Rath Boetike, who held a very high position on the military Board of Works; and of Oberregierungs Rath Busse, who was long associated with the various government building departments, and was a member of the *Akademie für Bauwesen*.

GENERAL BUILDING NEWS.

LUNATIC ASYLUM, DENBIGH.—Extensive additions are about to be made to the Lunatic Asylum at Denbigh, the contract for which, exceeding 50,000*l.*, has been placed in the hands of Mr. Samuel Warburton & Miles, Plating, Manchester. Messrs. C. O. Ellison & Son, of Liverpool, are the architects.

MUSIC HALL, SALFORD.—A music hall, to be called the Empire, capable of accommodating 2,500 persons, is to be erected at Salford. Mr. Frank Matcham has been retained as architect.

PARISH CHURCH, WOODWELL, YORKSHIRE.—The foundation stone of St. Mary's New Parish Church, Wombwell, which is to replace an ancient dilapidated structure, was laid on the 21st ult. by Viscount Halifax. The architects are Messrs. A. R. Garland & C. Hadfield, of Sheffield; Mr. G. Webster, Sheffield, is the contractor; and Mr. F. Coates, of the works, the new church will afford accommodation for 750 worshippers.

POST-OFFICE, TIPTON, STAFFORDSHIRE.—On the 21st ult. the new post-office at Tipton was opened. The building was designed by Mr. Tainer, H.M. Office of Works, Mr. J. Mallin, Churchfield, West Bromwich, being the builder, and Mr. Atkinson clerk works.

RESTORATION OF THE PARISH CHURCH, ALRESFORD, HANTS.—The Church Restoration Committee, Alresford, have obtained from Sir Arthur Blomfield & Sons plans for a scheme of restoration, which have been approved by the committee.

NEW CHAPEL, WHITECHAPEL INFIRMARY.—The new chapel at the Whitechapel Infirmary was consecrated. The chapel has been adapted from a disused ward, at a cost of 300*l.* designed by Mr. Capell, architect, and is intended to accommodate 150 persons. The contractors were Messrs. Jones & Groves.

BOARD SCHOOLS, BARKING.—The schools erected by the Barking School Board on a site near North-street, were opened by Major S. Glennly recently. Mr. C. Dawson is the architect. The schools are on the class room and central hall principle, in three stories. The total accommodation is for 1,714 children, divided as follows:—Infants, 674; girls, 520; and boys, 520. The external walls are of blue, yellow, and buff terracotta bricks, while the internal walls are of glazed piimrose bricks. The cost of the whole work has been 21,771*l.*

OPERATING THEATRES, ST. GEORGE'S HOSPITAL, LONDON.—On the 23rd ult. the new operating theatres in connexion with St. George's Hospital, Hyde Park-corner, were opened by the Duke of Cambridge. The suite of rooms embraces the large (east) theatre, which has been remodelled, and the small (west) theatre, which is entirely new,

two chloroform rooms, one in connexion with each theatre, a sterilising room, and other necessary adjuncts. The whole of the work has been carried out under the personal supervision of the architect, Mr. H. Percy Adams.

HOSPITAL, FALKIRK, STIRLINGSHIRE.—On the 22nd ult. a new fever hospital was opened by the Eastern District Committee of Stirlingshire. The new hospital, which is situated to the west of Camelon village, occupies a site extending to about three acres. The building, which cost about 7,500*l.*, embraces administrative, scarlet fever, enteric fever, and laundry blocks, besides two observation wards. There are twenty-four beds in all, and sufficient cubic space has been reserved to allow of further bed accommodation in case of emergency. The architects are Messrs. A. & W. Black, Falkirk.

LYRIC HALL, DUBLIN.—It is stated that plans of the Grand Lyric Hall, Dublin, have been lodged with the City Architect, Mr. W. H. Byrne, architect, has designed the hall.

CHURCH, CWM PARK, GLAMORGANSHIRE.—The Bishop of Llandaff, consecrated on the 22nd ult., at Cwm Park, St. George's Church. The church, which is situated in the centre of the village, accommodates more than 400 worshippers, and comprises a chancel, nave, south aisle, porch, and tower over 60 ft. in height. The architect is Mr. George E. Halliday, the Diocesan Surveyor for Llandaff. The walls are composed of native stone, while hard Doulton stone is used for the window tracery and other dressings; the hammer-beam roof is of pitch pine. The internal face of the walls is of pointed rubble work. The pulpit and font are of green Bridgend stone. The reredos is of polished pink alabaster, carved. The contractors were Messrs. Knox & Wells. The church is lighted by electricity.

MUNICIPAL BUILDINGS, HYSON GREEN, NOTTINGHAM.—The Mayor of Nottingham (Ald. E. H. Fraser) opened the new buildings at the junction of Radford-road and Gregory-boulevard, Hyson Green, on the 22nd ult. The buildings occupy a narrow site with a frontage of 320 ft. to the Gregory-boulevard, and are set back a distance of some 20 ft. from the thoroughfare. The charge-office and inequest-room above command a view of both the Boulevard and Radford-road. The buildings are of red brick with stone dressings, and have been erected by Mr. J. Adams, of Nottingham, to the plans of Mr. Arthur Brown, the Borough Engineer, at a cost of about 7,000*l.*

PROPOSED NEW THEATRE, ABERDEEN.—A syndicate has acquired from the Town Council of Aberdeen, by way of perpetual feu, a piece of ground with 120 ft. frontage and 126 ft. of depth, on the east side of Rosemount Viaduct. It is proposed to erect on the site a theatre capable of accommodating over 2,000 persons. The building will be fireproof throughout, the pit resting on arches fronting Upper Denburn, a street running under the viaduct at a lower level, but all the entrances will be from the viaduct. The new building will be of granite, and Messrs. Harper & Sutherland, Aberdeen, will act as architects for the syndicate.

BUILDING TRADES, GLASGOW.—Trade generally in all branches of business in Glasgow during the past year has been encouraging, and fully maintained the best anticipations, and presents indications of a promising character for the new year. The electric lighting branch of business has been fairly brisk throughout the year, having received a slight impetus owing to reduction (long promised) in the price of the electric current supply from the Glasgow Corporation.

BUILDING TRADES, LEICESTER.—The past year has been one of the best experienced for a long time past in the various trades connected with building operations in Leicester. Indeed, so busy have all sections of that industry been, and continue to be, that the difficulty is not to find work for the men, but men to do the work. Taken all round, the building trades are probably in a better position than any other in the town at the present time, and the outlook is still a bright one. Of course, the advent of such an immense undertaking as the M. S. and L. new line of railway has had a great deal to do with stimulating enterprise in the direction of building works, although it cannot be said that these have been confined to any particular part of the town. The clearing out of some of the older parts of the borough necessitated the erection of many new cottages as well as new business premises. As would naturally be expected, it was in the outlying districts of the town where the greatest activity in building operations was to be found. A noticeable feature of much of the new building work of the past year or two is the free use which is made of terra-cotta for frontages. Manufactured stone and cement concrete are also largely used, the last-named being, of course, a local production. Just now, and for some time past, empty houses in Leicester have been conspicuous by their absence, a fact that is closely associated with the exceptional activity in the building trades. In almost every direction new working-class dwellings may be seen in course of erection.—*Leicester Post*.

BUILDING TRADES, EDINBURGH AND DISTRICT.—Not for many years has more activity been manifested in the several branches of the building trade than during the past year. One of the largest of

the undertakings at present on hand, the rebuilding of the Waverley Station and the erection of the North British Railway Hotel, has not yet reached the stage when the mason and the joiner with their coadjutors come fully into play; but when the ground has been properly cleared for them the trade will undoubtedly witness a "boom." This, at any rate, is the opinion of those who know how numerous are the new schemes which in the next year or two will be launched, the North British reconstructions, formidable as they are, being only among several which, should they be proceeded with simultaneously, will tax the resources of builders to the utmost. Thus, the Caledonian Railway Company we understand, are seriously contemplating the erection of a hotel above the fine station at the west end of Princes-street, which they recently completed. Then, the Corporation are preparing for the construction of a new fever hospital at a minimum outlay of 250,000*l.*, while the cabling of the streets will necessitate a series of new tramway stations at various points in the city. Another big undertaking will be the building of the Usher Hall, when the Town Council have finally decided where Mr. Usher's gift shall be placed, and there is besides the re-erection of the Council Chambers, or at least such a structural re-arrangement as will be almost tantamount to a re-erection. The year has seen a further extension of the housing capacity of the city, especially in the Morning-side, Merchiston, and Murrayfield districts. Altogether the year has not only been an exceedingly prosperous one for the most influential trade in Edinburgh, but the prospects for the coming year are of the brightest. There have been no wage disputes during 1896. The joiners were on strike for a fortnight pending the re-arrangement of their working rules. The matter was compromised on concessions on both sides. The standard rate for masons fixed by the Master Builders' Association, in conjunction with the men, stands at 9*d.* per hour, but this is by no means the maximum which has been paid, many employers granting 9*d.*, and even 10*d.* The joiners' rate remains at 8*d.*, and has been seldom exceeded; and plasterers 9*d.*, not wood-ward receiving a halfpenny more; bricklayers 9*d.* to 10*d.* per hour; and lathspitters, 9*d.* per hour. The number of masons in Edinburgh is under 2,500—2,300 of the number are paying members of the Edinburgh Lodge of the Operative Masons Association of Scotland—and there are between 1,100 and 1,200 joiners employed in the city. It may be mentioned that a movement is on foot to start in Edinburgh a builders' exchange similar to that which has worked so successfully in Glasgow, and Colonel Bennett, of the latter city, will shortly deliver a lecture on the subject.—*Glasgow Herald*.

THEATRE, RUNCORN.—The foundation stone of the New Runcorn Theatre was laid by Mrs. Caddick recently. The theatre has three main entrances from Front-street. The auditorium is 34 ft. wide by 52 1/2 ft. in depth. The pit floor has a slope of 2 1/2 ft. from back to proscenium wall. The circle on the first tier has a seating for 240, and is also provided with two private boxes. The centre part of the circle is fitted up with 100 tip-up chairs, the side seats being continuous; on this tier also are provided ladies' and gentlemen's cloak rooms, lavatories, &c., complete. The gallery is on the next tier, and will accommodate about 500. The stage is 39 ft. wide by 31 ft. in depth. There are six dressing-rooms. There are also provided refreshment bars to pit and circle, the latter being 28 1/2 ft. by 27 ft. For the heating of the building and dressing-rooms, hot-water pipes are used, on the low-pressure system. The architect is Mr. William S. Shell.

BAPTIST CHURCH, FALKIRK.—A new Baptist Church is in course of erection at the corner of Weir-street and Orchard-street, Falkirk. The new church, which is in the Gothic style, has accommodation for 350 sitters, with ladies' and gentlemen's rooms behind, which can be thrown into one so as to form a hall. Mr. G. Deas Page, Falkirk, is the architect, and the cost is 2,000*l.*

RESTORATION OF GREAT HARROWDEN PARISH CHURCH.—The ancient Parish Church of Great Harrowden, dedicated to All Saints, which has recently undergone restoration, was re-opened on the 10th inst. The architecture of the church is Early English, consisting of nave with clearstory chancel, north aisle, north porch, vestry, and square embattled tower, with four crocketed pinnacles, containing bells and clock. It was found necessary to restore the nave and north aisle. The roof and floors were in a dilapidated condition, and the wood-work decayed. The old-fashioned box pews have been removed, and modern oak seats, with traceried ends, have been placed in the church, and are erected on a wooden floor. Ketton stone has been laid in the passages and aisles, and the old memorial slabs and grave stones have been replaced. In the interior of the nave a new oak pulpit, on a stone base, has been erected, as well as a box pew desk and a new font. The ancient Perpendicular wooden screen crossing the chancel has been carefully restored with a vaulted canopied cornice, enriched by a screen. New roofing of pitch pine has been placed over the nave and aisle and covered with lead as previously. The walls in the interior have been replastered, and the roof, parapets, walls, and stone seats of the north porch have been restored, and new

oak doors have been placed at the north and west entrances. The stonework of the windows and buttresses have also received attention, whilst steps have been taken to protect the base of the walls from wet by providing surface drains. This restoration has cost between 1,000 and 1,200. During the progress of the work fragments of very interesting wall paintings have been found, but they were so fragile, and the plaster so rotten, that it has been possible only to retain the one over the chancel arch and a portion of that on the east end of the north aisle. The arcades have been exposed. They are of Early English character of quatrefoil form, with disengaged columns. Messrs. Talbot Brown & Fisher have been the architects, and building operations have been carried out by Mr. G. Henson, of Wellingborough. — *Norhampton Herald.*

BUILDING TRADE IN FRASERBURGH, N.B.—There has been another year of very considerable activity among the building trades in Fraserburgh. A great many new houses have been erected. Extensive improvements have been effected on existing buildings, and other work of a kindred nature has kept all branches very fully employed. The great want of house accommodation, nevertheless, continues to be felt keenly, and the need of still further enterprise in this respect is great.

BUILDING TRADES, LEEDS.—Paralysed though it was for a period of twenty-two weeks, the Leeds building trade at the end of 1896 may fairly be described as in a very healthy condition. The outlook is exceedingly hopeful, and this is because of the absence of that feeling of unrest and forsoaking of disputes which had marked the beginning of some previous years. The unfortunate dispute of 1896 began on May 1; it ended on September 19; and, perhaps, each side felt that in the settlement they had gained some advantage. The bricklayers got an advance of a halfpenny, which made their payment an hour; the labourers were granted an advance of a farthing, with the promise of another farthing on September 19 next. On the other hand, the alteration in regard to walking-time, which substituted a two-mile radius from City-square for the fixed points which had previously controlled the payment, was regarded by the masters as a move in their favour, especially in view of the rapid rate at which building work was being carried on in the outlying parts of the city. The employers also believed that the adoption of certain new rules would assist them in their trade. The actual condition of the trade has not been better for years. There is work in almost every quarter. Among the larger undertakings are the Manston Hospital, the banks of Messrs. William Williams, Brown, & Co., the National Provincial Banking Company, and the Yorkshire Banking Company. In New Briggate the principal work is the new double arcade, and in Briggate the re-erection of the Buck Inn. Incidentally it may be mentioned that a great deal of alteration to public-house property has been effected. The rate at which dwelling-houses of all kinds, including the back-to-back class, are being erected is a satisfactory indication of the prosperity of the city. The Building Clauses Committee of the Corporation are said to be passing more plans than they have previously done in a similar period, the chief development being in the direction of Kirkstall-road and Buteley Hill, and also in the neighbourhood of Roundhay road. — *Leeds Mercury.*

BUILDING TRADE, PETERHEAD.—The building trades in Peterhead have been busy during the year. More new houses have been put up than last year; and there has been much more work obtained on structural alterations of houses. In addition, the work outside the town has been greater than usual, not a few masons, joiners, slaters, and plumbers having found lengthened employment in connexion with the erection of station houses for the new Cruden railway. In fact, the joiner trade was so promising in the summer time that the men demanded an increase of wages. The masters agreed to increase the standard rate to 6½d. per hour, which is the highest wage that has been paid in the joiner trade locally for a considerable number of years. — *Aberdeen Free Press.*

BUILDING TRADE IN DUNDEE.—To the building trade in Dundee the year just closed has from beginning to end been characterised by almost unbroken prosperity. It opened with the brightest prospects. A number of large undertakings were on hand, with others in view, while the boom in tenement building, although it had to some extent abated, had still left an enormous amount of this class of property in the hands of the builders. Thus throughout the year there has been no lack of employment in any of the branches of the building trade. Indeed, so far as masons are concerned, the difficulty has rather been in a scarcity of men, and no relief could be obtained from other centres in Scotland, where trade has been equally brisk. The only serious trouble was the strike of hewers at the end of May for an increase of 3d. per hour in their wages. Their action brought about a complete stoppage of building operations in the city, but after a struggle lasting for a month or five weeks the men returned to their employment on the old terms. The rate of wages has therefore remained unchanged during the year, viz., 9d. per hour for builders, and 8½d. per hour for hewers. The demand for houses of three rooms has been slack. In many parts of the city, too, there are numerous empty flats of four

and five-roomed houses, accounted for partly by the fact that many people who were formerly content with dwellings of this kind in the city are finding their way to suburbs like Downfield, Wormit, or Newport, and particularly the two last-named, with which there are cheap and easy means of communication. Thus year by year it is becoming increasingly evident that Dundee has been over-built with dwelling-houses. Judging by present appearances, there will be much less tenement building in 1897 than there has been for several years past. — *Dundee Advertiser.*

BUILDING TRADE, INVERNESS.—The year 1896 has commercially been one of the most prosperous in Inverness during the last forty years. The opening up of the Highlands by the introduction of railways gave a boom to the building and other trades, the effects of which were felt for many a day. And now once again the near prospect of the opening of the new through line from Inverness to Aviemore, and the almost certain passing of a bill in favour of either one or other of the companies for the construction of a line from Inverness to Fort Augustus, with a through connection with the Inverary line and speculators to the work of preparing for the great increase of traffic which they confidently expect will follow the completion of these great undertakings. The growth of the town in recent years has been remarkable. — *Dundee Advertiser.*

BUILDING TRADE, HALIFAX.—In the stone and building trades in Halifax there is a consensus of opinion among those engaged that the year has been a busy and a satisfactory one. The stone-quarrying trade has had a very favourable year. Throughout the twelve months the demand has been continuously steady and large. The exports to Germany have been above the average, and the consignments to London have been fairly large, whilst local requirements have been heavier than usual. For flagstones the demand has with difficulty been met, and all sections of the building trades have experienced a fairly busy year. The erection of cottage property on the outskirts, especially in the western district, has been more extensive than usual.

BUILDING TRADE, YORK.—The building trade in York has been very active during the year. Plans for about 350 villa residences, houses, and cottages have received the approval of the Council. Plans have also been approved for the construction of twenty-four new streets and back roads in Haxby-road and Fullford-road districts, showing sites for 300 or 400 houses; also for six new hotels or public-houses. Several large structural alterations to business premises have been approved, and there have been many instances of the conversion of houses into shops or the modernising of existing windows.

SCHOOL, AULDEARN, NAIRN.—A new school has just been opened at Auldearn. The new building was erected at a cost of 1,275*l.*, and 277*l.* for the transformation of the old school into a teacher's dwelling-house. The school will accommodate over 200 scholars. The contractors were—Mason, Mr. Thomas McDonald, Inverness; carpenter, Mr. J. Grigor, Auldearn; slater, Mr. Gray, Inverness; plumber, Mr. F. Wink, Nairn; plasterer, Mr. Campbell, Nairn; painter, Mr. McIntyre, Nairn. The architects were Messrs. Reid & Wittet, Elgin.

SANITARY AND ENGINEERING NEWS.

UNDERCLIFF DRIVE FOR BOURNEMOUTH.—The Bournemouth Corporation appear at last to be seriously taking into consideration the question of an undercliff drive and the preservation of the cliffs in the Bournemouth Bay, and at their meeting on the 30th ult. they instructed Mr. F. W. Lacey, their Borough Engineer, to be prepared with full particulars of his scheme. The ground landlord, Sir George Meyrick, and the London and South-Western Railway Company have promised to contribute towards the probable cost, which is estimated at about 60,000*l.* Mr. Lacey's scheme consists of a concrete wall about 20 ft. wide at the base, and constructed at an incline of about 2 in 1, and finished at the top with a stone coping, and terminating at the bottom well into the stratum, generally known locally as blue clay, at a depth of at least 2 ft. below low-water mark. He is of opinion that this form of wall as a sea defence is greatly superior to the vertical wall proposed in the pre-matured schemes in the competition, which would probably not resist the attacks of a single heavy storm. The scheme provides for a carriage-drive at the promenade from Alum Chine to Boscombe Pier, about 23,000 ft. long. The wall would be broken by flights of steps, giving an aggregate length of 4,400 ft., and the wall would be otherwise divided into bays by circular projections, on which would be placed shelters or seats. These projections would very much help to prevent the washing away of the sand, should there be a tendency to scour. There would be ramps at Boscombe and Bournemouth Piers, Dudley Chine, and Alum Chine for access to the beach, for the purpose of bathing machines, boats, &c., as may be required. The drainage of the cliffs would be effected by means of a system of small drains emptying into shafts sunk at the back of the cliffs, in connexion with adits driven up the face of the cliffs, which should again empty on to the beach through outfall-pipes passing under

the proposed drive. The present state of the cliffs in Bournemouth Bay is such as to render some scheme of the kind highly desirable, as they are so constantly changing and crumbling that an accessible path to the beach one year may be found to have nearly disappeared the next year.

NEW SEWERAGE SCHEME, ABERDEEN.—Mr. William Dyack, Borough Surveyor, recommends a new sewerage scheme for Aberdeen, the estimated cost of which is 150,000*l.*, exclusive of any allowance as compensation for way leave or surface damages. Mr. Dyack's plans provide a complete scheme for the interception and disposal of the sewage from the whole of the city, with two main outfalls—one in deep water in the sea at Girdleness, and the other beyond the bar at the mouth of the river Don—and two secondary outfalls—one at Abercrombie's Jetty in the navigation channel of the harbour, and the other near Victoria Bridge across the river Dee. The works recommended to be executed at once would cost 75,000*l.*, and the works—low-level sewer, high-level sewer from Old Ford-road to Skene-street, storm outfall at Esslemont-avenue, and storm culvert at Hutcheon-street—which are required without delay, would cost 34,000*l.* The scheme includes works for the purification of the Don, and as a means of stopping the pollution of their burns, which unite and flow along the Old-town Links into that river, Mr. Dyack recommends the discontinuance of the process of sewage irrigation on the lands of Spital.

BRIDGE, REDHEUGH, NEWCASTLE.—The Redheugh bridge, which has for some twenty years formed the principal means of communication between the western portions of Newcastle and Gateshead, is about to disappear. The present bridge had as engineer the late Sir Thomas Bouch, who designed the ill-fated Tay Bridge. The new one by which the Redheugh Bridge Company are about to displace it, has been designed by Messrs. Sandeman & Co. Moncrieff.

WATER SUPPLY WORKS, HAVERHILL, EAST ANGLIA.—Col. A. G. Durnford, R.E., an inspector of the Local Government Board, recently held an inquiry at Haverhill Town Hall with reference to an application by the Urban District Council for permission to borrow 2,000*l.*, a further loan on works of water supply. Mr. T. Cockerill (Engineer) attended.

PIER, BANGOR, COUNTY DOWN.—A new pier has been constructed at Bangor. The new pier is 790 ft. in length, and the breadth is 40 ft. The work, which was carried out by the firm of H. & J. Martin, Limited, Belfast, was commenced over two years ago. The work has been supervised under the supervision of Messrs. Martin's engineer, Mr. Wheeler, the foremen on the works being Messrs. Robert and Alfred Pippin.

WATERWORKS, LISBURN, IRELAND.—The formal opening of the new waterworks at Lisburn took place on the 23rd ult. The main features are—first, the reservoir, which is designed to give a population of 15,000 twenty gallons per head, and hold a supply for 122 days. The reservoir is formed by an embankment some 1,200 ft. in length. The catchment area above the reservoir is about 460 acres. The area of ground enclosed for the reservoir is 22 acres. The water is drawn off through valves into a cast-iron stand-pipe, which is in the centre of a cast-iron water tower standing about the middle of the embankment. The supply of water comes from springs mostly on the hills above. There are two filter tanks constructed of concrete, each 102 ft. by 69 ft., giving an area of filtering material sufficient for the work. The filtering material is broken stone, gravel, coarse sand, and fine sand on the top. At the base of the filter there is a clear water tank 82 ft. square, 10 ft. deep, where the water can be stored as it comes from the filters. This tank is constructed of concrete, and covered with the same material. The engineer of the scheme is Mr. Lanyon, M.Inst.C.E. The resident engineers were Mr. D. Sims, M.Inst.C.E., who died in January last, and Mr. A. M. Pearce, A.M.Inst.C.E. The contractors for the works were Messrs. H. & J. Martin (Limited), who were represented at the works by Mr. J. Fleming and Mr. J. Alexander.

ELECTRIC LIGHTING NEWS.

ELECTRIC LIGHT, BRAY, IRELAND.—Mr. R. O'Brien Smyth, C.E., Engineer, Inspector of the Local Government Board for Ireland, held an inquiry on the 23rd ult., in the Town Hall, Bray, with reference to the proposed extension of the Bray Township Electric Light Works, for which the Commissioners, acting as Urban Sanitary Authority for the district, had applied to the Local Government Board for their sanction to a loan of 6,450*l.* Sir Henry Cochrane, D.L., J.P., Chairman of the Bray Commissioners, was present, as were also the Town Clerk (Mr. Patrick McDonnell), and Mr. George Marshall Harris (Township Electrical Engineer).

STAINED GLASS AND DECORATION.

WINDOW, PARISH CHURCH, GOSBERTON.—A new memorial window has been placed in the Parish Church of Gosberton, Lincolnshire. The subject of the window is "The Walk to Emmaus."

and it is from the studio of Mr. T. W. Camm, of Smetwick, Birmingham.

STAINED-GLASS WINDOW FOR BUENOS AYRES.—The window intended for the Church of St. Andrew, Buenos Ayres, and executed by the firm of Messrs. D. & W. Guthrie, Glasgow and London, from the cartoons of Mr. David Gauld, is a perpendicular five-light treatment. The entire supervision of the work has been entrusted to Mr. John James Burnet, A.R.S.A.

WINDOW, ST. GEORGE'S CHURCH, EDINBURGH.—A feature of the improvements now being carried on in St. George's Church, Edinburgh, is the filling with stained glass of the large window of three divisions looking to the west. By somewhat enlarging the height of the central opening, sufficient space has been obtained for the representation of the subject of the Ascension. The composition divides itself into two groups. The upper one, elliptical in its main lines, consists of our Lord, in the act of blessing, surrounded by a group of angels. A hand of clouds and cloud forms of various hues separate the upper from the lower group, which latter consists of Apostles and the Virgin Mary; some kneeling, others standing, but all with upturned faces concentrated on the ascending figure. The side spaces are filled with classic ornament upon a coloured ground, the emblem of the burning bush being prominent. The lower group of George forming central features. The window was executed at the direction of the architect, Mr. Leadbetter, at the studios of Messrs. A. Ballantine & Gardiner, Edinburgh.

FOREIGN.

FRANCE.—M. Homolle, Director of the French School at Athens, has been re-appointed for a new period of six years. In order to give more time for the works for the 1900 Exhibition, it has been decided that the Old Salon this year will open not on the 1st of May as usual, but on the 20th of April, and will be closed on the 8th of September. After which the demolition of the building will commence. Where the exhibition will be held for the next three years, until the new Palace is at their disposal, is not yet known; a memorial has been addressed to the Fine Art Department on the subject. Extensive works are being undertaken for the improvement of the Gare d'Est, which will become one of the finest railway stations in Paris. Twenty window frames are to be spent on the work.—The works for the completion of the Avenue Ledru Rollin, connecting the Place Voltaire with the Seine, are to be commenced early this year.—An International Exhibition, in which industrial art will be largely represented, will be held at Lille, in the Palais Kameau, in April.—The restoration of the old church of Notre Dame-de-Joie, at Pontivy, has been completed by the construction of a stone spire. The work has been carried out under M. Lemoine, architect, of Lorient.—The Municipal Council of Paris has resolved that M. Bartholomé's "Monument aux Morts" shall be erected at Père Lachaise according to the original design, which it had proposed to modify on grounds of economy.—The death is announced of the age of 30, of a young architect, M. Henri Collet, pupil of Laloix. He had obtained the diploma of architect in 1893, and was considered to have a future before him.

GERMANY.—We have much pleasure in recording the fact that the title of an honorary professor has been conferred on Herr Bruno Schmidt, in connexion with the various monuments erected to Emperor William I. which have been executed from his designs.—Of competitions open to sculptors one of the most interesting is at present a memorial to Helmholtz. The subject has been open to a general competition amongst sculptors, and is now being treated in limited competition by the sculptors, Messrs. Hatter, Jarneuch, and Lessing. The memorial is to be placed in the forecourt of the Berlin University.—The new City Architect of Berlin—Herr Ludwig Hoffmann—will have sufficient occasion to make his post a most prominent one; and the Municipality has already voted 7,500*l.* to enable the preliminary work for the proposed local museum to be taken in hand. Herr Hoffmann has promised to have his sketches of Government prize and travelling studentship will next year be awarded to the most successful design for a town hall, and the Civil Engineers theme for a similar prize, offered by the *Architekten Verein*, is for the best plan of a harbour.—The Prussian Royal Academy—the presidential chair of which is now being held by an architect, Professor Ende—has offered a valuable Government prize and travelling studentship for architectural students. The value of the prize is about 150*l.*, and the premium will be awarded to the candidate who shows the best designs of any subject he may wish to treat, or drawings and photographs of work he has executed.—The German Budget contains an item of 3,000*l.* to facilitate the research work on Roman remains in Germany; about 10,000*l.* has been granted by the Government with this view during the last five years.—The public advertisement—or poster—appears to be becoming the subject of considerable interest at Berlin, as there has been a special exhibition of posters in the Arts and Crafts Museum.—The *Centralblatt der Bauverwaltung* publishes some further details as to the training

requirements of Fire Brigade officers, who are now enabled to undergo a systematic course of instruction at the headquarters of the Police Fire Brigade. Knowledge of building materials, construction, &c., is considered essential for the candidates for commissions.—An interesting series of controversial articles on lighting conductors is at present appearing in the *Centralblatt der Bauverwaltung* (published by Messrs. Ernst & Sohn, of Berlin). We shall in due course comment upon the controversy and the results arrived at.—The number of students attending the Royal Technical College at Berlin has now nearly reached 3,000. The buildings at Charlottenburg are now over-filled, and it will soon be necessary to add to the accommodation. Nearly 600 of the number are students of architecture.—Among the many public works in hand at Breslau a new prison has lately been completed at a cost of nearly 100,000*l.* It comprises a separate building for male misdemeanants, and another for female misdemeanants, together with the various offices and tenements for the officials. There are cells for approximately 400 male and 200 female prisoners.—A competition for sculptors has been decided at Dresden for a Bismarck monument; the first premium of 150*l.* has been awarded to Herr Werner Stein.—A competition has been opened for the designs of a new City Hall at Leipzig, and premiums of the value of 600*l.*, 400*l.* and several other prizes will be given. There will be a committee of assessors, comprising seven architects and two laymen. Among the names of those on the committee we notice that of Professor Wallop of Dresden.—The municipality of Hanover has also decided to open a limited competition for the design of a new town hall, the cost of which is limited to 225,000*l.* The competition seems to be arranged on very practical lines, as each competitor who is invited will receive a fee of 600*l.*, whilst the successful design will apparently procure the commission. The limited competition is the result of an open competition held some time back.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. T. Batterbury, hitherto practising as architect at 29 John-street, Bedford-row, has removed his offices to Imperial Chambers, 47, Chancery-lane.—Messrs. D. Campbell & Son, Surveyors, have removed to 4, Finsbury-circuit, their old offices at 69, Finsbury-pavement having been taken by the City and South London Railway Company for a station.—Messrs. T. & W. Farmlice, of Rochester-row, Westminster; Nine Elms, and Mitcham, S.W., have converted their business into a private Limited Liability Company. No shares will be offered to the public, and there will be no change in the management.—Mr. J. T. Passmore, estate agent, of West Kensington, has taken into partnership Mr. H. J. Cooke, formerly with Messrs. Debenham, Tewson & Co. The business will be carried on at Avon Lodge, West Kensington, under the style of "Pa smore & Cooke."—The partnership between Messrs. James Woodward & Rowley, sanitary earthenware manufacturers, Swadlincote, near Burton-on-Trent, has been dissolved by mutual consent. The business will be carried on by Mr. S. H. Rowley, managing partner for twenty-three years in the old firm, whose works are situated near Swadlincote station.—**LIFTS, ITALIAN INFIRMARY.**—The Committee of the Italian Infirmary have agreed to adopt electricity for working the lifts at their new Infirmary. The work, consisting of six passenger lifts and two service lifts, with all motors and accessories, has been placed in the hands of Messrs. Easton, Anderson, & Golden, Limited, of Erith.—**NATIONAL REGISTRATION OF PLUMBERS.**—A deputation from the District Council of the National Registration of Plumbers waited on Mr. Bryce, M.P., recently at the Grand Hotel, Aberdeen, for the purpose of enlisting his sympathy and support in connexion with the Plumbers' Registration Bill. The deputation consisted of Professor Matthew Hay, President of the Council; Mr. A. B. Robertson, master plumber, Vice-President; and the following members of Council—Mr. J. F. Anderson, Mr. William Gardiner, operators, and Mr. E. G. Wilson, architect. It was pointed out that the chief object of the Bill was to confer additional safeguards on the public health by enabling persons employing plumbers to select, when they desired to do so, those who had given evidence of their qualifications for plumbers' work. The Bill, it was also mentioned, did not contemplate any monopoly, and did not interfere in any way with the rights of non-registered plumbers, but prohibited them from representing themselves to be registered. Mr. Bryce, in reply, expressed his sympathy with the object of the deputation, and promised to give the Bill his most attentive consideration.—**GUILDHALL ALTERATIONS, WESTMINSTER.**—The dispute with the builders over the alterations to the Guildhall, Westminster, the meeting place and offices of the Middlesex County Council, is in a fair way to be settled. Messrs. Higgs & Hill, the contractors, sent in a bill for 1,340*l.* over the contract price and extras agreed to by the Council, on the ground that there had been extra work in connexion with some old walling that was made of stone rubble and not brick, as they asserted it had been repre-

sented to them. On the other hand, the County Council put in a claim against the contractors of nearly 1,300*l.* for penalties, and then referred the matter to the County Surveyor as arbitrator under the contract. The contractors objected to the arbitrator, and wished the reference to be to an independent engineer, and the County Council refusing this, the contractors issued a writ for 2,972*l.* 2*s.* 10*d.*, which they said was owing to them. Finally an offer has come from them that they will withdraw the claim for extra work if the County Council also waive a claim of 402*l.* for expenses. The Council has agreed to the terms, and a dispute which has lasted for more than two and a half years will be settled.—*Hornsey Journal.*

ECCLESIASTICAL DECORATION.—On the 22nd ult., in the studios of Messrs. Stephen Adam & Son, 109, Bath-street, Glasgow, Mr. Adam, sen., delivered a lecture to the Glasgow Ecclesiastical Society. It was, he said, in continuation of one on "The Methods of Mediaeval Glass-staining" which he gave before a meeting of the Society in Park Church in February, 1894, and which was published in the transactions of the Society for 1895. Having briefly recalled what was said then on the subject, he went on to refer to lectures on ecclesiastical decoration to which he said he had lately listened. While these had given him pleasure they did suggest a little that this art of his (the lecturer's) should, to put it mildly, take a back seat, that white windows and enriched walls should be desirable features in the perfect church. There was much of truth in what was said, but he asked—But for the mellowed and enriched light which stained glass was so capable of giving, how would the modern over-stencilled kirk interior look? Verily, his art cloaked many sins. The mural decorator had much to thank the glass stainer for; so had the architect. Many criminalities in colour, form, in cheap chiselling, had as it often was, acquired harrowed plumes, subdued richness, by the glorified light of the glass staining art. Genuine work, he continued, could only be produced by men of training who had studied what was good in early work and had the intuitive sense of colour harmonies. The lecturer went on to show wherein and to what extent the modern development of the art had succeeded in catching the spirit of what was purely mediæval glass-staining, where and how in later times it failed to do so, and consequently declined as an art, and how in recent years a healthy Renaissance had sprung up among them like an exhilarating sea-breeze which would resuscitate in modern forms the splendour and glory of earlier work. His hope for the improvement of modern church decoration lay in the restoration of their ancient trade guilds. The lecturer also gave practical illustrations of the process of glass-staining. At the close Mr. Adam was cordially thanked for his lecture.—*Glasgow Evening News.*

NOTTINGHAM AND DISTRICT TRADES COUNCIL.—A meeting of the Nottingham and District Trades Council was held on the 23rd ult., at the Exchange Hall, the chair being occupied by Mr. J. G. Hancock. With regard to the "contracts resolution" previously adopted by the Council, the Secretary reported that he and Mr. Richards waited, as a deputation, upon the Building Trades Council with a view of ascertaining how far that Council was prepared to support this Council with regard to the contracts resolution which they proposed to put before every candidate for municipal honours. The resolution was an important and far-reaching one, and this Council desired to secure a thoroughly united organisation of labour in the town. When the deputation waited upon the Building Trades Council the latter reminded them that this was a principle for which they (the Building Trades Council) had fought for many years, but they held out very friendly overtures to the deputation. He understood that after the deputation left the matter was referred to a committee, and no doubt this Council would subsequently receive a report. The resolution might require the alteration of a few words to make it stronger, but if they secured a thorough unity of workers he thought they would be arriving at a satisfactory understanding, and be considered that the result of the deputation appeared to be a happy augury for the cohesion of the two Councils.

THE EXECUTION BELLS, ST. SEPULCHRE'S.—It is stated that there was found recently in the church vestry, a relic of old times and old customs. It is the hand-bell which the clerk, or sexton, used to ring outside Newgate Prison on the eve of execution of sentence upon convicts in the "condemned cell." In 1605 Robert Dowe (he is called John Dowe in Mumby's Story) gave 50*l.*, arising out of a rent-charge on premises in West Smithfield, "For ringing the greatest bell in the church on the day the condemned prisoners are executed, and for other services for ever concerning such condemned prisoners." The "other services" included the ringing of the hand-bell, with the repetition of certain admonitory lines at the prison, and whilst the prisoners passed the church on their way to Tyburn. The Duchess Dudley gave a great bell to St. Giles's-in-the-Fields for a like purpose (see Hamper's Dugdale). Dowe's Charity was scheduled a few years ago by the Charity Commissioners, who framed a scheme for diverting the money from its original purpose, and giving it, in trust, to the

rector and churchwardens, to be applied in behalf of deserving and necessitous prisoners upon their discharge, with preference to those committed in the district of the Central Criminal Court.

IMPROVEMENT OF THE CATHEDRAL APPROACHES, MANCHESTER.—The street improvements round about the Manchester Cathedral are approaching completion, and something like 1,400 square yards of land have been added to the approaches. In Hunt's Bank land to the width of 37 ft. has been added along the west front of the building, and the thoroughfare is now twenty yards wide at the narrowest part.

THE BUILDING REGULATIONS ACT, GLASGOW.—At the last meeting of the Glasgow Building Regulations Act Committee a deputation was received consisting of Messrs. Paterson, Goldie, Ferguson, and Shaw, as representing the Glasgow Building Exchange, Limited, who were heard regarding the amending of certain of the by-laws made under the Building Regulations Act, 1892, as follows:—(1.) On By-law 31, which provides that "slates . . . shall be secured by at least two strong copper, or galvanised, or other suitable nails," that provision should be limited in its application to every third course of such slates.

such cylinder, and to the flushing pipe, and a shorter syphon-pipe connected to the larger one.

1,408.—MANUFACTURE OF FLOORING BLOCKS, &c.: G. L. Falconer.—This invention consists in manufacture of composite blocks, upper stratum being of wood, compressed wood, fibre, &c., and lower of concrete, such surfaces being connected by metal tongues, nails, screws, &c.

1,435.—FLOORS, PLATFORMS, &c., FOR PUBLIC BUILDINGS: W. Horsfall and Another.—Consists in making such floors, &c., in two or more parts, pivoted or hinged in the centre, and capable of being raised by jacks or similar mechanism.

1,835.—CHIMNEY COWLS: A. B. McKennie.—In cowls the inventor places a fan or exhauster, arranged to rotate on a horizontal axis by the action of the wind.

2,449.—INSPECTION AND CLEANING JUNCTIONS FOR DRAINS, &c.: E. Coding.—The invention is a junction of eye for drains, &c., provided with internal guides by which the cleaning-rod can be deflected in the direction desired.

2,714.—CHISEL FOR CUTTING STONE, IRON, WOOD, &c.: J. Drausefeld.—Consists in a steel holder with slit end, forming a pair of jaws, capable of being drawn together by set screws or bolts, into which a thin steel blade for cutting can be securely held.

3,228.—HINGES: W. G. Spaul.—This patent relates to a flush hinge especially designed for falls of plating, cases, desk-flaps, &c. The hinge is constructed of two box-like parts connected by a cranked or bent connecting link, hinged at its opposite ends to the inner ends of said box-like parts.

3,237.—STOP BLOCK FOR SINK PIPES, &c.: F. Holders.—The inventor claims a special combination in a stop block of inlet, trap, outlet, waste water inlet, cleansing inlet, and outlet.

3,665.—WATER-CLOSETS: E. A. Green.—This invention relates to the species of water-closets where a vertical shaft is fixed over a trapped pan, from which a supply issues. The inventor proposes a trapped pan, formed with the bottom of pan sloping from top of same into throat of trap, and with top of pan formed at same level as lowest part of the interior of out-go of trap, where the trap is made water-tight in pan and trap, whereby the pan is kept full of water, with a large surface area for the dejecta to drop into, and the trapped pan is made of smaller depth and capacity than for other purposes.

3,863.—WINDOW FITTINGS: J. Lunsdon.—This invention consists in the combination of a locking catch, sliding catch, and shoe or socket of special forms.

3,797.—WINDOW SASH-FASTENERS: W. R. Ray.—This fastener consists essentially of a rod passed horizontally through the top and bottom sashes, the rod having one end split and furnished with knobs and notches. Fastener may be also used for other purposes.

3,904.—DOWEL PINS AND JOINTS: A. J. Beull.—The inventor adopts a wooden dowel pin, having longitudinal ribs adapted to embed themselves in the wood into which the pin is driven. There are also shallow grooves between ribs adapted to retain glue, and a longitudinal vent groove of greater depth.

NEW APPLICATIONS FOR LETTERS PATENT. DECEMBER 14.—28,528, H. Waite and Others, Door, Casement, or Window Adjustment.—28,554, S. Bradshaw, Reversible Windows.—28,582, G. Duffield, Water-closets.—28,611, L. Cohn, Device for Indicating the Stoppage of Water-closets.—28,615, H. Schröer, Roofing Tiles.

DECEMBER 15.—28,653, J. Horn, Fismatic Lights.—27,674, D. Fletche, Mechanism for Lifting, Lowering, and Locking Window Sashes, &c.—28,671, C. Stowe, Traps for Waste Pipes, &c.—28,749, J. Minto, Automatic Flushing System.

DECEMBER 16.—28,758, J. Haynes, Sash Line Fastener.—28,795, J. Allen, Apparatus for Obviating the Rattling of Window Sashes and Preventing same from being Opened from the Outside.—28,824, A. Marlew, Chimney and Ventilating Cows, &c.—28,829, R. Fraser, Roof Supporting Frames.—28,832, G. Brown, Junr, Brake for Ship Weights, &c.—28,877, H. Kelson and G. Strecker, Mills.—28,892, M. Murray, Fire, Water, Waste, &c. Homan, Construction of Walls or Partitions.

DECEMBER 17.—28,929, E. Royston, Tiles, Slabs, &c.—28,963, J. S. Dibble, Combined Water-closet and Seat.—DECEMBER 18.—29,029, A. Delig, Walls.—29,059, J. Thomas, Treatment of Wooden Surfaces for imitating Mahogany, Rosewood, Enamel, Tortoise Shell, Veneering, &c.—29,114, A. Nicholson, Draught Excluder for Doors and Casements.—29,149, A. Mills, Water Waste Preventer.—29,151, T. C. Fawcett, Limited, and T. Fawcett, Brickmaking Machines.—29,160, A. Wragg, Machine or Die to make Perforated Kilo Bottom Bricks or Lump by means of Power Presses.—29,212, Fittorie, Limited, Manufacture of Cement.

PROVISIONAL SPECIFICATIONS ACCEPTED. 24,071, F. Chaplin, Sliding Bolts for Doors.—24,711, R. Hunter, Finely Pulverised Substances for Use in the Production of Portland Cement, Pigments, &c.—26,744, J. Duckett & Sons, Limited, and Others, Waste Water Closets.—26,745, J. Duckett & Son, Limited, and Others, Sink Fittings.—26,946, E. Bloom and Others, Paint Brushes, &c.—27,216, Tonks, Limited, and J. Whiting, Spring Hinges and Door Springs.—27,279, W. Westwood, Hinges or Bolts for Ventilators, &c.—27,374, H. Hyde and J. Aday, Hinges.—27,406, P. Wood, Kilns.—27,420, M. Newlove, Raising and Lowering Window Sashes.—27,429, J. Longue, Window Fasteners.—27,437, T. Mathews and F. Tarr, Clamps.—27,614, J. Sankey and C. Turnock, Sharpening and Setting Saws.—27,828, J. Morton, Enamelling or Glazing Bricks, Tiles, &c.—27,829, J. Berry, Machines for Moulding Bricks, &c.—28,003, S. Marchant, Gauge for Saws.

COMPLETE SPECIFICATIONS ACCEPTED. One is application for two months. 24,013, W. Bird and the Globe Inventors' Trading Company, Limited, Windows with Sliding Sashes.—2,015, S. Helyer, Water-closets, &c.—2,155, J. Shanks, Lavatories.—3,421, W. Ludlow, Miter Clamp.—3,591, S. Hill and R. Hodges, Morse Fastenings.—13,791, G. Fuhrer, Socket for Securing Nails, &c., to Walls, &c.—24,902, A. Gries, Slabs for Building and other purposes.

RECENT SALES OF PROPERTY. ESTATE EXCHANGE REPORT. December 3.—By J. H. North (at Dublin), Raphoe, co. Donegal.—Enclosure—12 a. 3 r. 19 p. 2 r. 3 p. 4 f. £3,000

Clontarf, co. Dublin.—4 and 5, St. John's-st., ut. 148 yrs, g.r. 302, r. 784. 4,365 2 to 4, 7 and 8, Rosborough-coles, ut. 148 yrs, g.r. 204, r. 414. 625

December 11.—By H. W. MELLERSH (at Godalming). Witley, Surrey.—Wheeler-st., "The Star" Inn and 6 cottages adjoining, f. r. 497 18s. 1,400 Cranbury-st., 10 building plots, 18 ft. 4 in. front, Cranbury-lane—enclosure of land, r. 1 r. 30 p. 116 Godalming (near), Surrey.—The Hascombe Post Office, g.r. 20, f. 291. 425 Lambourne-lane, three freehold cottages, r. 182 4s. 490 Stoke Newington.—Albion-rd., f.g.r. 262 6s, reversion in 25 yrs. 1,322 By CLEMENTS & BURTON (at Coventry). Coventry, Warwick.—56 and 57, Henford-st., f. r. 39. 820

Bobbing, Kent.—The Key Inn and o.a. 2 r. 18 p. f. r. 404. 2,950 Sheerness-rd., enclosure of land, 3 a. 2 r. 35 p. f. r. 68. 320 Milton-next-Sittingbourne, Kent.—High-st., the White Hart p.h., with house and shop adjoining, and 12 a. 1 r. 10 p. of land. 2,000 Stockbury, Kent.—"The Hartow" Inn, f. r. 227. December 12.—By W. R. NICHOLES & Co. (at Pangbourne). Pangbourne, Berks.—Meadow-side-rd., nineteen building plots, f. 598 Tidmarsh-rd., three building plots, f. 1,023 December 14.—By ORCILL, MARKS, & ORCILL. Gravesend, Kent.—"The Grove" and "The Distillery" and warehouses, also 17, High-st., f. 2,500 By THOMAS FEYER & MILNER. Caterham, Surrey.—"The Hotel" and grounds, f. r. 255. 10,000 By WYATT & SON (at Chichester). Chichester, West Sussex.—38, The Hamlet and shop adjoining, f. 700 December 15.—By DEAN, BURNETT, & ELDRIDGE. Islington.—30 to 36 (even), Charlesworth-st., ut. 25 yrs, g.r. 160, r. 105. 17,35 38, Blundell-st., ut. 55 yrs, g.r. 124 10s, r. 120 Rotherhithe.—1 to 13, Nolan-place, ut. 85 yrs, g.r. 405. 500 By CHANCELLOR & SONS. Earnings.—Gipsy-lane, "Venlaw" and "Fontenay" ut. 75 yrs, g.r. 214 1rs, ad. r. 195. 2,400

Soho.—3, Little Pulteney-st., f. r. 754. 1,360 Notting Hill.—28, Holland Park-av., ut. 26 yrs, g.r. 94 10s, ad. r. 110. 1,065 Barbican.—35 and 37, Whitcross-st., area 1,770 ft. 2, 5,600 City of London.—Petterlane, a built site, area 595 ft. f. 2,800 Whitechapel.—Middlesex-st., a corner plot of land, area 580 ft. f. 930 Bishopsgate.—Westbourne-grove, "The" and 595 ft. f. 3,025 Whitechapel.—Middlesex-st., &c., six building sites, area 7,449 ft. f. 8,100 By FRUZBURT, WALKER & SONS. Hall Tavern. Poplar.—Emmett-st., "The Union," p.h., a freehold rental of 12s. 6d., with reversion in 26 yrs. 3,700 Bayswater.—"The Rectory" and "The Rectory" profit rental of 100s., for 32 yrs, with reversion. 7,510 By LOUMB & HOWITT (at Masons Hall Tavern). Kensington.—Leighton-rd., "The Torrione," P.h., lease for 49 yrs, r. 100. 26,500 By ORCILL, MARKS, & ORCILL (at Masons Hall Tavern). Blackheath.—Lee-rd., "Railway Hotel," lease for 53 yrs, r. 120. 21,510 By BYRONOV & HOWITT (at Waltham Green).

Fulham.—42, 44, 46, and 48, Langford-rd., ut. 87 yrs, g.r. 246. 590 14 and 16, St. Vincent-st., ut. 47 yrs, g.r. 74. 445 By G. B. HILLIARD & SON (at Rayleigh). Rayleigh, Essex.—Rochford-rd., a freehold house with range of buildings and 2 a. 1 r. 7 p. 430 Rochford-rd., 2 enclosures, 4 a. 0 r. 31 p. f. 430 December 16.—By H. J. BROMLEY. Norwood.—66, St. Julian's Farm-rd., f. 395 Highgate.—59 and 61, Highgate Hill, ut. 481 yrs, g.r. 154 f. 744. 795 By THURGOOD & MARTIN. Bishopsgate.—74, Cannonville-st., "The Salisbury Tavern," area 2,200 ft., part f. and part ut. 52 and 61 yrs, g.r. 301, r. 416. 9,200 Islington.—Barnsbury-rd., "The Union Tavern," also 125, 127, Alding-st., 84, 83 yrs, g.r. 1,975 Marylebone.—36, Great Portland-st., f. 80; also l.g.r. 5s, ut. 174 yrs, g.r. 131. 710 35, Bolsover-st., ut. 78 yrs, g.r. 164, r. 80. 370 Islington.—Shepherd-rd., a built site, ut. 284 g.r. nil. 145 By E. W. RICHARDSON & SON. New Southgate.—5 and 6, Lower Park-ter, f. r. 254 10s, ut. 45 years, g.r. 40. 720 Bethnal Green.—75, Quilter-st., ut. 282 yrs, g.r. 20 5s. 495 Poplar.—2, Oriental-st., ut. 601 yrs, g.r. 44 15s, r. 361. 495 By DOUGLAS YOUNG & Co. Greenwich.—61, Blackheath-rd., ut. 5 yrs, g.r. 57 74s, f. 364. 155 Camberwell.—4, Aldington-st., 84, 83 yrs, g.r. 67 14s, r. 4. 543 Battersea.—3, Rollo-st., ut. 66 yrs, g.r. 12 17s, 6d. f. 301. 300

Contracts used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; g.r. for improved ground-rent; r. for ground-rent; p. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; ut. for unexpired term; p.h. for per annum; y. for years; ad. for ad valorem; r. for rent; square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard; &c.

MEETINGS.

SATURDAY, JANUARY 2. Sanitary Inspectors' Association (Carpenters' Hall)—6 p.m.

SUNDAY, JANUARY 3. Sunday Lecture Society.—Mr. Richard Kerr on "The New Photography: the Röntgen, or X Rays"—with experiments. 4 p.m.

TUESDAY, JANUARY 5. Royal Victoria Hall, Waterloo-road, S.E.—Professor H. G. Seeley, F.R.S., on "The Heat of the Earth," 8.30 p.m.

WEDNESDAY, JANUARY 6. Liverpool Engineering Society.—Mr. J. W. Anderson on "Mechanical Refrigeration." 8 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

978.—SELF-CLOSING DOOR HINGES: E. Edwards.—This invention relates to a hinge, the rubbing surfaces of which are made of an undulating form round the pin which connects upper and lower parts to the door, which, when opened, always comes back by its own weight to its lowest position. A tubular ring oil-holder is attached.

1,301.—SYPHON CISTERNS: H. J. Dakin.—The inventor claims a siphon cistern provided with a cylinder, having mounted upon it a ball, with a small hole therein, actuated by a weighted lever, a long syphon-pipe connected with

SOME RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT. December 8.—By J. H. North (at Dublin), Raphoe, co. Donegal.—Enclosure—12 a. 3 r. 19 p. 2 r. 3 p. 4 f. £3,000

PRICES CURRENT OF MATERIALS.

Table listing prices for various materials like timber, iron, and copper. Columns include item names and prices per unit.

DENBIGH.—For additions, &c., at the North Wales Counties Asylum, Messrs. C. O. E. & Co., architects, 29, St. Thomas Street, Liverpool. Quantities by the architect.

DOVER.—For providing, laying, &c., cast-iron water-mains &c., Folkestone-road, for the Town Council.—

SAWEN.—For the supply of 1,420 tons broken granite, &c., for the Town Council.—

DRIFFIELD.—For additions to National Schools, Driffield. Mr. J. Shepherdson, architect, Driffield.

WALSINGTON (Durham).—For the supply and erection of iron hospital for infectious diseases, with outbuildings, for the Rural District Council.—

FRIMLEY.—For the erection of six cottages. Mr. A. E. Hall, architect, Frimley, Surrey.—

GOLCAR.—Accepted for the erection of a residence, Seaford, for Mrs. Fielding. Mr. Arthur Shaw, architect, Golcar.

GREAT YARMOUTH.—For additions to 'The Anchor and Hope Hotel,' Gosport Pier, Messrs. E. Laxon & Co., Messrs. Bell & Oley, architects, Great Yarmouth.—

HASLINGDEN.—For the erection of boiler house, chimney, &c., for the Central Sewage Plant, Mr. H. Leonard Hinnell, C.E., 41, Corporation-street, Manchester.

KEIGHTLEY.—For the execution of private improvement works, Dure and Wren streets, for the Corporation. Mr. W. H. Hopkinson, C.E., Municipal-buildings, Keightley.

LEEDS.—Accepted for the erection of two labourers' cottages, Scarforth, Leeds, for Mr. H. Miles. Mr. W. Carby Hall, architect, Prudential-buildings, Park-road, Leeds.

LONDON.—For the erection of additional premises at Gladstone-road, Battersea, for the Globe Foundry Company.—

LONDON.—For the erection of iron church for the Rev. Percy M. Bayne, at Manor Park, E.C.—

LONDON.—For erecting the Kennington-road public baths and washhouses, for the Commissioners of Baths and Wash-houses for Lambeth. Mr. A. Hessel, 1, Cannon-street, Bedford-row, London, W.C.—

LONDON.—For engineering work for the new women's swimming bath, Calcutt-road, & additions to the public washhouse, for the Vestry of St. Mary, Islington. Mr. A. Hessel, architect, 6, Johnson-street, Bedford-row, London, W.C.—

LONDON.—Accepted for alterations and repairs at 270, Hoxton-square, Hoxton, for Mr. A. Gottwein.—

LONDON.—For alterations and additions, 29, Gordon-road, Peckham, for Dr. Hignett. Mr. J. William Stevens, architect, 21, New Bridge-street, City, E.C.—

LONDON.—For alterations and additions to Langewath, Belsize-lane, Hampstead, for Mr. A. R. Bay, Mr. J. William Stevens, architect, 21, New Bridge-street, City, E.C.—

LONDON.—For four houses, Duke-road, Chiswick, for Mr. Wm. Forch. Mr. Herbert S. White, architect, 155, High-road, Chiswick.—

LONDON.—Accepted for the erection of a new warehouse at Tumb Green, for the Army and Navy Auxiliary Co-operative Society, Limited. Mr. J. Durrill, architect. Quantities by Messrs. John Leaning & Sons.—

LONDON.—For the execution of sewerage works, Burnt Oak, Orange Hill (Low Level Sewerage, Contract No. 4), for the Urban District Council of Hendon. Mr. S. Suter Gwynne, Engineer, Public Offices, the Burroughs, Hendon, N.W.—

Table with columns A, B, C, D listing various contractors and their prices for different types of pipes and fittings.

NEATH (Wales).—For the erection of the Cambrian Hotel, for Mr. E. E. Bevan. Messrs. Lambert & Rees, architects, Metropolitan Bank Chambers, Neath. Quantities by architect.—

PONTYFRIDD.—For the erection of two villa residences at Giddegreen, for Messrs. W. & D. Thomas. Messrs. Giffitts & Jones, architects, Pontyfridd & Tonyrundy.

RISCA (Mon.).—For the erection of school buildings, Cross Keys, for the School Board. Mr. Geo. Rosser, architect, Victoria-houses, Holywell, Newbridge, Mon.—

ST. LEONARD'S-ON-SEA.—For alterations to Nos. 24 and 25, London-road, St. Havenock-road, Hastings.—

ST. LEONARD'S-ON-SEA.—For alterations and additions to stabling and cottage at 'The Wren,' Silverhill, St. Leonard's, for J. Higgins & Sons, 2, 15, 16, St. Wm. Cooper, architect, 21, 66, G. Vitor & Co., 517, St. H. Ashdown, W.—

WATFORD.—For the erection of additional premises for the Acme Tint Engraving Company.—

WATFORD.—For erecting a new brewery, for Messrs. Benskin's Watford Brewery, Limited.—

WORSBOROUGH DALE (Yorkshire).—For the construction of sewers and streets, for Mr. Benjamin Turner. Messrs. Wade & Turner, surveyors, 10, Pitt-street, Barnsley.—

TENDERS.

communications for insertion under this heading should be addressed to 'The Editor,' and must reach us not later than 10 a.m. on Thursdays. N.B.—We cannot sub tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of tenders accepted unless the amount of the tender, or, in any case, the lowest tender is under, unless in some exceptional cases and for special reasons.

WORKING (Essex).—For the construction of sewers, &c., Axe-way, New-road, and Bridge-street, for the Urban District Council. Mr. J. Davery, surveyor, Council Offices, East-street, Barking.

NEW-ROAD, AXE-STREET, BRIDGE-STREET, TOTAL. S. d. S. d. S. d. S. d. S. d. S. d.

THOMPSON. 452 15 0 357 14 0 75 4 0 669 13 3

king. 395 0 0 155 0 0 30 0 0 530 0 0

SWICK UPON-TWEED.—For paving Featherbed-lane, for sanitary authority. Mr. Dickson, Borough Surveyor, Berwick-upon-Tweed.—

BEHILL.—Accepted for the erection of house and shop in Behill-road, Beahill, for Mr. J. Farnen, Hasting. Mr. D. Hicks, architect, Sea-road, Beahill.—

BEHILL.—For the erection of three houses and shops, St. D. Hicks, architect, Sea-road, Beahill.—

BEHILL.—For the construction of sewer, &c., and making an ash-pit on-road, Beahill, for Mr. W. Mayner, Stratford. Mr. A. C. L.D., surveyor, Beahill.—

BRIDGE (Ireland).—For the erection of two labourers' cottages, Colclough, for the Union Guardians. Mr. L. A. Strick Moore, Dunboyne.—

DYDOND.—For the erection of detached house, Parklane, for Mr. Bruce Johnston. Mr. A. Broad, architect, 3, Street, Dydond. Quantities by architect.—

COMPETITION, CONTRACTS, AND PUBLIC APPOINTMENT.

COMPETITION:

Table with 4 columns: Nature of Work, By whom Advertised, Premiums, Design to be delivered. Includes 'Designs for Houses' by J. C. Hill, T. Ashward.

CONTRACTS.

Table with 4 columns: Nature of Work or Materials, By whom Required, Forms of Tender, Ac. supplied by, Tenders to be delivered. Includes 'Paving Works, Hope-street, &c.' by Ramsbottom U.D.C.

CONTRACTS—Continued.

Table with 4 columns: Nature of Work or Materials, By whom Required, Forms of Tender, Ac. to be Supplied by, Tenders to be delivered. Includes 'M*aking-up and Paving Roads' by Fulham Vestry.

PUBLIC APPOINTMENT.

Table with 4 columns: Nature of Appointment, By whom Advertised, Salary, Application to be made. Includes 'Two Inspectors of Sewage Works' by Carshalton U.D.C.

Those marked with an asterisk (*) are advertised in this Number. Competition, p. iv. Contracts, pp. iv, vi, viii, & x. Public Appointment, pp. xvii.

LONDON SCHOOL BOARD TENDERS.

The following lists of tenders were submitted by the Works Committee at a recent meeting of the London School Board:

Table of tenders for London School Board, including sections for Ashburnham, Baltic Street, Beethoven Street, Berger Road, Bolingbroke Road, Brecknock, Brinton Hill, Brockley Road, Bucks Row, Campbell Street, Chequer Alley, and Conway Road.

Table of tenders for various streets including Dempsey Street, Dulwich Hamlet, East Lane, Edwards Street, Eleanor Road, Farncombe Street, Gideon Road, Gloucestergrove East, Hamond Square, Hargrave Park, and Harwood Road.

Table of tenders for various streets including Hasetline Road, Holland Street, Horseferry Road, Keeton's Road, Laxon Street, Lyham Road, Tower Hamlets, Minaroad, and Mordey Terrace.

TAR-PAVING ON A RUNNING CONTRACT.

Table with columns for Schedule, W. H. Renstead & Son, Brunwick & Co., W. E. Comptable & Co., W. Gibbs & Co., A. C. W. Holbourn & Co., D. Marchall & Co., and Josiah Smart.

Table listing various streets and their respective contractors and costs, including Warple Way, Webb Street, William Street, Wolverley Street, and Walnut Tree Walk.

TO CORRESPONDENTS.
NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

PUBLISHER'S NOTICES.

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The Builder.

VOL. LXXII NO 2854.

JANUARY 9, 1897.

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Design for an Institute of Architects.—By Mr. Percy E. Newton	Double-Page Photo-Litho.
Proposed New Premises, London and Provincial Bank, Enfield.—Mr. W. Gibbs Scott, F.R.I.B.A., Architect	Double-Page Ink-Photo.
The Mary Pease Almshouses, Darlington.—Mr. Paul Waterhouse, F.R.I.B.A., Architect	Double-Page Ink-Photo.
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The Burlington House and New Gallery Exhibitions.



It seems both fortunate and appropriate that a collective exhibition of Mr. Watts's paintings should be held at the New Gallery concurrently with the exhibition of Lord

Leighton's works at Burlington House. The two exhibitions afford very interesting matter for comparison and contrast. Both artists are, in the majority of their works, painters of ideal subjects, but the ideal is a totally different one. Leighton painted solely for beauty and decorative effect; his pictures have for the most part no intellectual meaning, and certainly they are entirely devoid of any moral or didactic element. Mr. Watts, on the other hand, in painting figures and subjects has professedly aimed at making them the medium for the expression of a moral meaning; in his own words, "the object has been to suggest, in the language of Art, modern thought in things ethical and spiritual." A noble object certainly; the question is whether in striving to carry it out he has not been in danger sometimes of outstepping the proper limits and capabilities of the art of painting, of attempting what had better have been expressed in words, and sacrificing artistic beauty to a moral end.

The collection of Leighton's works is on the whole a very representative one; the only important one which we hoped to find there and missed is the grand picture of "Phryne," a nude figure almost larger than life, at all events of what is called "heroic" size, which some of our readers may remember hanging in the large gallery a good many years ago, just over where the "Daphnephoria" now hangs. This was an impressive work from its large scale and the power of design displayed in it; we should be interested to know what has become of it.

The pictures are all dated, so that we can compare the painter's style at different periods. Up to about twenty years ago, the period of the "Daphnephoria," his art may be said to have been steadily progressive; beyond that date it is fluctuating; he never surpassed the "Daphnephoria," but since

that time we have had pictures equal to it in essential qualities of style and colour, mingled with others which were decidedly inferior. The difference between the earlier nudes and the best style of the later period is very well illustrated in the contrast between "Actæa" (49) dated 1868, and the "Bath of Psyche" (51), painted in 1890. In the former the figure is cold in colour and hard and sculpturesque in quality; in the latter, though there is still a certain degree of hardness and artificiality which is inseparable from Leighton's style, there is a delicacy of colour which contrasts strongly with the cold tone of the older work. The "Venus Disrobing" (56), painted in 1867, is another typical example of the time when Leighton was a splendid draughtsman but a poor colourist; the pose in this figure is a very difficult one, and treated with great mastery of drawing. In some of the latest works the artist seems to have dropped again into his earlier style, as in "Summer Slumber" (70), a work hard in texture and inharmonious in colour, and which displayed the artist's shortcomings rather than his powers.

The exhibition of "Cimabue's Madonna" (65) which hangs opposite the "Daphnephoria," and was painted forty-one years ago, furnishes an indication of the progress which has been made in the art of painting in this country since the fifties. Even as the work of a young painter of the age of five-and-twenty, it would hardly in the present day produce a sensation, as probably its author would have readily admitted. It would rank as a very good picture for a young painter who had not yet emerged from the effects of scholastic training. It is methodical and mannered, and has no touch of dramatic reality about it. We have learned since to think more of realising a scene in history, less of merely making a composition of it; and the "Cimabue" is mainly a careful composition, rather stiffly put together in a conventional manner, with a good deal of attention to costume. As its author's first important work it will always retain its interest, but the point of view has altered since it was painted. The contrast between this stiff conventional composition and the "Daphnephoria" opposite is one of the most striking points in the exhibition; the perfectly free and apparently improvised manner in which the procession in the latter picture seems to move along, as if we had

just seen it come from round the group of trees, is a triumph of the *ars celare artem*. Among Leighton's larger works this is unquestionably the finest and most successful, both in colour, movement and composition, and in the beauty of the individual figures. Whether the conventional and stage character of the trees which form the background is the result of an intention on the part of the artist to give them a certain decorative flatness and artificial character, so as to prevent their interfering with the effect of the figures, or whether it is only another instance of his apparent want of power to paint landscape with freshness and reality, it may be difficult to decide; but even if the conventionalism were unintentional, it perhaps hardly detracts from the effect of the picture; the trees form a sombre background to the glittering procession, and beyond that office they do not claim much attention. It is curious, however, that an artist who showed such close and patient realism in his pencil studies of trees and plants, should never have succeeded in getting a real-looking tree into a finished picture; the landscape, whether as a whole or in detail, is always, where introduced at all, the weakest part of his work.

The most complete perfection of Leighton's work is perhaps to be found in some of the smaller figure subjects which represent a single moment of beauty of action, pose, and colour, treated with absolute unity of aim and style. Two such works are to be seen in Gallery I, equally perfect though very different in style and colour. One of these is the "Antique Juggling Girl" (15), painted in 1874, an example of decorative design and colour, the value of which no fashions in art can change. As some of our readers may remember, it is a small picture representing a nude girl, whose figure is perfectly drawn and painted, in front of a wide vertical strip of curtain the lines of which are of great value in the composition, tossing four balls, two with each hand, her upturned forehead face so completely drawn and made out, in this most difficult position, that the features would be recognisable if one knew the personage before. The other work referred to, "Weaving the Wreath" (6), is even simpler in scheme and still finer in colour; a dark-skinned girl with black hair seated and almost wholly wrapped in a dark purple robe, weaving a wreath of leaves, with a marble bas-relief as a back-

ground. The subject is nothing; it is simply a momentary incident of beauty of colour and composition perfectly rendered—a faultless work of abstract art. The two were painted within a year of each other; and to the same period belongs what is perhaps a still finer work of the same class, "Summer Moon" (84), now hanging in, if we remember right, the very same position in the large room in which it was first seen just a quarter of a century ago. This work, popularly known by engravings, may be called superior to the other two not in execution but in the fact that to beauty and unity of composition it adds poetic sentiment. The texture and manner of painting in this picture is very different to Leighton's usual style of execution—much fuller and less flat in texture, perhaps with the intention of conveying better the softened effect of coloured draperies only half seen in the moonlight.

Among the well-known works which will be found here are the "Cymon and Iphigenia" (20) which is not hung to the best advantage in Gallery 1.—the scale of the picture demands more space; "Perseus and Andromeda" (32) which we hold to be a greater success in conception and composition than in colour; "The Music Lesson" (47); "Captive Andromache" (57); and "Flaming June" (75) which, in spite of the somewhat contorted attitude of the figure, is one of the most powerful and successful of the artist's single-figure pictures.

The Water-colour Room is occupied by a number of sketches and studies, which give remarkable evidence of the care which Lord Leighton bestowed on the study and preparation of his pictures. Not only are there numerous small studies in crayon for individual figures in various pictures, but bronze models in the round for various figures and groups in the "Daphnephoria," for the two figures in "Cymon and Iphigenia," and for the whole composition of the "Hesperides" and the "Perseus and Andromeda." Sketches in the flat for pictorial compositions and for separate figures in them are of course made by all painters who take their work seriously, but the actual modelling of figures which are to be painted in the flat points to a thoroughness of study which is not common in these days, though it was largely employed by Michelangelo. Among the sketches are two or three of small Italian towns nestled among hills, probably made with a view to their use as incidents in the backgrounds of pictures, and the one bit of original design of an architectural nature which we noticed is a sheet of three designs for Mrs. Brownning's tomb.

The contrast on coming to the New Gallery and to Mr. Watts's paintings is striking in many ways. Mr. Watts is a great colourist, which Leighton was not pre-eminently, though he produced very fine colour occasionally. Leighton's treatment of the nude figure is generally conventional, in most cases somewhat hard. His figures do not resemble real life because they lack the appearance of softness and warmth; Mr. Watts's aim, on the other hand, seems to be to spiritualise away the flesh into a mere visionary semblance of a figure, with more colour and warmth and less precision of line and anatomy than the reality. In his beautiful "Olympus on Ida" (68), in reality a representation of the Judgment of Paris, we see not so much three

goddesses as three visions of goddesses, in the golden haze of a dream. So are "Uldra," the Scandinavian spirit of the rainbow (27) and "Psyche" (88); ghosts of figures rather than realities; though in these two cases the nature of the subject affords an excuse or suggestion for such a treatment. This kind of treatment belongs more especially to the painter's later and more mature period. In the large picture painted in 1848 under the title of "Life's Illusions" (64) we could fancy that the painter had been studying Hilton, so much is there in the composition and the design of some of the figures which recalls some classical composition of Hilton's such as "The Abduction of Helen;" and even in the "Fata Morgana" (84), seventeen years later, there is the same kind of classic elegance in the limbs of the principal figure, though the subject is a moral allegory. The later "Fata Morgana" (109), painted in 1889, it is interesting to compare with the other one; it is unquestionably a finer composition and conception, with less prettiness about it, but it is not equal to the earlier one in colour.

Among the latest class of allegorical paintings we meet with things which must "give us pause," paintings in which moral allegory has quite over-ridden art, and in which the picture requires the explanatory comment before we can find any interest in it. Such are "Faith" (123), "The Dweller in the Innermost" (131), "The All-pervading" (129). These are not so much pictures as puzzles, and we fear it is their fate to be so regarded. There are certain works in which the pictorial grandeur is so evenly balanced with the moral meaning—a moral easy and obvious to every one—that they may be regarded as successes from both points of view. Such a picture is "Love and Death," of which one of the editions, not quite the best, is here; "Love and Life," which is neither quite so obvious nor quite so fine, but which justifies itself; such is "Hope," a poetic vision beautiful both in the poetic and pictorial sense. Such also are "Mammon" and "The Minotaur," for the power with which coarse and evil natures are depicted in these two works is in itself a fascination. "Sic Transit" is also a truly decorative allegorical painting which explains itself. The failure comes where the picture does not explain itself, and where its pictorial motive is not in itself striking. The climax of this mistake is reached in the picture of "Chaos" (148), an attempt to symbolise the evolution of social order out of chaos and confusion; a picture which is bewildering without the explanatory comment, and we fear verges on the absurd with it. The two paintings of Eve—"She shall be called Woman" and "Eve Repentant"—have a noble meaning, which is intelligible enough, but unhappily they are totally devoid of womanly beauty, almost even of natural verisimilitude, and how can such an Eve appeal to our sympathies? On the other hand, the strong draped figure with bowed head, illustrating the verse, "He went away sorrowful, for he had great possessions," is impressive in itself from its dramatic force of expression, and gains an added interest when read with the title, though it does not require that to impress us as a powerful work. The conclusion forced upon one from a comparison of the various moral works is that there is a line in moral and allegorical painting which cannot be

safely overpassed. A picture must be a picture in the first instance, to be admired for its pictorial quality; as soon as we come to the point where the moral meaning is the principal point and the pictorial interest secondary, we have got out of the proper region of painting, and might as well have a printed sermon at once.

In one picture in the collection, and which was recently seen at the Royal Academy, the painter has indeed shown us that he can still paint for pure beauty. The "Childhood of Jupiter" is a work so remarkable for beauty of composition and colour, such a pure pictorial poem, without the shadow of a moral about it, that when it was exhibited at the Academy there was an impression among many people that it was a work of the artist's earlier period, then exhibited for the first time. It appears, however, from the New Gallery catalogue, that it was painted only last year, and thus gives us assurance that Mr. Watts can still paint a purely beautiful picture when he can shake himself free from his desire to turn pictures into sermons. Let us hope that there are more such works still to be looked for from his hand.

COLOMBO.



THE first view of Colombo from the deck of a mail steamer coming up from the South is pleasing in the extreme. A few large and imposing buildings, a broad expanse of bright green turf, boldly grouped masses of foliage, and enough palms to show that one is right in the tropics. When the fine and massive breakwater of concrete blocks is turned, the ship swings round into the harbour, and another aspect of the town is opened up. A few large buildings surrounding the Clock Tower, some spacious, wide-roofed warehouses away to the left, and the confused but by no means prominent mass of the low-pitched roofs of the native town, make up this picture.

But no, it is not quite complete; for if the day be fine, there is a background of rolling ranges and distant grey-blue peaks, that adds the final touch, and makes Colombo, from the sea, one of those rare scenes that live in the memory when much else is forgotten. When one lands, however, the spell is broken, for the palatial buildings, so prominent in the view from the sea, which should at least be of stone, if not of marble, resolve themselves into stucco showing evident signs of decay and disrepair.

The general design of the older buildings is, however, effective and admirably adapted to the climate. Mostly of one story, they are surrounded by a spacious verandah, with widely-spaced columns of classic detail, carrying a solid-looking roof of reddish-brown tiles, similar to those in common use in Italy. The covering tiles are, however, doubled, to guard against the sheets of rain that fall in the wet season penetrating the laps. Most of the old buildings were erected during the Dutch occupation of the island of Ceylon, and though the detail is poor, the general effect is satisfactory.

It is a pity that as much cannot be said of those put up under the English rule. Buildings of two or even three stories are common, but the detail is quite as poor, and, in addition, is hard and mechanical. The extensive barracks facing the sea are a

striking instance. The new Post and Telegraph Office, only finished about four years since, is, however, somewhat better. It is a building of three stories, the lower forming a rusticated basement. There are no verandahs, but a large open hall, entered from the street by a wide flight of steps; and three archways serve as a gathering place where the public business of the department is transacted. The other principal external features are projecting piers, which in the upper story change into coupled columns. The attempt is ambitious, but the effect is not so impressive as it might be, owing to the most objectionable salmon-coloured wash which covers the cement. A coat of plain lime-white would be infinitely preferable.

Near the landing-stage some new offices are being erected for the Peninsular and Oriental Steam Navigation Company, and here the sloppy character of native bricks and brickwork may be studied, if not with advantage, at least as a warning. It is, however, as good as can be obtained, and one wonders whether the natives have lost the art of doing good work, or have never attained to it. The former appears to be the case, if the written descriptions of some of the old cities and temples of a bygone civilisation are to be trusted. Another and larger work is the rebuilding of a large hotel, a favourite resort about a mile away from the town, enjoying the fresh breezes and facing the rolling surge of the Indian Ocean. There, if anywhere, one would expect that the old and satisfactory system of external verandahs or loggias would be retained. But, alas, the huge pile shows no sign of one at present, and from the visitor's point of view, the battered and dirty-looking relic of the old building is preferable. This is to be pulled down, and then surely some provision will be made to secure the shade so urgently required.

Of course, every one goes to see a Buddhist temple, of which there are several, but they scarcely repay a visit. One has a dagoba of brick of the type made familiar to us by Fergusson and other writers. It has but few decorative features, and they are in cement. That on the road to Mount Lavinia is perhaps the most interesting, and possesses (or did possess) a few well designed metal finials. The buildings consist of two or three groups, and there are several loggias in which a few yellow-robed priests are sure to be seen praying, reciting, or lounging, or else a class of scholars under instruction. The effect is thoroughly Oriental and pictorially satisfactory.

The great attraction to the visitor is, of course, the varied teeming life of the markets and the native quarter, where brilliant colour studies and figure subjects meet one at every turn. But this is rather the province of the painter than the architect, and although devoted to the latter art, one is seized with a wild desire to change places for a time with our brothers of the brush and, inspired by the wealth of Oriental life all around, to attempt that which even to the accomplished painter would be a difficult task. So it is as well that mail steamers wait for no man, and one is compelled perforce to bid this attractive bit of the glowing East "au revoir," if not "good-bye."

BUILDING TRADE, BLACKPOOL.—The Building Plans Committee, Blackpool, at their monthly meeting on the 20th ult. considered ninety-two plans. Of these seventy-two were accepted, and twenty disapproved.

NOTES.

Peterborough Cathedral. The most important feature in the Peterborough correspondence since last week has been the protest of Mr. T. G. Jackson, who, in stating his reasons for refusing to sign what he calls the "irrational petition" which the opponents of the Dean and Chapter are sending round, calls attention to what we have already commented on, that "the appeal, we are told, is being largely signed by persons eminent in literature and various walks in life—persons who have not examined the building themselves, and who, if they did examine it, have not the knowledge of construction and masonry requisite to make their opinion of the slightest value." In reply to a letter by Mr. Micklethwaite in the *Times*, who insinuates that Mr. Jackson's expressed regret that there should be any necessity for rebuilding any part of the front of Peterborough is "conventional," Mr. Jackson pertinently remarks that Mr. Micklethwaite and his companions "allow no one to love an old building but themselves." The letter signed "J. R. C.," another new importation into the controversy, though well meant, unfortunately goes too far. He instances the Portland Vase, which has not suffered in appearance from its breakage and putting together again; but a vase is not a building, and the cases are hardly parallel. Generally speaking, the effect of this controversy, with all calm-minded people who know anything of the subject, will probably be to weaken the influence of the archeological party in these questions; they have overdone the matter even from their own point of view, and have shown such irrational temper and such a disregard for accuracy of statement as must diminish their chance of being listened to on any future occasion. As to some of the newspapers which have been so violent on the subject, their object has palpably been to raise what they thought would be a popular cry, for journalistic purposes.

St. Séverin, Paris. The church of St. Séverin, well known as one of the finest examples of late Gothic in Paris, is reported to be in so serious a state of decay that repairs will be required on a scale which the parish has not the means to provide for. It is hoped that the Municipal Council, which is occupied with the question, will supply the funds necessary for its repair, and also for clearing away some of the mean old buildings which cling round it. That is the Parisian view; as to the latter point it may be a question whether it is well to meddle with these hanging-on buildings, which are in many cases a highly picturesque adjunct to French churches and cathedrals, and the removal of which will furnish only too much temptation for restoration in the objectionable sense of the word. In these matters the French are in the opposite case from ourselves; public money can be found for repairs to important buildings where it would never be forthcoming in England; on the other hand, the authorities who supply the funds are apt to want to have too much done for their money.

Pembroke Earthquakes. At a meeting of the Geological Society held on Wednesday last, a paper by Dr. Charles Davison was read "On the Pembroke Earth-

quakes of August, 1892, and November, 1893." He showed that during the former month no fewer than eleven shocks occurred; the principal one being the third; in the latter month there were four undoubted earthquakes, of which the chief was the first one. The author sought to show the connexion between these seismic disturbances and faults or dislocations of the strata in part of South Wales. For more than fifty years prior to the earthquakes of 1892-93 there were no slips of importance along the fault system in Pembrokeshire. Then the earlier movements took place along the north and south faults, and the later along the east and west. The three faults of the latter series which the author connects with the disturbances lie successively one to the north of the other, and there can be little doubt that the fault slips of 1892 affected the conditions of stress along the neighbouring north and south fault. The detailed particulars concerning earthquakes collected by Dr. Davison cannot fail to be of great practical use, though their chief interest, so far as England is concerned, is of a purely philosophical character. The evidence he is accumulating here, however, is in reality available also for "earthquake countries," for should he ultimately prove that seismic disturbances are always connected with faults, and that the position of the latter, either as caused in the first place or as a limiting influence subsequently, determines the distribution of the chief effects of the disturbance, then it will not be difficult to indicate, with certainty, localities which must enjoy comparative immunity from shocks, even in an "earthquake country." We thoroughly agree with Dr. Davison that the study of such earthquakes as take place in England is extremely valuable as supplementing geological surveys.

Iron Curtains in Theatres. The fatal accident at Liverpool in one of the Variety theatres, owing to a mishap with the iron curtain, again calls our attention to the great negligence in English theatres in respect to the division of the auditorium from the stage in the case of fire. In the first place, we believe there is no power to enforce any such division in old buildings, unless they are undergoing material alteration; and in new buildings the actual construction of such curtains is practically all the authorities can order. There is no definite policy, either in London or in the provinces, as to which form of "fire-resisting" curtain can be considered efficient, and which type of screen or mechanism should be used. When such a curtain has once been installed, there are no further regulations to compel its constant use, either at the end of a performance or between the acts; nor do the authorities compel the owner or manager to provide a competent attendant, whose sole duty it should be to work the proscenium curtain. The result is that comparatively few old theatres have the necessary curtains, and that the types here, as well as in the new buildings, where they can be enforced, vary considerably, their efficiency often being exceedingly doubtful should need ever arise for their use. We have found, in fact, that a great many of the curtains will not work at all, owing to the want of regular use and attendance. As it is everywhere recognised

that the divisional curtain is one of the prime factors of protection from fire in places of public entertainment, we hold that the subject of their proper regulation calls for special attention and, if necessary, special legislation. Such fatalities as the one at Liverpool should not occur.

Municipal Tramways.

TRAMWAY legislation will be well represented during the coming Parliamentary Session. Some twenty or thirty towns are going to Parliament for authority either to extend their systems or to work the lines. If many of these schemes be carried through the tramway mileage of this country will be doubled within the next few years. The important question that has to be considered at the present time is not so much whether municipalities or private companies should own the lines, as what system of traction is to be adopted. It is generally admitted that in the future mechanical traction will be used in preference to horse traction for tramways. Municipalities would be wise not to adopt any system of overhead trolley wires hurriedly. There are a large number of new methods being tried which avoid the drawbacks of the overhead trolley, so that it is probable that those municipalities who pride themselves on being the pioneers of electric traction in England will, as in the case of electric lighting, have reason to regret their haste. It is instructive to note that in America, where there are over twelve thousand miles of road equipped with overhead wires, the greatest activity is being manifested by electrical engineers in inventing systems of electric traction which will obviate the necessity of the dangerous and disfiguring trolley wire.

THE new Opéra Comique at Paris is now complete as far as the building is concerned, and the sketches and models for the interior decoration have been submitted to a special committee presided over by M. Roujon, Director of the Fine Arts Department. The decoration of the cupola of the building is to be entrusted to M. Benjamin-Constant; that of the grand staircase to M. Olivier Merson and M. François Flameng. The sketches for the work seem to promise an interesting scheme of decoration pervaded by a general unity of style and design. The foyer, the vestibule, and the two salons situated at each extremity of the façade, will be decorated by artists who will be selected by the committee during the course of the present month.

Scaford.

MANY persons regret the necessary extinction of the small coast village or town on the south of England, and the growth in its place of the more fashionable watering-place. Such a change may now be witnessed in progress at Scaford, a village near Newhaven, comfortably sheltered by the sloping downs. But it is to be regretted that this transformation does not take place there systematically. Eastbourne has benefited very greatly from the systematic manner, in which—thanks to the town having been built wholly on two large estates—it has been enlarged. At Scaford, on the other hand, the primitive character of the place is already lost, whilst on the other hand it has none of the

merits of the well-built watering-place. An unfinished esplanade is ugly and dangerous, picturesque bungalows can only be approached up a muddy lane, which would, perhaps, not be out of place in a Midland hunting shire. A large and capacious pit marks the site of some future terraces, whilst an existing block of houses ends in a moat-like ditch. Towards Newhaven houses appear to rise up here and there, turning their faces and their backs to each other, as the fancy of the owners dictates. As regards aspect and access to the Downs, Scaford is superior to Eastbourne, and the Urban District Council should endeavour to guide its development with taste and knowledge, otherwise it may be spoilt with growth. For after all, a good site and an ancient town go but a little way towards a pleasant, modern dwelling-place, which may be created on any bit of coast, if the persons interested in the locality set to work in a systematic manner, as, for example, at Bexhill.

A BILL has been deposited by the promoters of the City and West-end Railway for an underground line, 64 miles long, to be worked by electricity, between Cannon-street (Budge-row) and Hammersmith. Two of the scheduled sites include Thanet-place, Strand, and St. Mildred's Church, Bread-street, with some adjacent property. As regards the latter, we may quote a passage from Mr. G. H. Birch's work, recently reviewed in our columns (see the *Builder*, June 6 last) :—

"If any one wishes to see a perfectly untouched City church just as Wren left it, let him wend his way to St. Mildred's, which is innocent alike of medieval adornments or nineteenth-century arrangements."

The church contains some excellent iron and brass work, wood-carving, and plaster work in flowers and foliage, well worthy the attention of lovers of seventeenth-century craftsmanship. There is a memorial to members of the Crisp family, parishioners, one of whom, Sir Nicholas (King Charles I.'s devoted friend), is said to have introduced into England a new method of brick-making. The register records the marriage, on December 30, 1816, by licence, of Percy Bysshe Shelley and Mary Wollstonecraft Godwin; and on October 3, 1791, by banns, that of "Henry Cecil, of the Parishes of St. Mildred's, Bread-street, Batchelor, and Sarah Hoggins, of the same Parishes, Spinster." One does not at first recognise, in this entry, the actual substance of a favourite legend. "He is but a landscape-painter, and a village maiden she," sang the late Laureate; yet there seems to be no doubt that the entry relates to the second (but first legal) marriage to his second wife, of the nephew and heir of the ninth Earl of Exeter, who, on his first wife's elopement, retired to Bolas, co. Salop, where, as "John Jones," he went through the marriage ceremony, on April 13, 1790, with Sarah Hoggins of that place. In July, 1791, he obtained an Act dissolving his marriage with Emma Vernon; and succeeded his uncle in December, 1793, having meanwhile returned to Bolas as "John Jones," with his wife Sarah. The entry in St. Mildred's register is witnessed by E. Foulkes, who was the family solicitor, we believe. Thanet-place, just without Temple Bar, is a *cul-de-sac* of old-fashioned houses, which is named after the Tuftons, Earls of Thanet. At the entrance stood the "Rose"

tavern, at one time famous for its vine and the painted room mentioned by Walpole, of which the history has been traced to more than 200 years ago.

Landscape Exhibition, Dudley Gallery.

THE Dudley Gallery is the scene of a very interesting little exhibition of the works of a few landscape-painters of special style and aims, including Mr. Hope McLachlan, Mr. R. W. Allan, Mr. James S. Hill, Mr. Peppercorn, and Mr. Leslie Thomson; and also Mr. Waterlow, whom we mention separately because his is a *talent vague*, and leans not to experiments and eccentricities, and if there is less power in his works than in some of the others in the room, there is a finish of execution and balance of style about them which is not to be found in other works in the room. Nevertheless, some of Mr. McLachlan's paintings of special effects of light and weather are very fine and effective, as "Night on the Loch," "Moonrise," (in which there is a real look of moonlight), and "Storm at Sundown," a fine effect of a fiery windy sky. Mr. Allan's "The Golden Hour" is a little too obviously inspired by Corot, but there is much beauty in it, and it is interesting to see how a painter generally noteworthy for the keen freshness and light in his open-air subjects can touch a quite different key at will. Mr. Hill's "Meadows at Sandwich" is what would be a fine picture spoiled by a too dirty and material sky; "Across the Sand Dunes" we like better. Mr. Waterlow's "Golden Autumn" received a gold medal at Berlin last year; it is a little too delicate and demi-tinted, but a beautiful work nevertheless, perhaps surpassed in real artistic feeling by one or two of the smaller ones, "A Little Farm, Tintagel," especially. Mr. Peppercorn splashes too violently in "The Solent" and "The Pool," but his "Twilight" with its "sallow-rifted glooms" is really fine, as also one or two others of the group. Of Mr. Leslie Thomson's "Wareham" is the best; there is a certain power in one or two of the others, but "Sunset, Poole Harbour" will never do—or rather, it is quite overdone.

Mr. Walter Emden.

WE have had a communication on the part of Mr. Emden, to the effect that we have done him injustice in the "Note" in our issue of December 26, under the heading "Mr. Emden and the London County Council Contracts." We are assured that Mr. Emden did not take the prominent part that is supposed in recommending the artificial stone made by the company of which he was a Director; that he neither received nor expected any commission in the matter; and that his reported observation on resigning his position in the Metallic Stone Company, that he could be of more use to them when free, was merely a general remark implying nothing more than appeared on the face of it. We are glad to be given to understand that this is so; merely observing that Mr. Emden's own action in the matter was so ill-judged that he was himself to blame if unfavourable deductions were drawn from it; and this, we believe, his own friends will admit.

SYNAGOGUE, MAIDA HILL.—In reference to this building, illustrated in our issue of December 26 last year, Messrs. Ewart & Co. ask us to mention that they performed the work of covering the dome with sheet copper.

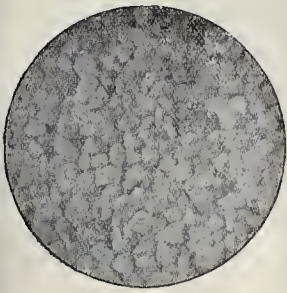


Fig. 1.—Kentish Ragstone.

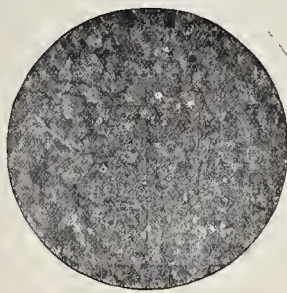


Fig. 2.—Cement Clinker.

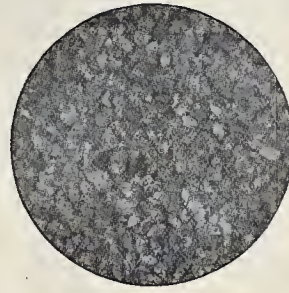


Fig. 3.—Cement G as received.

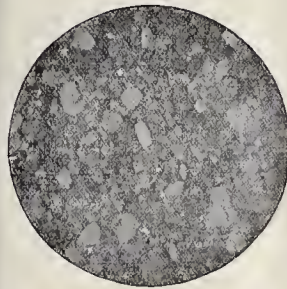


Fig. 4.—Cement G: + 20 per cent. Ragstone.

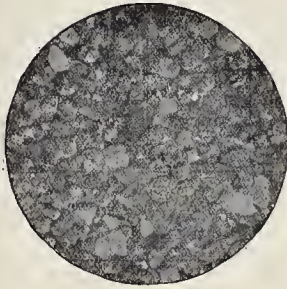


Fig. 5.—Cement containing Rag.

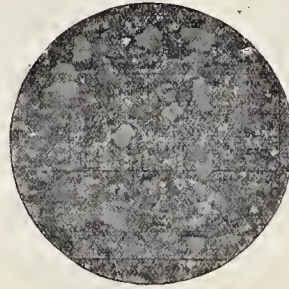


Fig. 6.—Cement containing Slag.

THE EFFECT OF ADMIXTURES OF KENTISH RAGSTONE, &c., UPON PORTLAND CEMENT.

THE following is the paper on this important practical subject which was read before the Society of Engineers on November 2 by Mr. D. B. Butler, the present representative of Messrs. Henry Fajja & Co. The publication of this valuable paper has been deferred hitherto for want of space to give it entire:—

“At the conclusion of a paper which the author had the honour of reading before the Society last year, the question of cement admixtures was briefly touched upon, and the author intimated that he preferred to reserve his opinion as to the effect of such admixtures until the completion of a series of experiments on the subject which he then had in hand. These experiments now being completed, he has great pleasure in placing the results before the Society, together with the conclusions he has deduced therefrom.

It will be remembered that during the controversy on this matter that was carried on in the technical journals some two years ago, one firm of Portland cement manufacturers in the London district strenuously upheld the admixture of Kentish rag with cement, and maintained that a judicious admixture of that material was not only not an adulterant, but actually improved the cement. Kentish rag is the local name for a sandy limestone of the Lower Greensand formation, which is extensively quarried near Maidstone and elsewhere for building and road-making purposes. It is a more or less impure carbonate of lime, the impurities consisting of sandy argillaceous matter, which vary according to the strata in which the stone is found. The particular ragstone used for these experiments was obtained from a firm of quarry owners near Maidstone in the ordinary course of business, and its chemical analysis was found to be as follows:—

Water	...	100
Insoluble Siliceous Matter	...	7.28
Soluble Silica	...	2.75
Alumina	...	3.79
Oxide of Iron	...	3.34
Carbonate of Lime	...	80.69
“ “ Magnesia	...	56

For the purposes of these experiments, the stone was carefully picked to avoid as far as possible the sandy matter forming its outer surface,

and was ground to the following degree of fineness:—

Residue on a 180 sieve	...	37.0 per cent.
“ “ 120 “	...	25.0 “
“ “ 76 “	...	9.8 “
“ “ 50 “	...	0.3 “

The first series of experiments undertaken was to add this ground ragstone to an ordinary Portland cement in quantities ranging from 2 to 50 per cent., and to ascertain the effect of the admixture by means of the usual tests for tensile strength, both neat and with three parts of standard sand, at dates ranging from seven days to twelve months. The results of these tests are given in Table I. To facilitate comparison, a column is added to each table giving the net gain or loss per cent. at the completion of each series of tests. Broadly speaking, the admixture does not seem to materially affect the strength of the cement when gauged neat, in some cases showing a slight gain, especially at the earlier dates, but when gauged with three parts of standard sand, the adulterated cement almost invariably gives a lower result than the pure cement.

A further experiment was tried with the same cement gauged with fresh water in the ordinary way and left in air, and also gauged with sea water and placed in sea water at the expiration of twenty-four hours. Fifteen per cent. of ragstone was added in each case, and the results are given in Table II. These results suggest that the prejudicial effect of the admixture is greatly intensified when the cement is left entirely in air, and also when exposed to sea water. As 15 per cent. seemed to be about the quantity of admixture used by the advocates of the ragstone, that proportion was tried with three other cements from different London manufacturers; the tests of two of them were carried to three months only, the third being extended to the end of the twelve months. The results are given in Table III., and confirm the previous experiments, viz., that when tested neat the strength is not materially affected by the admixture; in fact, in the case of cement C, it shows a distinct gain; but when tested as a mortar with three parts of standard sand, its strength is in every case seriously diminished, the diminution ranging from 6 to 14 per cent.

In the course of the discussion before mentioned, one correspondent maintained that the addition of ragstone was of no more value than

the admixture of so much fine sand, and the author therefore thought it would be interesting to ascertain what the exact effect of an admixture of fine sand would be. For that purpose, therefore, some standard Leighton Buzzard sand was pulverised to the following degree of fineness:—

Residue of a 220 sieve	...	28 per cent.
“ “ 76 “	...	7 “

Fifteen per cent. of this fine sand was mixed with cement A and the mixture tested as before, the results of which are given at the bottom of Table I. Taking the neat test first, it will be seen that the strength of the cement was sensibly diminished by the admixture at the end of a week, while at twenty-eight days, three months, and six months, it was equal, and even superior, to the pure cement; but at twelve months it dropped back to a loss of 8.7 per cent. The three to one sand briquettes, on the other hand, show a marked diminution of strength throughout, especially at the earlier dates.

The experiments hitherto described, formed the first series undertaken by the Author in carrying out his researches on this subject. The chief points which seemed to him worthy of further experiment were the comparative effect of ground sand and ragstone upon cement, and also the effect of the ragstone admixture when the cement was used with sea water and when left entirely in air. The following experiments were therefore instituted with the view of corroborating or otherwise the results obtained in the primary series.

Referring first to the effect of an admixture of finely ground sand compared with that of ragstone, experiments were instituted to ascertain the comparative effect of admixtures of 2, 10, 20, and 30 per cent. of each of these materials, and the results are given in Table IV. Based on the neat tests alone, cement containing as much as thirty per cent. of fine sand is slightly stronger at the end of twelve months than the pure cement; but taking the three to one sand briquettes as the basis of quality, the cementing power of the adulterated material is found to be diminished by the admixture as much as fifteen per cent. The results of these experiments tend to the conclusion that, so far as improvement goes, the admixture of finely ground sand has practically the same effect as an admixture of ragstone, viz., it certainly in some instances increases its strength when gauged neat, but when used as a mortar, with three to

TABLE I.

THE EFFECT OF THE ADMIXTURE OF VARIOUS PERCENTAGES OF KENTISH RAGSTONE UPON THE TENSILE STRENGTH OF PORTLAND CEMENT.

Cement No.	Nature and Proportion of Admixture.	Gauged with	Placed in	TENSILE STRENGTH IN LBS. PER SQUARE INCH.													
				Neat Cement.					Effect of the Admixture at end of 12 months.		Three parts Sand to one part Cement.					Effect of the Admixture at end of 12 months.	
				7 days.	28 days.	3 mths.	6 mths.	12 mths.	Loss %	Gain %	7 days.	28 days.	3 mths.	6 mths.	12 mths.	Loss %	Gain %
A	Pure Cement	Fresh Water		406	573	595	653	745	Loss %	Gain %	160	257	283	383	410	Loss %	Gain %
A	2 per cent. Kentish Ragstone	"	"	462	573	651	757	730	3.35	—	137	275	302	359	385	6.09	—
A	5 " "	"	"	432	595	573	663	742	6.42	—	117	252	274	332	355	10.9	—
A	10 " "	"	"	425	522	577	692	700	6.04	—	108	248	289	350	357	12.9	—
A	15 " "	"	"	403	497	592	677	752	—	0.94	93	242	268	340	393	4.0	—
A	20 " "	"	"	385	557	592	655	742	20.5	—	95	230	250	312	357	12.0	—
A	50 " "	"	"	190	350	449	513	592	—	—	43	197	167	282	333	18.8	—
A	15 per cent. Fine Sand	"	"	356	548	581	723	680	8.7	—	88	197	272	337	330	19.5	—

TABLE II.

THE EFFECT OF AN ADMIXTURE OF KENTISH RAGSTONE UPON PORTLAND CEMENT WHEN LEFT IN AIR AND WHEN PLACED IN SEA WATER.

Cement No.	Nature and Proportion of Admixture.	Gauged with	Placed in	TENSILE STRENGTH IN LBS. PER SQUARE INCH.													
				Neat Cement.					Effect of the Admixture at end of 12 months.		Three parts Sand to One part Cement.					Effect of the Admixture at end of 12 months.	
				7 days.	28 days.	3 mths.	6 mths.	12 mths.	Loss %	Gain %	7 days.	28 days.	3 mths.	6 mths.	12 mths.	Loss %	Gain %
A	Pure Cement	Fresh Water	Air.	410	747	691	817	855	Loss %	Gain %	145	227	223	300	351	Loss %	Gain %
A	15 p.c. Kentish Ragstone	"	"	417	710	726	672	747	12.6	—	118	85	212	183	180	48.7	—
A	Pure Cement	Sea Water	"	438	600	611	782	810	—	—	87	170	242	313	330	—	—
A	15 p.c. Kentish Ragstone	"	"	328	482	621	795	815	—	0.61	28	100	225	247	272	17.6	—

TABLE III.

THE EFFECT OF AN ADMIXTURE OF 15 PER CENT. OF KENTISH RAGSTONE UPON THE TENSILE STRENGTH OF THREE DIFFERENT PORTLAND CEMENTS.

Cement No.	Nature and Proportion of Admixture.	Gauged with	Placed in	TENSILE STRENGTH IN LBS. PER SQUARE INCH.													
				Neat Cement.					Effect of the Admixture at end of 12 months.		Three parts Sand to one part Cement.					Effect of the Admixture at end of 12 months.	
				7 days.	28 days.	3 mths.	6 mths.	12 mths.	Loss %	Gain %	7 days.	28 days.	3 mths.	6 mths.	12 mths.	Loss %	Gain %
B	Pure Cement	Fresh Water.		577	775	—	822	857	Loss %	Gain %	197	373	—	408	428	Loss %	Gain %
B	15 p.c. Kentish Ragstone	"	"	515	640	—	825	803	6.3	—	170	237	—	355	400	6.5	—
C	Pure Cement	"	"	—	—	526	—	—	at 3 mon this only.	—	—	353	—	—	at 3 mon this only.	—	—
C	15 p.c. Kentish Ragstone	"	"	—	—	696	—	—	12.6	—	—	304	—	—	12.9	—	—
D	Pure Cement	"	"	—	—	613	—	—	at 3 mon this only.	—	—	375	—	—	at 3 mon this only.	—	—
D	15 p.c. Kentish Ragstone	"	"	—	—	612	—	—	15	—	—	346	—	—	7.7	—	—

one of standard sand, it diminishes its value according to the amount of diluent used.

Coming next to the effect of admixtures of Kentish ragstone upon cement that is left with sea water and upon cement that is left in air, the author tried the comparative effect of such admixtures upon two samples, cement F being manufactured on the Thames near Gravesend and cement G from the lias formations of Warwickshire. Cement F was mixed with 15 per cent. of ragstone, and cement G with 10 and 20 per cent. respectively, and the effects of these admixtures are given in Tables V. and VI. It will be seen that the addition of 15 per cent. of ragstone to cement F weakens it throughout, both when tested neat and with three parts of sand, the weakening effect of the ragstone being specially marked when the cement is left entirely in air, and to an even greater degree when gauged with and placed in sea water.

With cement G (Table VI.) the addition of 10 and 20 per cent. of ragstone does not seem to materially affect its strength when gauged neat, but when gauged with three parts of standard sand, the loss of cementing power is represented by 1.2 per cent. and 8.9 per cent. respectively, at the end of six months. The briquettes left in air indicate the presence of the ragstone in a very marked degree, both neat and with three parts of standard sand, while those gauged and placed in sea water show a much greater diminution in strength than the ordinary fresh water briquettes, though not to such an extent as those left in air.

The author has not thought the effect of the ragstone admixture upon the minor properties of the cement, such as colour, time of setting, specific gravity, &c., of sufficient importance to warrant any special experiments. It is very evident that, as the ground ragstone is much lighter in colour than Portland cement, its addition would tend to lighten the colour of the mixed material according to the proportion used. The same remarks apply to its effect upon the setting properties of the cement, inasmuch as being by itself

an inert material, it merely retards the setting in the same way that an addition of sand or other aggregate would do. There is, however, one peculiarity which is worth noting, and that is, when gauged for testing purposes in a Fajia mechanical mixer, a cement containing the admixture has a tendency to ball together, or cohere in the machine more readily than pure cement, and this cohesive property may in some degree account for the improved results obtained in certain instances."

For the purposes of reference the chemical composition and fineness of the several cements used in the foregoing experiments are given in Tables VII. and VIII. It should be noted, however, that as the analyses were made some time after the inception of the experiments, the amount of carbonic anhydride and water found is largely due to absorption from the atmosphere.

Taking these experiments as a whole, they clearly show that, although in some instances a certain percentage of ragstone may improve the strength of the cement when gauged neat, it invariably produces an inferior result when tested with three parts of standard sand, especially when left in air or placed in sea water. In other words, although it sometimes increases the cohesive strength of the sample, it invariably diminishes its adhesive power or cementitious value, which is the most essential property of a cement. It is probable that if tested with a larger proportion of sand, say five to one, instead of three to one, the weakening effect of the ragstone would have been still more marked, inasmuch as the inert particles of the admixture would have been spread over a larger area, and their inertness as a cementing material brought more into prominence. The author's object, however, in these experiments was to compare the results of the pure and mixed cements by the standard methods of testing, and only those methods have been adopted throughout. As, therefore, in actual work, cement is never used neat, but always with a certain proportion of aggregate, these experiments show that

an admixture of ragstone is merely a diluent, and, as has been shown by the experiment given in Table IV., is practically of the same value as an admixture of finely-ground sand.

Why the admixture of a considerable percentage of inert material, such as Kentish ragstone or finely-ground sand, should in some instances improve the strength of a cement when gauged neat, is a matter which is not altogether easy to explain. In the course of some recent researches on the finer grinding of Portland cement, the author found that by re-grinding a cement having a residue of about 30 per cent. on a 180 sieve, so as to all pass through that sieve, its strength when gauged neat, although slightly higher than the original cement at the seven days, practically showed no increase at the twenty-eight days, three, and six months, while the original cement gradually increased at each date. On the other hand, the three to one sand briquettes of the fine cement showed a great deal higher strain at the seven days than the sand test of the original cement, and continued to increase at the longer dates till, at three and six months, they were considerably stronger than the neat briquettes. This suggests that the extremely fine particles of the cement—by themselves, unless they have some considerable body of hard inert substance to crystallise around, are not so strong as a cement containing coarser particles of clinker, which form, so to speak, a perfect aggregate and nucleus of crystallisation. It may be, therefore, that in some instances a certain percentage of hard inert material gives body or hardness to the neat briquette, and that the presence of small particles of inert material afford more nuclei of crystallisation, and thus enable the briquette to withstand a higher tensile strain. That an admixture of ten or twenty per cent. of inert material should cause the cement to develop a lower strain when tested with three parts of standard sand is only what might have been expected, for it is very evident that if two particles of sand or aggregate have between them a particle

TABLE IV.

THE COMPARATIVE EFFECT OF ADMIXTURES OF KENTISH RAGSTONE AND FINE SAND UPON THE TENSILE STRENGTH OF PORTLAND CEMENT.

Cement No.	Nature and Proportion of Admixture.	Gauged with	Placed in	TENSILE STRENGTH IN LBS. PER SQUARE INCH.											
				Neat Cement.				Effect of the Admixture at end of 12 months.		Three parts Sand to 1 part Cement.				Effect of the Admixture at end of 12 months.	
				7 days.	28 days.	6 mths.	12 mths.	Loss %	Gain %	7 days.	28 days.	6 mths.	12 mths.	Loss %	Gain %
F	Pure Cement	Fresh Water.	Fresh Water.	498	587	645	651	—	—	247	289	446	489	—	—
F	2 per cent. Kentish Ragstone	"	"	475	498	586	675	—	—	232	292	421	466	4.3	—
F	2 per cent. fine Sand	"	"	479	540	648	642	1.3	—	220	299	401	461	5.7	—
F	10 per cent. Kentish Ragstone	"	"	438	471	648	682	—	4.7	197	301	389	478	2.2	—
F	10 per cent. fine Sand	"	"	483	552	656	665	—	2.1	203	287	420	449	8.2	—
F	20 per cent. Kentish Ragstone	"	"	423	479	672	640	0.76	—	173	225	397	453	7.3	—
F	20 per cent. fine Sand	"	"	405	470	737	690	—	6.0	170	260	389	441	9.8	—
F	30 per cent. fine Sand	"	"	355	507	687	655	—	0.81	143	228	370	412	15.7	—

TABLE V.

THE EFFECT OF AN ADMIXTURE OF KENTISH RAGSTONE UPON PORTLAND CEMENT WHEN LEFT IN AIR, AND WHEN PLACED IN SEA WATER.

Cement No.	Nature and Proportion of Admixture.	Gauged with	Placed in	TENSILE STRENGTH IN LBS. PER SQUARE INCH.											
				Neat Cement.				Effect of the admixture at end of 6 months.		Three parts Sand to 1 part Cement.				Effect of the admixture at end of 6 months.	
				7 days.	28 days.	3 mths.	6 mths.	Loss %	Gain %	7 days.	28 days.	3 mths.	6 mths.	Loss %	Gain %
F	Pure Cement	Fresh Water.	Fresh Water.	323	544	628	697	—	—	135	218	318	378	—	—
F	15 p.c. Kentish Ragstone	"	"	393	451	579	676	3.0	—	136	198	297	357	5.5	—
F	Pure Cement	"	Air.	440	428	782	695	—	—	138	217	282	265	—	—
F	15 p.c. Kentish Ragstone	"	"	405	601	683	614	8.3	—	167	157	213	258	12.8	—
F	Pure Cement	"	Sea Water.	382	540	682	802	—	—	102	163	265	312	—	—
F	15 p.c. Kentish Ragstone	"	"	395	513	642	721	10.1	—	72	124	226	252	19.2	—

TABLE VI.

THE EFFECT OF ADMIXTURES OF KENTISH RAGSTONE UPON PORTLAND CEMENT WHEN LEFT IN AIR AND WHEN PLACED IN SEA WATER.

Cement No.	Nature and Proportion of Admixture.	Gauged with	Placed in	TENSILE STRENGTH IN LBS. PER SQUARE INCH.											
				Neat Cement.				Effect of the Admixture at end of 6 months.		Three parts Sand to 1 part Cement.				Effect of the Admixture at end of 6 months.	
				7 days.	28 days.	3 mths.	6 mths.	Loss %	Gain %	7 days.	28 days.	3 mths.	6 mths.	Loss %	Gain %
G	Pure Cement	Fresh Water.	Fresh Water.	497	579	612	692	—	—	183	248	358	402	—	—
G	10 p.c. Kentish Ragstone	"	"	540	614	683	681	1.6	—	188	253	355	397	1.2	—
G	20 p.c. Kentish Ragstone	"	"	507	674	707	702	—	1.4	145	219	307	366	8.9	—
G	Pure Cement	"	Air.	440	440	814	845	—	—	213	277	382	411	—	—
G	10 p.c. Kentish Ragstone	"	"	452	749	763	652	22.8	—	208	252	214	153	16.1	—
G	20 p.c. Kentish Ragstone	"	"	430	662	766	735	13.0	—	210	249	237	291	30.8	—
G	Pure Cement	Sea Water.	Sea Water.	—	604	773	832	—	—	—	239	297	321	—	—
G	10 p.c. Kentish Ragstone	"	"	—	625	737	787	5.4	—	—	232	285	398	7.1	—
G	20 p.c. Kentish Ragstone	"	"	—	667	779	830	2.4	—	—	176	200	273	14.9	—

of an inert substance, such as Kentish rag, instead of an active cementitious particle of cement, the weakening of the mass must result. The author is, therefore, of opinion that any admixture which by itself is inert, unless it is readily soluble in water, or reduced to an absolutely impalpable powder, so that it can be acted upon by every particle of the cement, must diminish the cementitious value of the cement, and therefore prove a source of weakness to the structure.

Having conclusively demonstrated that, so far as the cementitious value of the cement is concerned, these admixtures are simply diluents, or adulterants, the author next proposes to discuss some of the methods by which their presence may be most readily determined. The most certain method of detection is, of course, by chemical analysis; but a chemical examination of a fairly simple nature will determine the presence of Kentish rag. As already stated, Kentish rag is a more or less impure carbonate of lime, and, as such, effervesces freely upon the addition of hydrochloric acid. If, therefore, a sample effervesces to any considerable extent when treated with a weak solution of this acid, there is reason to suspect the presence of ragstone, and a further examination should be made to corroborate, or otherwise, these indications. In applying this test, however, it must not be forgotten that all well-matured cements effervesce more or less when treated with this acid, owing to their having absorbed a certain amount of carbonic acid from the atmosphere, and care must be taken that this slight effervescence is not confounded with that due to the presence of ragstone. If any appreciable quantity of ragstone is present, the effervescence is more prolonged, and the larger particles of the limestone float about in the liquid giving off gas. If the dilute acid is placed in a glass or other suitable dish and the cement dropped into it, a few grains at a time, from the

point of a pocket knife, a very little experience enables the operator to discriminate between the effervescence caused by the presence of ragstone and that which is merely due to a well-matured cement. Of course, if a complete chemical analysis is made of the sample, there are other indications in addition to the evolution of carbonic acid gas which enable the presence of ragstone to be finally and conclusively determined upon.

Another admixture which is more particularly used in the North of England is blast furnace slag, and, although the author has not experimented specifically with this substance, he is of opinion that, having of itself no cementitious value, its effect, when added to cement, is practically the same as that of ragstone. The presence of slag is also fairly easy to detect by chemical means, though to determine it with any certainty requires practically a complete analysis. A peculiar characteristic, however, of many cements containing slag is that, after immersion in water about a week, a briquette or pat freshly fractured has a peculiar dark-green appearance, which fades to the normal grey after exposure to the air for a few hours.

Taken in conjunction with a chemical and mechanical examination, the author has found the microscope an invaluable ally in determining the presence of foreign added materials in cements. For the purposes of a microscopic examination, he has found it most convenient to examine the coarser particles of the powder, viz., those particles which pass through a sieve having 70 holes per lineal inch, and are retained on a sieve having 120 holes. A piece of well-burned cement clinker, reduced to particles of this size, and examined under the microscope with a low power (say a one inch objective), has a dark, almost black appearance, somewhat resembling coke, and is of the well-known porous honeycombed nature characteristic of cement clinker. Kentish

rag on the other hand, reduced to particles of the same size, is almost white in appearance, and is considerably less opaque. Slag, similarly treated, is also considerably lighter in colour than the cement clinker, and, moreover, appears to split up into angular, almost flaky, fragments in grinding.

It will therefore be readily understood that, with the aid of a microscope, the presence of Kentish rag, and also of slag, is fairly easily determined if in any appreciable quantity. To illustrate the difference microscopically between these substances, the author has prepared a few micro-photographs of cements with and without such admixtures, shown in figs. 1 to 6 (see p. 33). The powder in each case was prepared as previously described, viz., by sifting through a 70 and retaining on a 120 sieve. Fig. 1 is a micro-photo of the Kentish rag used in these experiments, and fig. 2 of a piece of well-burned clinker from the Rugby district; the difference between them is so marked as to need no comment. Fig. 3 represents cement G (see Table VI.) as received from the manufacturer, and fig. 4 the same cement after 20 per cent. of ragstone had been added; the difference between them is very distinct, the particles of ragstone being readily recognisable from their almost white, semi-transparent appearance, in contra-distinction to the dark-coloured clinker. Fig. 5 is a micro-photo of a cement as received from a firm of manufacturers who use Kentish rag in their ordinary manufacture; the rounded, white, semi-transparent nature of the ragstone renders it easily distinguishable. Fig. 6 is a sample of cement received by the author for testing in the ordinary course, which was found to contain a large admixture of slag. The one great disadvantage of photography is that it does not reproduce the colour of the object. In this particular instance (fig. 6) the substance under the microscope has very much the appearance of



Fig. 1.

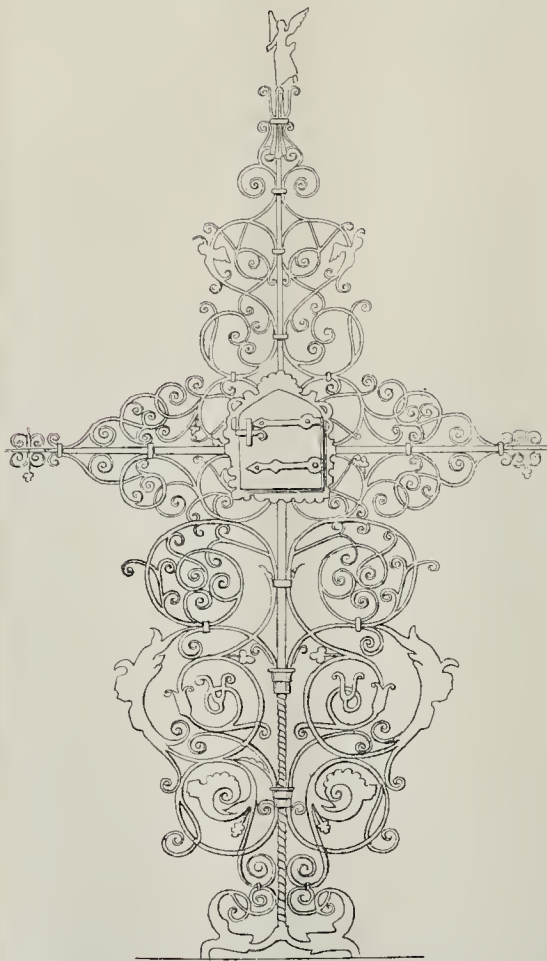


Fig. 2

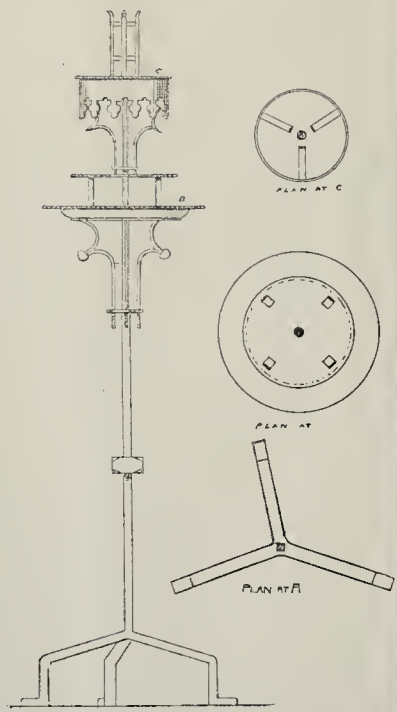


Fig. 4.

red sweets, to use a somewhat saccharine
nile, which effect is very inadequately repro-
ced in the photograph. It will be noticed also,
at in addition to the difference in colour,
other peculiarity of this substance is the sharp,
gular, almost jagged fracture of the fragments
slag, as distinguished from the more rounded
pearance of the cement clinker.

Fig 2, being a piece of picked clinker, rather
presents the microscopic appearance of an
eal cement than of the usually manufactured
ticle, inasmuch as it consists only of thoroughly
dined particles, and contains none of the more
less imperfectly burned portions which are
generally found in the ordinary cement of com-
merce. Fig. 3 conveys a better idea of the
appearance of an ordinary cement, the particles
which range from a brownish coloured semi-
transparent substance, somewhat resembling gum
rabie to the almost black-looking material shown
in Fig. 2. The microscope is of value, there-
fore, not only in detecting the presence of im-
urities, but also enables some opinion to be
formed of the amount of calcination to which the
ement has been subjected in the process of
manufacture.

In conclusion, the author would add that the
ements used in these experiments were in no
ay specially selected for that purpose, but were
ther purchased from the manufacturers' wharves
rough a builder, or had been sent to the author
or testing in the ordinary course. Altogether
he experiments comprise the results of some two
housand briquettes, in addition to analyses and
ther tests, and the author trusts they are suffi-
ciently exhaustive and conclusive to clear up a
exed question."

SOME EXAMPLES OF ANCIENT
IRON-WORK:
FROM THE MUSEUM OF SCIENCE AND ART,
DUBLIN.

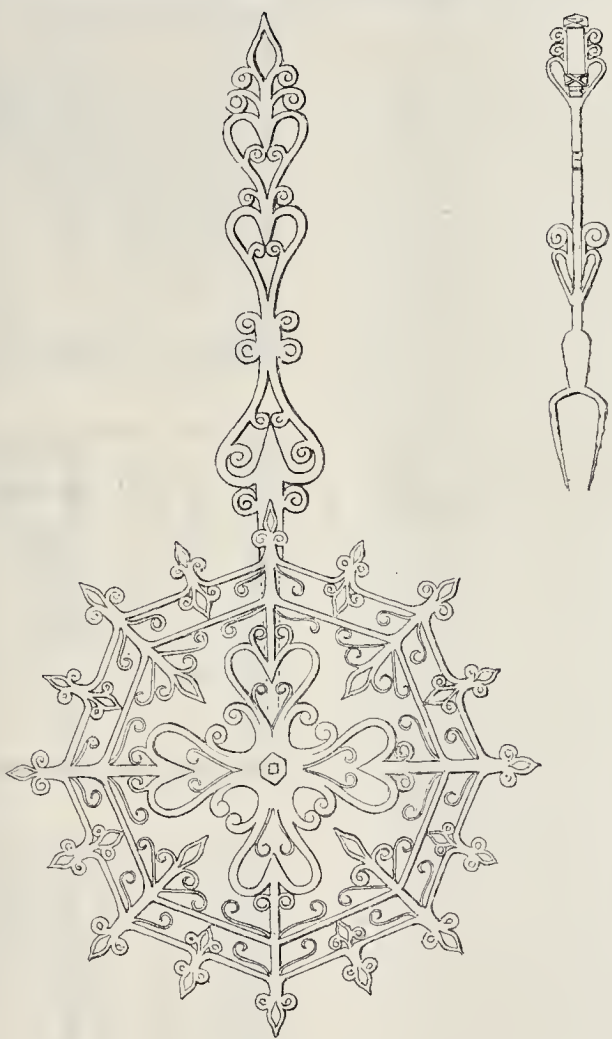
THE specimens of ancient ornamental iron-
work exhibited in the above Museum, although
not numerous, include, however, several works of
exceptional interest, both from an artistic and
archæological point of view. For instance, there
s to be seen a compartment of the railing from
Iampton Court Palace, the work of Huntington
shaw, the blacksmith, of Nottingbam, an exceed-
ngly fine work of the seventeenth century, but
which is probably too well-known to the readers
of the *Builder* to require any description;
and amongst other works hitherto unnoticed, but
well displaying the handwork of the worker in
iron, are the following of which illustrations are
given. No. 1 is a very elegant example of
artistic iron-work, described as a "Fanlight Grille
of iron wrought in scrolls and foliage. A mask
in the centre. German sixteenth century. Sent
by the Trustees of the Compton Downville Estate,
per Captain G. Leslie Poe." This is a very elab-
orate example consisting of scroll-work springing
from a central stem and extending its convolutions
to the right and left. The scrolls are moreover
enriched at every turn by graceful foliage. The
central stem has a mask at about
the middle of its height. The iron composing the
scroll-work is round in section and 1/2 in. diameter.

The size of this work is considerable, being
7 ft. 6 in in width. Although described as being
of the sixteenth century it is evidently much later,
and is probably of the same date as the next
example.

No. 2.—A grave cross, described as being of
Bavarian work of the seventeenth century. This
iron cross is of large size for a memorial of this
description, being 7 ft. 4 in. in height and
4 ft. 7 in. in width. The composition exhibits a
combination of beautiful curves starting from
either side of the central stem of the cross, and
twining in varied directions. A small receptacle
of rather rude design is placed in the centre
of the cross, and opens with a small door turning
upon hinges, probably as a place for an inscription,
or repository of some memento of the deceased. A
very appropriate design surmounts the cross,
being an angel holding a trumpet. This is cut
from sheet iron. The scroll work is formed of
round iron through which the various intersecting
pieces are inserted.

The exceeding richness of the whole design is
very remarkable, combining elegance with
strength and lightness.

No. 3.—Two very curious articles of domestic
use, labelled "A gridiron and fork of the Ancient
Corporation of the Good Fathers of Alost,
Belgium. Flemish c. 1500. From the Ménard
Collection, Ghent." From the appearance and
state of preservation of the "gridiron," it
appears somewhat doubtful as to whether



Length about 5 feet.
Height 3 1/2 inches.

Fig. 3.

it could have been used as a gridiron in the
manner in which it is employed at the present
day, but that it was employed for cooking or heat-
ing food over a fire the two claws underneath
evidently denote. As will be seen from the illus-
tration, it is composed entirely of open-work,
octagonal in form, and surrounded by fleurs-de-
lys, which project from its sides. The handle is
also formed of open scroll-work, and terminating
with a fleur-de-lys.

The fork corresponds in design with the grid-
iron. The total length of the gridiron is 2 ft. 10 in.,
that of the fork, 1 ft. 6 in.

The whole form a very interesting example of
the domestic work at the commencement of the
sixteenth century.

No. 4.—This large iron candlestick is described
as a "Candelabrum with revolving pan of brass,
and socket for a large candle. French, fifteenth
century. Portion of the Peyre collection." As
will be seen from the illustration, it stands upon
three feet, and the stem as high as the cusps sup-
porting the brass pan is of 1/2 square iron;
thence it becomes round and decreases in
diameter. The details accompanying the illus-
tration will, it is hoped, explain the construction

of the upper portion which revolves round
the central stem. With regard to the use
to which this large candlestick was ap-
plied, it is difficult, in the absence of any
information with regard to its original locale,
whether religious or civil, to form a con-
jecture. Should it have been the former, it
might be suggested that it was for holding the
Paschal candle; but its unecclasiastical form
seems to militate against the suggestion.
Altogether, it is a very curious and puzzling
piece of work, and of much interest. The height is
5 ft. 11 in., and the diameter of the lower bowl
or pan is 1 ft. 4 1/2 in. D. A. W.

BUILDING TRADE, LEIGH, LANCASHIRE.—
Despite interruptions through had weather the
building trade in the Leigh district has during the
past half-year been in a flourishing condition. The
Leigh, Atherton, and Tyldesley operative brick-
layers and their labourers have given notice of their
intention to apply for an increase in wages of one
halfpenny per hour. The bricklayers at present
receive ninepence, and their labourers sixpence.
The strike of the moulders at Bull's foundry still
continues.

Illustrations.

THE WESTERN CHOIR, BAMBERG CATHEDRAL.

THE Cathedral of Bamberg, on the Main, is one of the most valuable examples of twelfth and thirteenth century architecture to be found in Germany. It is finely situated on the top of a hill, completely overlooking the town, and, like many early German churches, it has an apse flanked by lofty towers at either end. Internally, the church has choirs at both ends, which are supported upon large crypts, all above ground. The whole of the eastern choir and its crypt are fine rich Romanesque work, and were erected after the year 1110, when the first cathedral was burnt down. This eastern choir is shown in the distance in my drawing. The nave of the church occupies three large quadripartite bays between the two choirs, and to an Englishman the arrangement of the interior is very puzzling, because not only is there a stalled choir at either end, but there are also two high altars and two subsidiary altars, with flights of stairs on either side leading to the choirs above. The western choir is the finest example of pure "first pointed" work I have met with in Germany. It is bisected by transepts in the same style. Its crypt is a singularly beautiful work. I am inclined to think that the western choir and high altar were formerly the more important of the two, because, in the first place, the choir itself is deeper than that at the western end. In the second place, it is bisected by the transept; and, in the third place, in the centre of it is the tomb of Pope Clement II., who died in 1028. It is evident that his monument must have been placed here after the rebuilding of the cathedral, and as he was raised to the Papacy from the episcopal See of Bamberg, it is extremely probable that this western choir was erected as a kind of memorial to him. The tomb has been much mutilated, but is still very curious. It consists of a sarcophagus, which is undoubtedly a genuine old classical work, and probably came from Rome; around it are the marble bases of eight slender columns, which probably carried a thirteenth century canopy, which no longer exists. The ends of the tomb are adorned with mermaids having double tails, which would seem to suggest that it was originally the sarcophagus of some Roman admiral. This tomb is shown in the immediate foreground of my drawing.

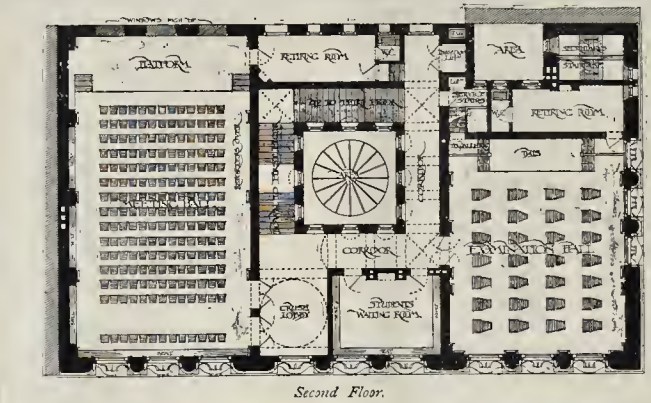
The stalls are remarkably fine, evidently dating from the close of the thirteenth century or the commencement of the fourteenth. Few examples of early wood carving are so rich and elegant in detail.

The stalls of the eastern choir are later in date, and somewhat resemble those of King's College Chapel, Aberdeen; the stone screens at the back of them are thirteenth century work, and on their outer sides are adorned with the noblest thirteenth century sculpture in Germany. The whole cathedral, in fact, is remarkable for its sculpture and carving.

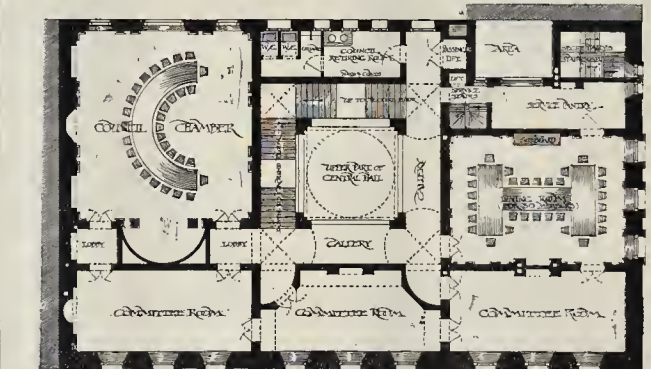
Attached to the pier between the nave and eastern choir on the north side is a grand equestrian statue, nearly life size, forming a monument of St. Stephen, King of Hungary, and dating from the thirteenth century. In the centre of the nave is the beautiful marble monument by Tilman Rhiemenschneider, erected in the year 1513 to the Emperor St. Henry II. and his wife St. Cunigunda. The effigies of the Emperor and Empress are remarkable for their grace and dignity, and the subjects filling in the Gothic panels round the tomb are remarkable for their delicacy. The whole is executed in white marble. Attached to the walls and piers are several upright effigies of bishops. Three of these are said to be the work of Peter Vischer. An altar in the south transept has over it a twelfth century crucifix of ivory, a most remarkable work; and opening out from the same transept is a long building divided into a nave and aisles, called "The Chapel of the Holy Nail."

The walls are completely covered by monumental bas-reliefs, cast in bronze, dating from the fifteenth to the seventeenth century, and the principal altar has a beautifully carved wooden reredos enclosing pictures by Wohlgemuth.

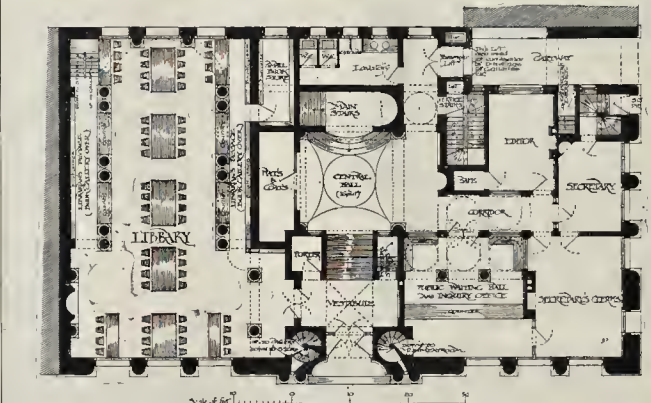
It is said that this cathedral contains one hundred and thirty ancient monuments, all of them interesting works of art. During the restoration of the church some fifty years ago, all the modern monuments were removed to the church of St. Michael, where they can still be seen. None of them, however, are of special value, and by their removal and that of the



Second Floor.



First Floor.



Ground Floor.

Design for an Institute of Architects. Plans.

whitewash, wall paintings of remarkable interest have been exposed; and I think that these were also monumental, as several of them are full-length figures of bishops.

The sacristy and treasury of this cathedral are full of objects of interest, some of the reliquaries and curiosities having been given to the Church by the Emperor St. Henry II. and St. Cunigunda; those, however, which date from the fifteenth century are finer as works of art, though not so curious.

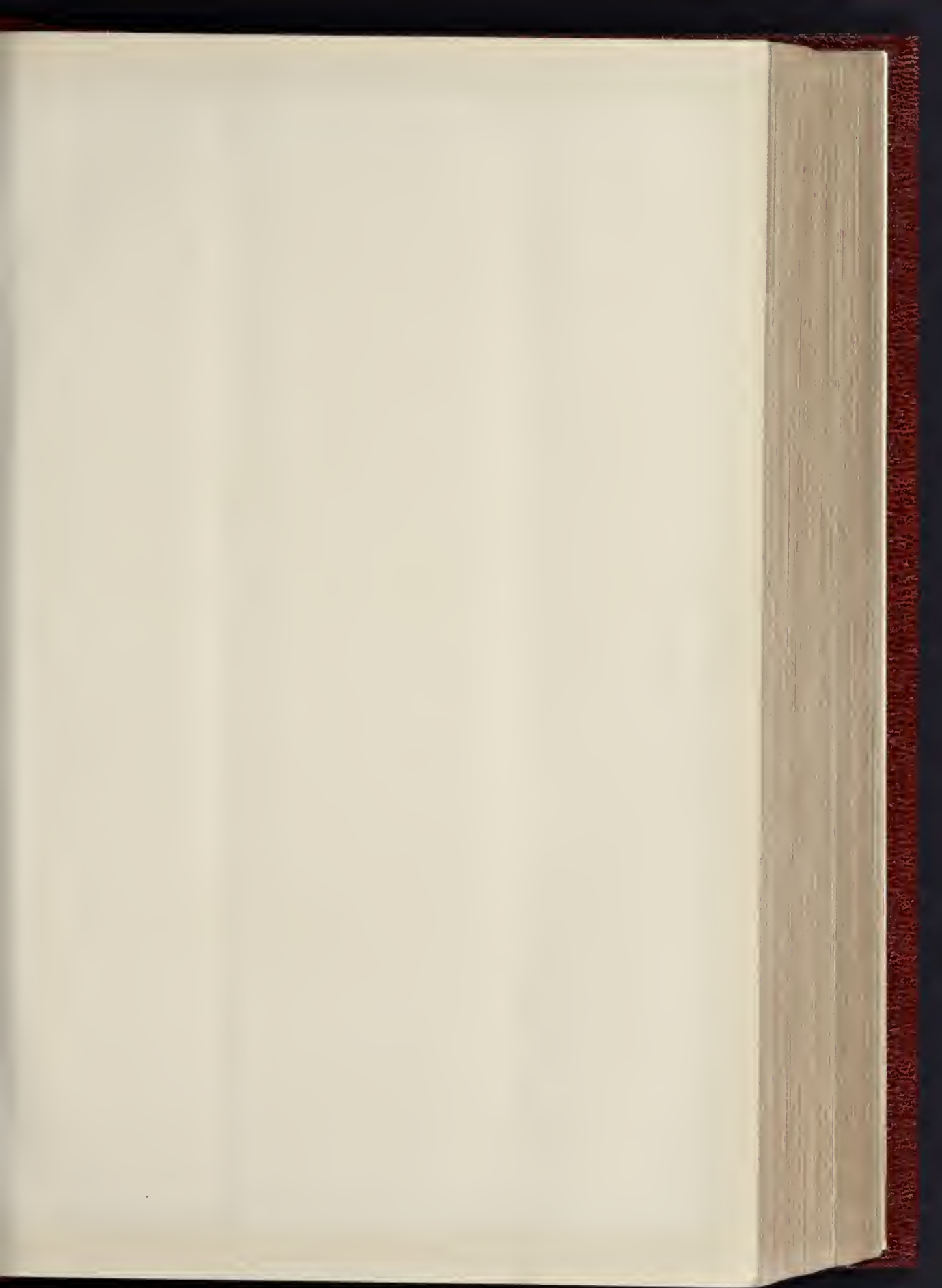
Bamberg is an interesting place full of curious old churches. The immediate district is one of the most fertile of all Europe, the scenery charming and rich in well-preserved old castles, some of which are still inhabited and contain remarkable examples of ancient furniture, tapestry,

plate, &c. In fact, few more pleasant localities are to be found in Europe than this Franconian Bavaria.

H. W. BREWER.

DESIGN FOR AN INSTITUTE OF ARCHITECTS.

This design was prepared in competition for the Soane Medallion, and was exhibited at the Royal Academy last year. The exterior was intended to be of Portland stone, with the exception of the ground story, which was to be of unpolished granite. The frieze of sculpture is illustrative of the arts and crafts allied to architecture, and the shields under the second-floor windows have medallions commemorating famous



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THE GROUND
Ground Plan.

SCALE OF FEET



Mezzanine Plan.



First Floor Plan



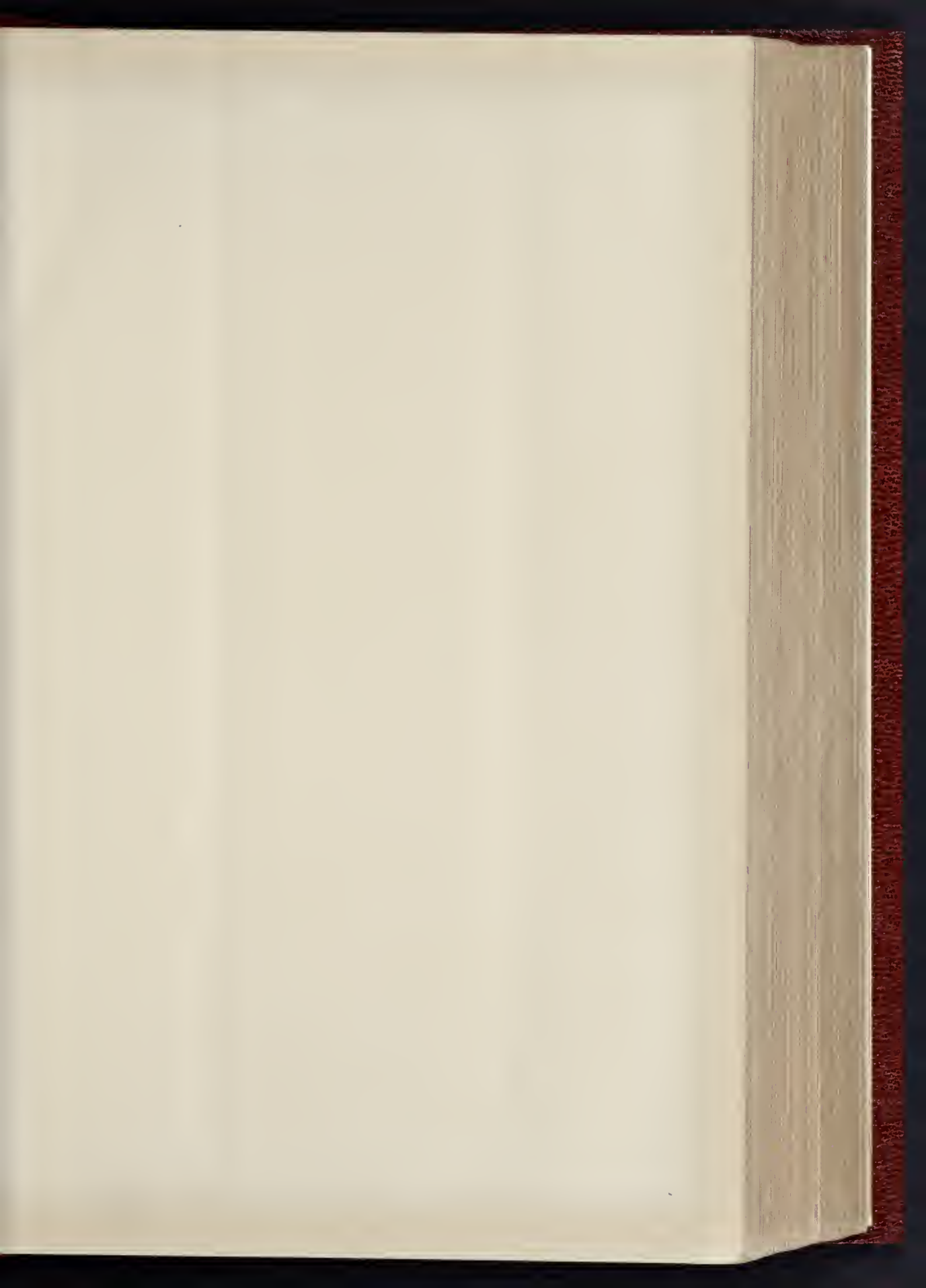
PROPOSED NEW PREMISES: LONDON AND PROVID



W. Gilbee Scott
 F.R.I.B.A.
 Architect

INK PHOTO SPRAGUE & CO 4 & 5 EAST HARDING STREET FETTER LANE, E.C.

ENFIELD—MR. W. GILBEE SCOTT, F.R.I.B.A., ARCHITECT

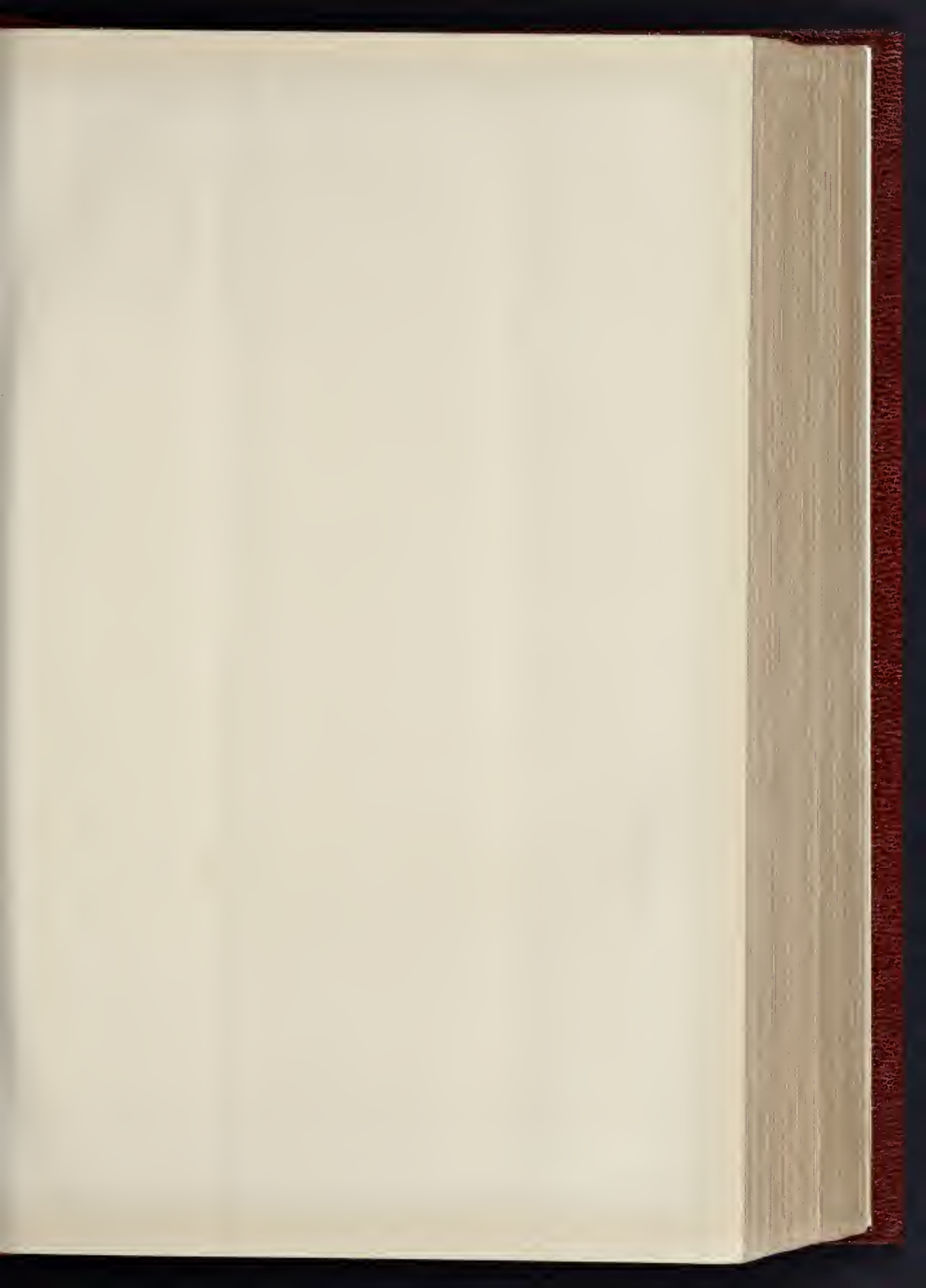


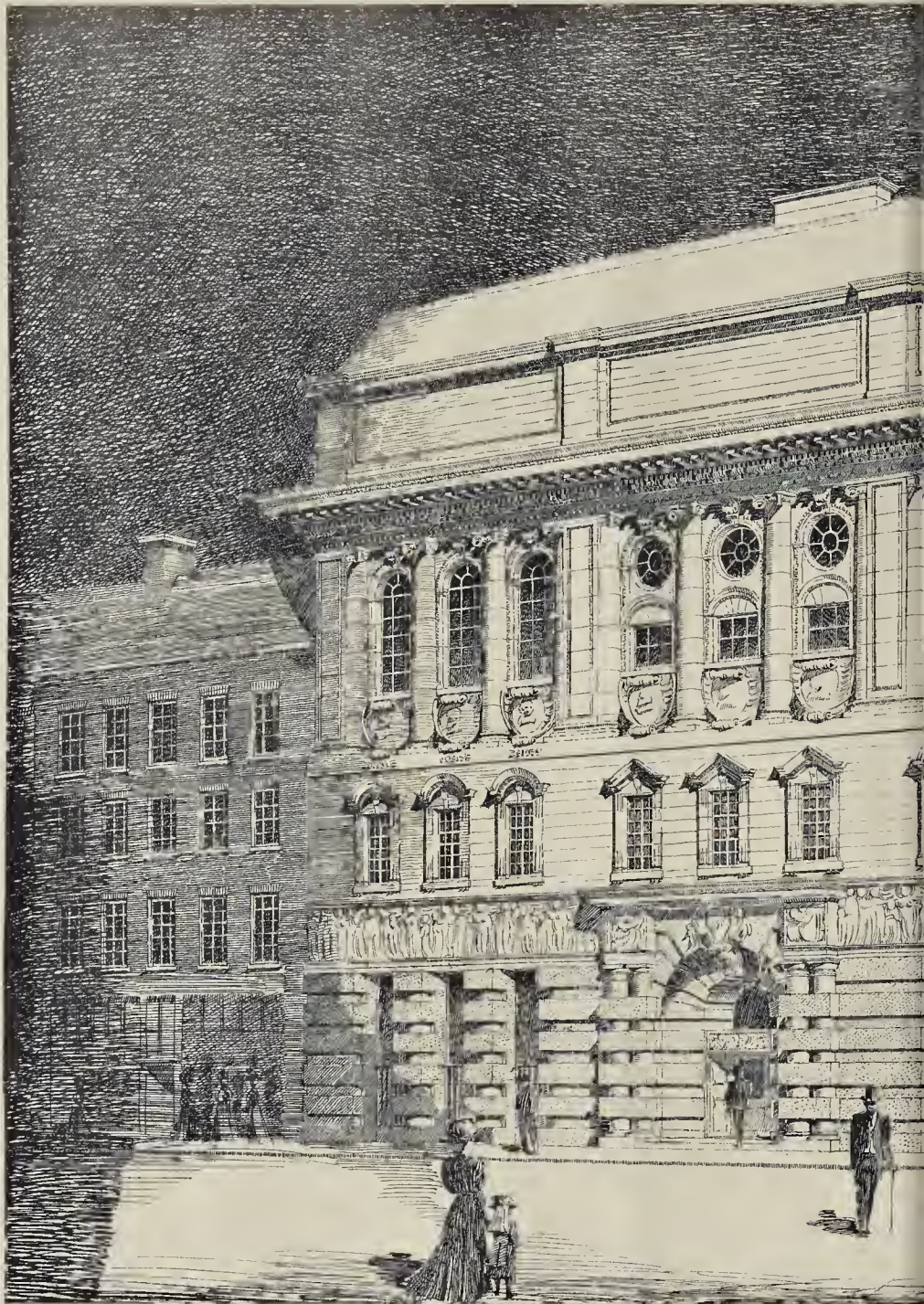


The Mary Pease Alms-Houses, Darlington
Founded 1820 Rebuilt 1895
Paul Waterhouse, Arch.



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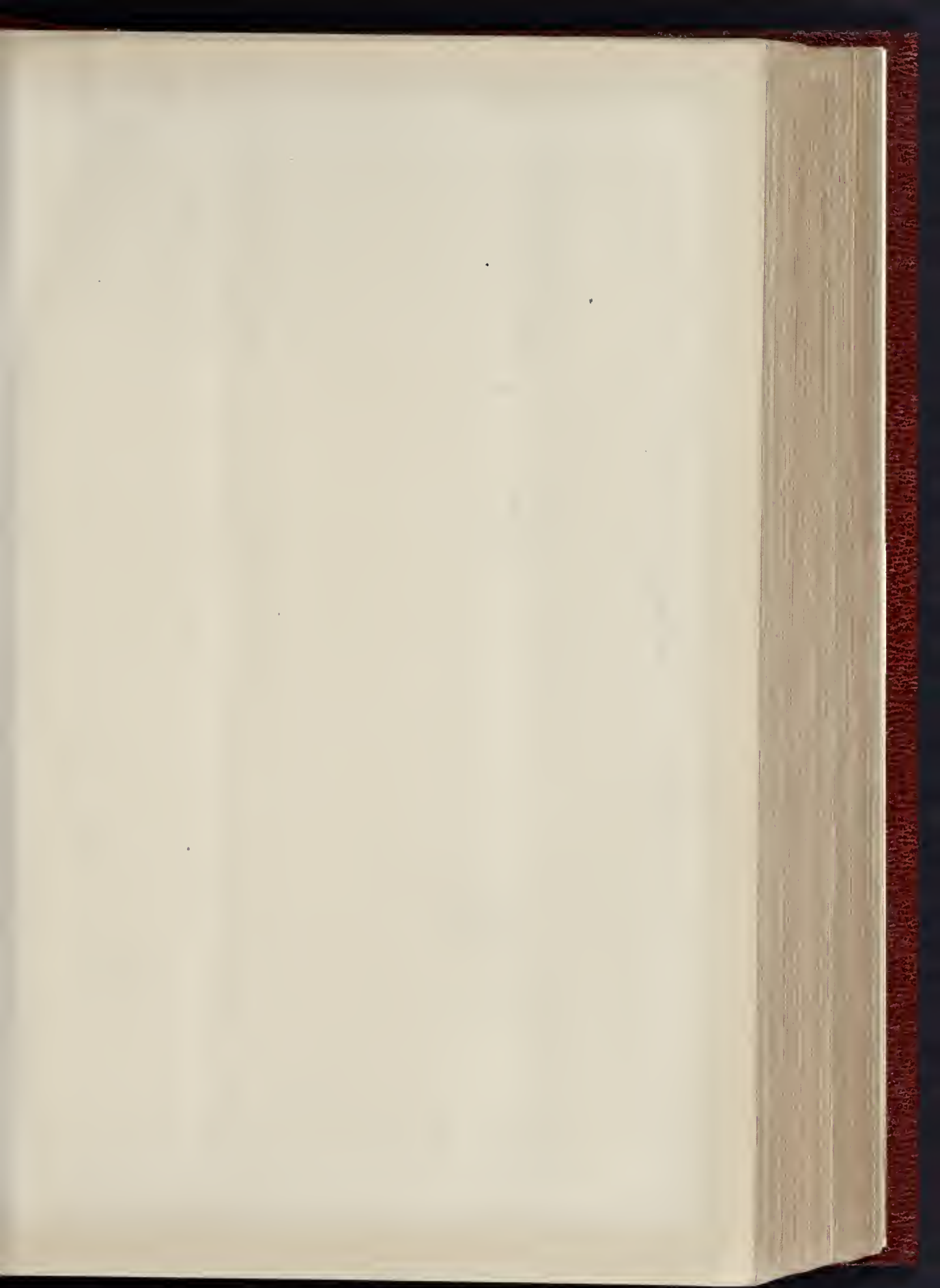


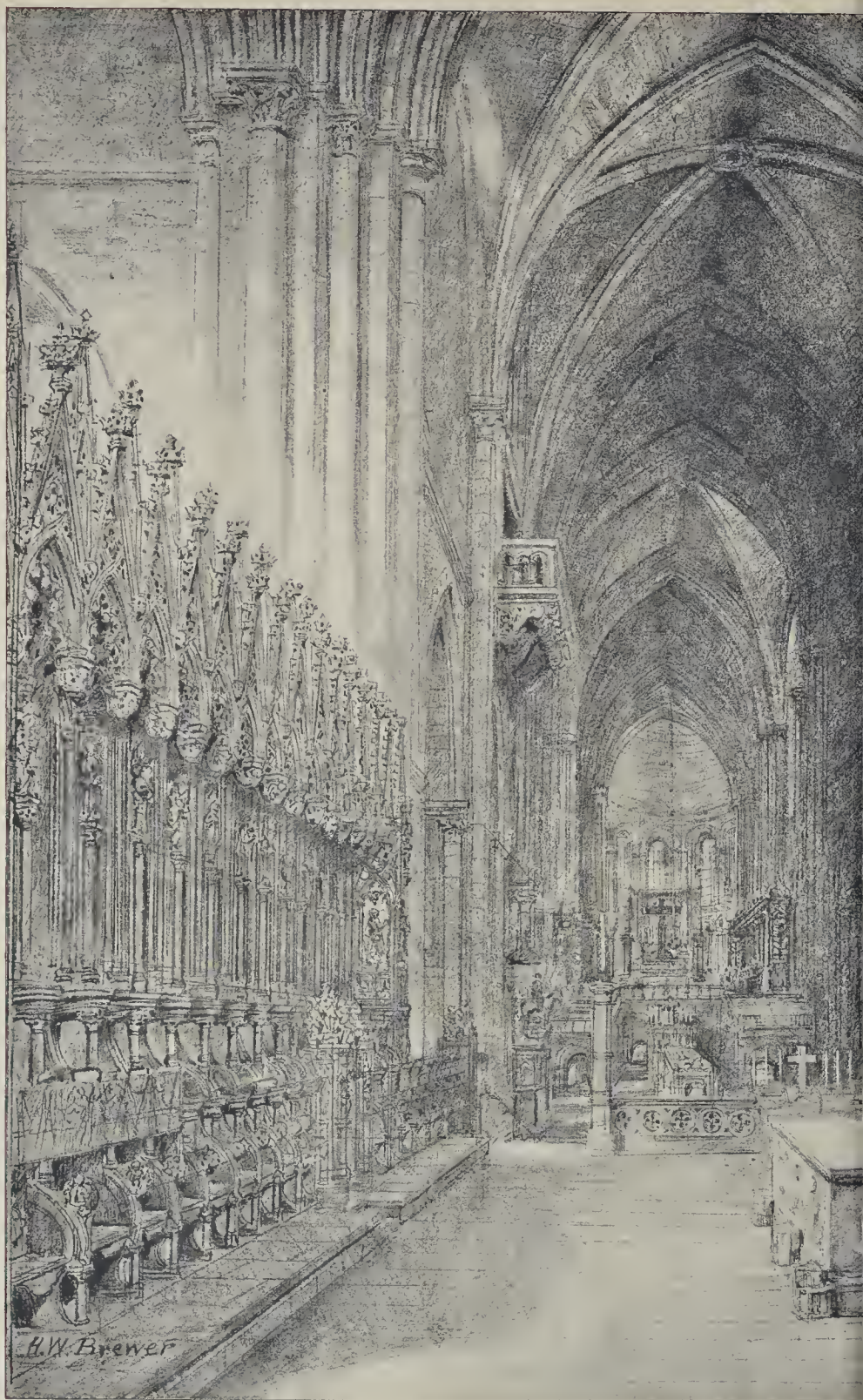
DESIGN FOR AN INSTITUTE OF



ECTS —By MR. PERCY E. NEWTON.

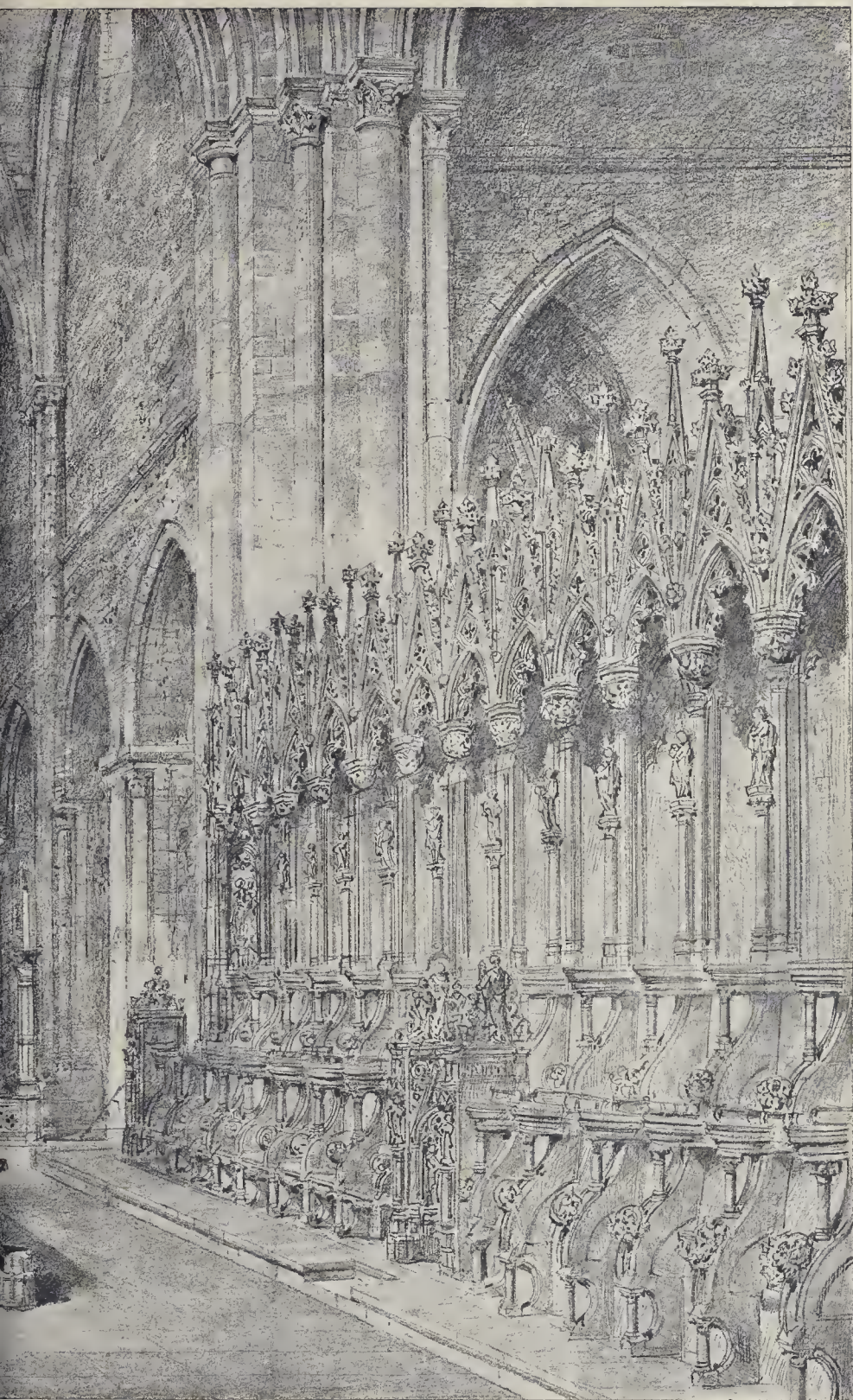
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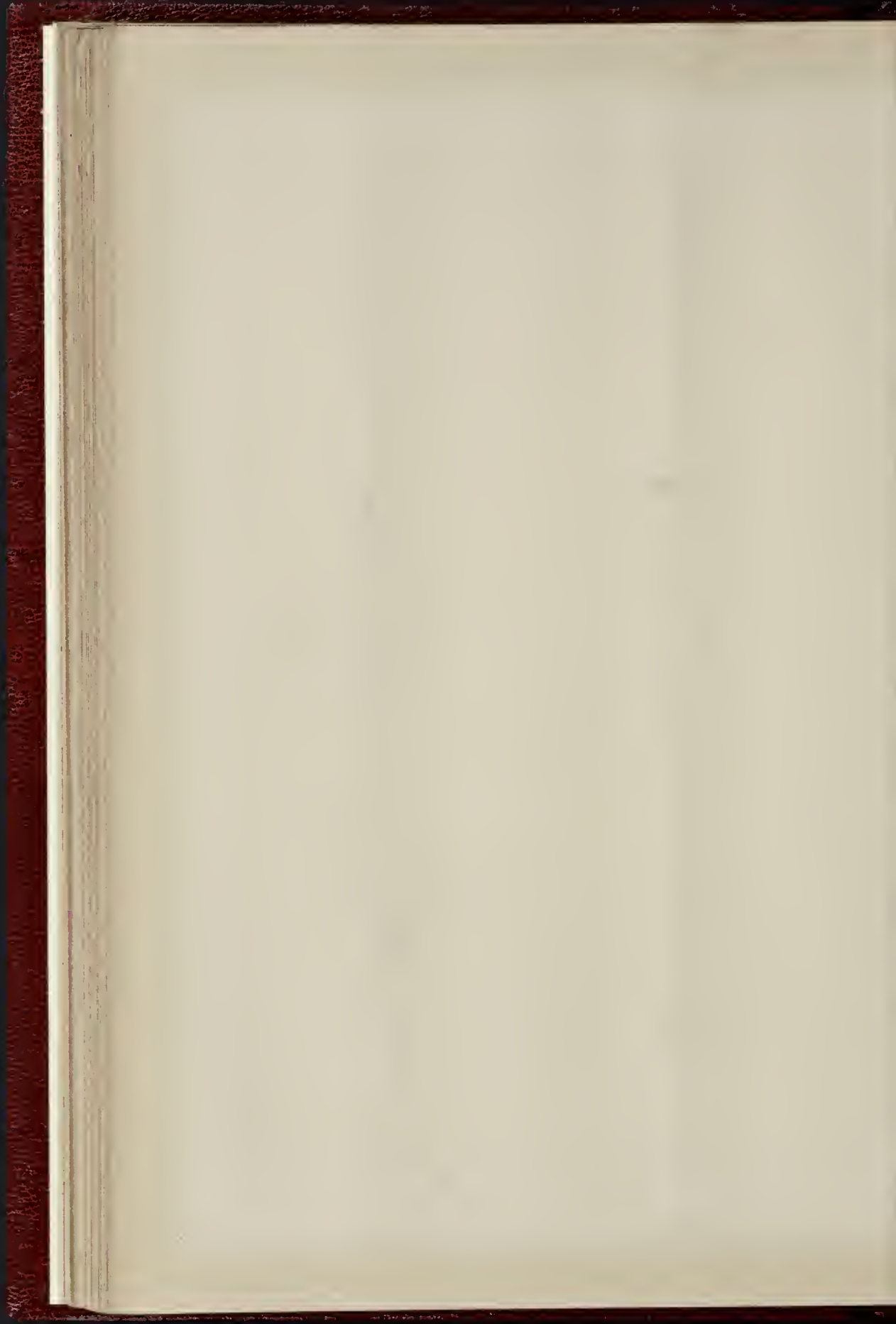
H.W. Brewer

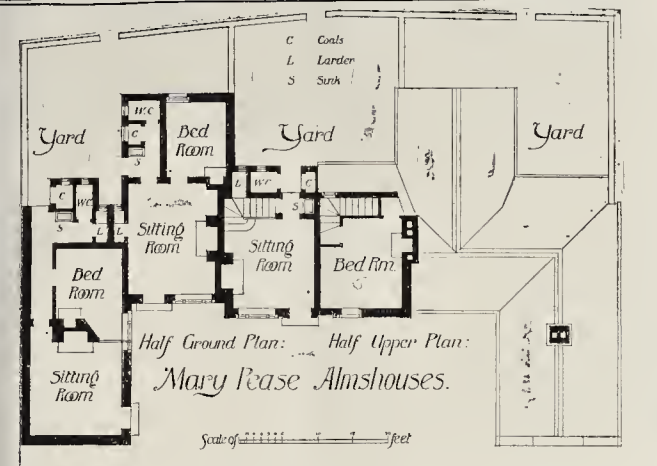
THE WEST CHOIR, BAMBERG



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—DRAWN BY MR H W BREWER





architects. A dignified effect in the entrance and central hall was aimed at, the latter being lanterned above the level of the first floor, the walls lined with marble, and the vaults frescoed. The masking of the main staircase seemed to convey an air of mystery, and add interest to the interior. The basement contains storage and strong rooms, and a porter's residence. Bedrooms are contived in the roof, over secretary's residence, and mezzanine floors are arranged over all the smaller rooms. The accompanying plans show the more important floors.

PERCY E. NEWTON.

LONDON AND PROVINCIAL BANK, ENFIELD.

The design for this building, by Mr. W. Gilbey Scott, was selected in a limited competition. The whole of the ground floor stage of the bank is in stone, and all cornices, window dressings, and other architectural features above this would be in stone also, the remainder being faced with red bricks, and the roofs covered with green slates.

It is proposed to construct the entrance doors, the internal lobby, the counter, cashiers' desks, the panelled dado, and all other fittings in teak. The floor is fireproof throughout. The space for the public would be laid with marble mosaic, and that in the banking space, and in the waiting-room and manager's-room, with pitch pine-wood block flooring. The ceiling of the bank is also fireproof.

The strong-room has a thick fireproof floor and ceiling, and is completely isolated from all external walls. The manager's house is arranged so that he will be able to get to his room in the bank direct from his house without passing through the bank, by means of a short corridor which is quite shut off from the rest of the house.

The bank being 16 ft. high, it was thought waste of space and money to give the same height to the strong room, lavatories, private entrance, &c., which are situated behind the bank. These portions, therefore, are only 9 ft. high, which gives a floor at a mezzanine level, which has been utilised for the kitchen and its offices.

With the view of utilising the remainder of the bank site, it was considered that a block of offices would be the best and most remunerative building to erect. Twenty offices are provided, with lavatory and water-closet accommodation on every floor; and doorways would be formed and then bricked up, so that at any time they could be opened without structural alteration, should any tenant require two or more rooms communicating. The external architecture of the offices is of the same character as that of the bank, but more simple, that it may not detract from the importance of the principal building.

The drawing was exhibited at the Royal Academy last year.

THE MARY PEASE ALMSHOUSES, DARLINGTON.

These almshouses were originally founded by the benefactress, whose name they bear, in 1820, and were situated in the heart of the town. The

present re-erection and enlargement of the establishment is due to the generosity of Miss Emma Gurney Pease. Not only is provision made for six inmates (women), instead of four, but being removed to a less crowded position near the outside of the town, the site is more open and attractive. It will be seen from the plan that each inmate is provided with a fair-sized sitting-room, a bedroom, larder, sink, coal-cellar, &c. Most of the accommodation is on the ground-floor level, but the bedrooms in the case of the two central houses are placed upstairs. The building is of local brick, the external walls being 14 in. thick, with a cavity of 4 1/2 in. Commondale moulded bricks are used for the gable copings and chimney dressings.

Miss Pease unfortunately died just as the contract was about to be signed (though she had directed and approved all the arrangements of the plan), and the task of seeing the undertaking completed was taken up by her brother, Sir Joseph Pease.

The late Mr. Robert Kitching, of Darlington, was the principal contractor, and the architect, Mr. Paul Waterhouse (of A. Waterhouse & Son) was assisted in the superintendence by Mr. J. P. Pritchett, of Darlington.

The total cost of the work was 1,498*l.*, including fencing, turf, and brick paths.

The drawing was exhibited at the Royal Academy last year.

ADDITIONS TO WYE COLLEGE.

THIS is a drawing which was exhibited at the last Royal Academy, by Mr. Paul B. Chambers, but in regard to which we have no further information from the architect. In the absence of a plan, the building has at least the merit of expressing pretty well, externally, its general arrangement.

MAGAZINES AND REVIEWS.*

The *Art Journal* contains an article by Mr. Cosmo Monkhouse on "A Northern Home," illustrating the interiors in an exceedingly sumptuous mansion somewhere in Scotland (we are not told precisely where), which are very rich and effective, though perhaps rather too showy and wanting in repose. Mr. F. Miller contributes an article on "Book-binding," with some illustrations of admirable work by some contemporary bookbinders. We quite concur in the principle that few tools, and the design a simple development of the characteristic marking of each tool, is the right path in designing book-cover decoration. We are also glad to read of the method employed by Messrs. Dent for some less expensive bindings, in which "the binder who tools them works out his own ideas in each cover, so that no two are quite alike;" the general design being given we presume. This seems a most sensible procedure where entirely original and special work cannot be afforded. The Rev. J. Cavis-Brown gives a popular article on "Chichester," and one of the

* The object of these notes is to point out anything in the contents of the current magazines which is of special interest to our readers, with occasional brief criticisms on the views expressed in such articles. When a magazine which has been sent to us is not noticed, it is because that number contains nothing that it is within our province to comment upon.

illustrations in the number is a reproduction from a study by M. Dagnan-Bouveret for the head of the Christ in his "Last Supper."

We are glad to see the small monthly publication which used to appear under the title of *A. A. Notes* appearing this year in an enlarged form, and with the title in the more dignified form, *Architectural Association Notes*. There are two interesting sheets of illustrations from the work of the Class of Design, "A Porch" and "A Convalescent home." The latter is very suitably treated in a quiet style, but the members of the Class of Design should we think, be required in such a case to add a north point to their plans and to show that these are laid out with due regard to aspect. We may also point out that the kitchen fireplace is hadly placed in regard to the window, so that the cook would be in her own light; an oversight common enough in plans by older architects than the members of the Class of Design.

The *Antiquary* has an interesting paper on the five-storied cliff houses of Pompeii, of which one does not hear very much, though the street houses seem as familiar to us as our own. In the course of the article one is glad to read of one very sensible piece of preservation of old ornament on the part of the Administration of Pompeii. On the ceiling of an old bath room were patches of fresco and relieved stucco ornament, which threatened to fall off. The pieces were carefully detached, and the whole put together into a wooden frame, into which they were cemented. The frame was then raised and placed in the position in which the fragments were found, and fixed by iron supports. In referring to the Peterborough controversy the *Antiquary* naturally takes the side of the Society of Antiquaries, but in advocating that the advice of an engineer should be called in our contemporary would find that engineering advice, in comparison with that of architects, would be (from the antiquarian point of view) out of the frying-pan into the fire. People fancy an engineer would advise how to keep the structure up without interfering with it; whereas the engineer would only say, "it is not worth while to make the attempt." We should like to hear a colloquy between an eminent engineer and the representatives of the Society of Antiquaries and the Society for the Protection of Ancient Buildings; it would afford amusement at all events, if no other result.

In the *Contemporary* is to be found Mr. Holman Hunt's paper on "Religion and Art," read at the last Church Congress, which should be read by all who are interested in seeing church art raised to a real art instead of being a medievalised form of decoration carried on as a business. "Throughout my life," says Mr. Hunt, "I have looked upon the artificiality of religious design with despair. It was impossible to cure the evil, for some artists acquiesced in the practice it had given rise to. What gives new hope for the generation to come is that ecclesiastics have arisen with a new sense of the value of living art, and a small number of young artists have thought it high time to combine to denounce the prevalent taste, and to strive to serve religious thought with designs of original conception." Professor Sayce's article in the same magazine, on "Recent Discoveries in Babylon," sums up the results of the latest excavations, unfortunately not by Englishmen, but by Frenchmen (under M. de Sarzec) and Americans. The suggestion made a year or two ago in Mr. Statham's "Architecture for General Readers" (page 21) that the discoveries of M. de Sarzec seemed to leave room for the question "whether architectural influence may not have travelled in the first instance from Assyria to Egypt instead of the reverse way," appears likely to be more than fulfilled, according to Professor Sayce's reading of the results of these recent discoveries.

Harper gives a summary of the state of "Science at the beginning of the Century," with portraits of Humphry Davy, Lagrange, Herschell, and others. An article on "Literary Landmarks of Rome" deals mainly with buildings and monuments connected with literary celebrities, and, in connexion with the illustrations, will interest those who wish to make the most of their Rome.

In the *Century* an article on "Public Spirit in Modern Athens" presents an interest of rather exceptional kind, as it serves, both in illustrations and text, to bring the ancient and modern Athens side by side for comparison. One illustration on the modern side, the head of "A Girl from Eleusis," shows at least that the type of perfect Greek beauty is not extinct in modern times. The article is followed by a short poem, by Mr. R. W. Gildery, on "The Parthenon by Moonlight," which however is hardly equal to the occasion.

In *Scribner* the article on "Thackeray's Haunts and Homes," with sketches of various houses in England and abroad in which he lived at different times, ought to be of interest to many English readers. Under the heading "The Field of Art" are some remarks on the causes of the inability to appreciate sculpture and why it is so universal, which will be read with sympathy by sculptors, though they will hardly find therein consolation or any hope of better appreciation. As a frontispiece is a scene from "David Copperfield," No. 1 of a series of "Scenes from the Great Novels," by Mr. L. Ravenhill, which as an example of book illustration is really masterly; the characters are the precise personages of Dickens, without the element of caricature which has generally pervaded "Dickens" illustrations, and for which a truth the novelist gave only too much excuse. We wish Mr. Ravenhill would illustrate Thackeray, who merits illustration more than Dickens, and has had less of it.

The *Revue Générale* contains an interesting critical article on the architecture of Vienna, "Une Promenade dans Vienne," by M. J. G. Freson, which by the way closes with a compliment, not we think undeserved, to English architecture. Speaking of the excessive classicism of Vienna, M. Freson observes that not only is one met by structures unsuited to the climate and locality of Vienna, but that this continual imitation of Renaissance details leaves hardly any distinction between the modern and the old architecture. "Toutefois, cette observation est applicable aux édifices contemporains en général. L'Angleterre seule a gardé une certaine originalité, grâce au mode d'éducation de ses architectes; heureux effet dû à l'absence d'écoles d'architecture."

Knowledge commences a series of articles on "The Age of Mountains," by Professor Lohley. Mr. E. Walter Maunder makes an interesting suggestion under the title, "An Old Record of the Corona"—that one of the forms of Assyrian ornament, "a ring with wings," is really a conventional adaptation in ornament of the effect of the corona in solar eclipse.

In the *Essex Review* (quarterly) Mr. F. Chancellor describes and illustrates St. Mary the Virgin, Runwell, in his series of "Essex Churches." There is an illustrated article on some brasses in various Essex churches—Great Bromley, Cold Norton, Shopland, Stebbing, and Wenden Lots.

The *Pall Mall Magazine* gives an illustrated account of Warwick Castle.

The *Gentleman's Magazine*, in an article on "A Country Town in the Seventeenth Century," gives some interesting details as to the official, social and business life of such a town two hundred years ago, as gathered from old papers and mercantile accounts &c. The number also includes a short article on "Spectroscopic Double Stars" by Mr. J. Eiland Gore.

Under the heading "The Most Wonderful Tunnel in the World" the *English Illustrated* gives some account of the making of the Blackwall Tunnel, which is illustrated by sections, as well as views, in a more practical and workmanlike style than is usual in magazines for general reading—in this country at least.

CYCLING AND THE BUILDING TRADE.

THE present enthusiasm for cycling has had a remarkable effect during the past year on the building trade in connexion with the central home of cycle manufactory, Coventry. Nearly all the hundred or more cycle companies, as a result of the extraordinary volume of trade, thought it necessary to increase their factory accommodation. One important feature of the cycle trade was the introduction of several new undertakings into the city, intended to supply certain parts of the machines hitherto purchased from other towns. These have all had their effect upon the building trade. During the year the Cycle Manufacturers Tube Company erected an entirely new factory at a cost of 21,000*l.*; a new stamping factory was opened late in the season by a local firm, and at the present time large stamping works are being erected. Altogether, last year about forty new factories were built, and about sixty plans passed for additions to others, in the majority of cases quite as large as the original buildings. In 1895 only ten new factories were erected, and in 1894, fifteen; and the buildings erected last year are on a far more extensive scale than before, and their total value cannot be much less than 250,000*l.* Included among them are the new workshops of the New Beeston Cycle Company, which cover eight acres; the Rover Cycle Company (four

acres); the Pneumatic Tyre Company, who have doubled their factory accommodation; the Premier, Singer, Sparkbrook, Coventry Cross, Centaur, Roulette, Viking, Conqueror, Coventry Macinists, and Elk Companies, and many others. The old Colton Mill has been converted into a factory for the accommodation of the Beeston Tyre Company, and two entirely new firms—the Daimler Motor Company and the Great Horseless Carriage Company. The works of the Humber Company, which were destroyed by fire in July last (the damage being estimated at 100,000*l.*), have been rebuilt and are now in occupation.

All these circumstances have led to strange developments. As the city filled up with mechanics, attracted by the activity in the cycle trade, builders began to be employed on the new factories and extensions. For this work more bricklayers and carpenters were required than the city could supply, and it was not long before new arrivals exhausted the existing house accommodation. The large contracts given to builders prevented them turning their attention to the erection of houses. As early as May there was not an empty house in the city, and hundreds of men, for whom there was plenty of employment in the cycle and building trades, had to seek work elsewhere. In the summer months many houseless men took their rest in the neighbouring fields, and one contractor, Mr. C. Gray Hill, was obliged to so far recognise the situation as to put up a tent for many of his workpeople who would otherwise have been shelterless. For a long time houses continued to be built very slowly, considering the exceptional opening for remunerative investment. An idea of the demand for house accommodation may be gathered from the fact that in many instances rent was paid for houses long before they were completed, in order to secure the tenancy. But builders themselves had something to say upon the subject of house building. Many were fully employed on large contracts, but the speculative builders, who confined their attention to dwellings, complained that they received little encouragement. Land had increased in value to almost prohibitive prices, materials had risen, wages were higher, and the building by-laws (according to their view) far too stringent. The increase in the price of bricks—about 20 per cent.—was, of course, partly due to the inadequacy of the local supply. Then, again, more building meant more building trade operatives, for whom there was no accommodation in the city. But with the completion of many of the large contracts, and the relaxing in certain particulars of the building by-laws, more attention has lately been given to the erection of artisans' dwellings. Plans were passed about during the last few months of 1896 for twenty new streets and nearly 600 houses. Apart from these, other estates are being rapidly developed, and it is not improbable that during 1897 the number of new houses will be at least 2,000.

Amongst municipal projects occasioned by the prosperity of the industries of Coventry are a new sewage system at an estimated cost of 156,500*l.*; the extension of the fever hospital and the erection of a smallpox hospital, to cost 6,700*l.* and 3,100*l.* respectively; the beginning of the scheme for new municipal buildings by the passing of plans for a new police station (14 571*l.*); the widening of several central thoroughfares; and the re-organisation of the City Surveyor's department by the proposed appointment of a Borough Engineer.

While it may be safely said that the building trade in Coventry will be active in the present year, it is probable that fewer hands will be employed. At present quite 1,000 bricklayers, and as many carpenters and joiners are in regular work. Nearly all the large contracts will be completed in a few weeks, and a considerable number of workmen who have temporarily lived in Coventry will then probably leave. In ordinary times there are about 600 bricklayers and carpenters and joiners in Coventry, but there is no fear of this level being reached during 1897.

COMPETITIONS.

SKIPTON INFECTIOUS HOSPITAL.—The Skipton Joint Hospital Committee, at their last meeting, had before them the report of Mr. Thos. Worthington, of Manchester, as to the best six designs for an infectious hospital. There had been twenty-seven sets sent in for competition, but Mr. Worthington had brought the number down to six. He had submitted these for a further examination, with the following result:—1st premium, 20*l.*, Mr. G. E. Bolshaw, architect and surveyor, Southport and

Grew; 2nd premium, 10*l.*, Mr. A. Cullen, architect, Motherwell, Glasgow; 3rd premium, 5*l.*, Mr. H. W. Pratt, Chancery-lane, London. Mr. Bolshaw's estimate for carrying out his design amounts to 10,000*l.*

CORONER'S COURT, POPLAR.—We understand that the designs of Messrs. Lansdell & Harrison, of Highbury, for the Public Coroner's Court and Mortuaries for the Poplar District Board of Works, have been placed first by the assessor.

ARCHITECTURAL SOCIETIES.

ARCHITECTURAL ASSOCIATION OF IRELAND.—At the ordinary meeting of this Association on Tuesday evening, Mr. Thomas Drew, R.I.A.A., delivered a lecture on "The Architecture of Dublin." Mr. R. Caulfield Orpen presided. Mr. Drew said that in the study of architecture as a living art in Dublin they had remarkable advantages in the mere luxury of living in an old, historic, respectable city, with many dignified monuments of a past time, with a picturesqueness of architectural effect—spontaneous, unstudied; the growth of accidental creation, not made, as it was impossible to make it in a brand new town or city. Let them think what the difference would have been had their lot been cast as students in such new towns as Birmingham, Bradford, Leeds, Wolverhampton, even Manchester. Let them even take his native city, Belfast. How much was there in the modern makings of such towns to inspire the architectural student with one spark of genuine enthusiasm for his art of architecture as he went to his work in the morning and returned in the sunset of the evening? London had great wealth of noble and illustrative architecture, if the student could find it out—from its unmatched Abbey of Westminster, running through all the gamut of progression of styles of the Middle Ages, up to the grand chord of the Renaissance architecture in St. Paul's Cathedral, than which there were few more satisfying examples in all the world of classic Renaissance architecture. In London the architectural student had the run of all that, if he were appreciative and discriminating, and lived on a bicycle; but he did not run it as a matter of fact. The interests and objects were too widely apart, and overflowed by a teeming modernism and a sordid flood of building of a greater modern city. Edinburgh had native charms to inspire the architect artist with a fire of enthusiasm in his daily life of going to and fro, such as he knew nothing to approach in all the lovely cities of these kingdoms. There was nothing in pictorial, theatrically-imagined architecture, and aerially enchanted effect to be conceived like the picture of Edinburgh from the valley below its native Prince's-street. Dublin might not afford exhaustive examples of every age and style, but he maintained that it presented such examples as were wanted to illustrate methods of architectural study. The lecturer then spoke of the architects and architecture of the Custom House, the Bank of Ireland, the Four Courts, Trinity College, and of the residences of the Irish nobility and gentry in Dublin a century ago, and amid applause he concluded his interesting and instructive lecture.—Mr. A. E. Murray, R.H.A., in proposing a vote of thanks to Mr. Drew, said his lecture was the result of a genuine study of the history and architecture of the finest buildings in Dublin, and if Mr. Drew enlarged on the subject and published it, it would be full of interest not only to the citizens of Dublin, but to strangers who visited the city. The Chairman announced the next meeting for the 19th inst., when Mr. J. J. O'Callaghan would lecture on "Design." The library of the Association is now open, and the classes on building construction commence this week, and those on design next week.

PRIVATE BILLS, SESSION 1897; AND PROVISIONAL ORDERS (BOARD OF TRADE).

THE number (293) of private measures prepared for the coming session exceeds the total (251) of last year. The increase is mainly in respect of gas, water, and electricity projects. There are sixty-eight railway bills as compared with sixty-three, nineteen tramway bills as compared with fifteen, and fifty-five electricity and electrical lighting orders as compared with thirty-seven. We give an epitome, abstracted from the official "Notices," of the more important enterprises with our own province, to which we have not already adverted.

MUNICIPAL, BUILDING, SANITARY, AND OTHER LOCAL IMPROVEMENTS.

BILLS—City of London: To dissolve the Commissioners of Sewers (1843), and vest their property,

powers, duties, &c., in the Corporation, to be administered by the Common Council. *H.M.S. Commissioners of Works:* To acquire the sites of Nos. 27-8, Southampton-buildings, for an extension of the Patent Office, westwards of the new block in Staple Inn (south side). *London County Council (general powers):* A new street, from north side of St. George's Lane, through the church-yard to Long-lane, opposite Tabard-street, giving, in lieu of the churchyard, lands on the east side of the new street, and to lay out the same as a recreation ground; widen Long-lane on the south side, between Great Dover-street and Sneathall-place, and on the south side for 4 ch. from the church; widen Battersea Park-road on both sides (in parts), and reconstruct the West London Extension Railway bridge, the Battersea Vestry to contribute; widen Holloway-road (in part), St. Mary, Islington, Vestry to contribute; to provide for contributions by the respective District Boards or Vestries in respect of open spaces at Well-street, Sydenham; East-street, Walworth; Nelson-street, Bermondsey; and Fortune-green, Hamstead; to enable the Council, or any District Board, or Vestry, with their consent, to erect and maintain on a deeded burial ground, such buildings as may be necessary for the efficient management of such ground as an open space or recreation ground. To admit the sewage of Acton and part of East Ham into the Metropolitan drainage system, the Acton, and East Ham Urban District Councils to contribute.

By the following Corporations:—*Birkenhead:* Consolidation of wharves, extension of borough limits, and regulation of places for public dancing. *Bolton:* New streets, a boating-lake, 572 yds. by 80 yds., at Deane and Horton, with diversion of the Middle brook; underground sanitary conveniences, and regulations as to nuisances, libraries, &c. *Bournemouth:* To purchase from Mr. J. E. Cooper Dean the Dean Park House Site, and build thereon municipal offices; widen and improve several streets; acquire lands for public gardens and recreation ground. *Bradford:* For street improvements; extension of the borough, to include Alerton, Heaton, Thornbury, and Tyersal, and improvement of St. James and Rawson-place markets; control and licensing of the ice-cream and fried fish trades; control of places occupied by or for the Salvation Army; regulation of sky-signs, and to deal with trade sewage and effluents. *Bristol:* Extension of boundary to take in Hofield, Stapleton, and St. George parishes, with parts of Westbury, Brislington, Bedminster, Long Ashton, Portbury, and Pottishead; wharfs and quays on the Avon and the floating harbour, and an opening bridge across the Avon. *Colne:* (1) For a new street, to be called North Valley-road, the owners, lessees or occupiers of the land to bear the cost; to take a site in Albert-road for erecting a public library, buildings for technical instruction and secondary education, and other purposes; to set apart land for games, with provision of gymnastic and other appliances; the regulation of sky-signs, advertisement boards, signs, and street advertisements, with various provisions relating to public health. *Glasgow:* Various local measures and improvements. *Huddersfield:* To widen and improve certain thoroughfares; to work their tramways by other than animal power; to prohibit (except as to such as may be required for the tramways) the suspension of electric wires or lines over, across, or along any street, and to permit the same to be placed underground, with removal of those now existing; provision for recreation grounds, including the two offered by Mr. J. Nield Sykes and G. W. Shaw. *Kingston-on-Hull:* To extend the borough area, and erect an opening bridge in Scalcoates; provide a crematorium in the Western cemetery; prohibition of sky-signs and projections of any kind over the streets, and to regulate all structures or devices for advertisements. *Leeds:* Improvement of the drainage area of the Washburn Valley, taking 28 a. of Swinsty Moor and 13½ a. of Hoodstorth-lane Common and Thruscross Green; to widen many streets, and take up and re-enter the human remains in Holy Trinity burial-ground at West End. *Leicester:* Extension of gas and water area; to work the tramways by mechanical or electrical power; to build a public hall with an organ, and to pay musical bands; to erect a crematorium in First Horse-close, Gilross; regulations as to caravans, shows, steam and other organs, whistles, hours for driving cattle, &c., also as to lodging-houses, the hanging of articles and flags over the streets, sky signs, advertisement vehicles, and house signs, sanitary matters and the like. *Nottingham:* For new streets and the widening of others; to construct a towing-path between Wilford and Trent Bridges, and embark the river. *Pullheli:* To constitute themselves the Harbour Authority; to buy the Pullheli Water Company and erect new works; and to enlarge, improve, and fit up the town and market hall. *Salford:* To buy a site for a warehouse for grain or "grain silo"; lay down tramways (4 ft. 8½ in. gauge); to alter and amend existing laws and regulations as to building; and to provide for better regulation of traffic. *Great Yarmouth:* To lay out as a public park or recreation ground Southtown Common, 15½ a., in Gorleston; regulations for the sea-shore; to provide swimming baths and recreation

grounds; to control and restrict the erection and placing of booths, exhibitions, &c., on the marine parade, beach, gardens, sea-shore, and jetty; to provide for the observance of decency and order at the bathing places; to require (with other sanitary measures) that urinals shall be attached to all kinds of refreshment houses and places of public entertainment, and provide public conveniences and lavatories; to supervise lodging-houses; for the removal or prevention of cranes, sign-boards, flag-poles, and other projections into streets, and prevention of street noises.

For a body of Commissioners in Birmingham to pull down the churches of St. Peter, St. Mary, and Christ Church, with schools and vicarage, sell the materials, graveyards, monuments, vaults, &c., church furniture and plate, to form and endow three new ecclesiastical districts, and convert the site of St. Mary's Church and churchyard into a public recreation ground. (See the *Builder* of November 14 last.)

By the following Urban District Councils:—*Cassey Bay and Colwyn:* Provisions as to the promenade, fore-shore and sands, bathing, and bathing-machines; for new recreation grounds, or winter gardens; to contribute towards musical bands, and advertise the local attractions. *Hoylake and West Kirby (Cheshire):* To construct two parades, a marine lake, and carry out the Hoylake Lake Improvement Scheme, by forming an embankment, with gates and sluices, 433 yds. in length. *Llandudno:* To purchase the undertaking of the Great Orme's Head Marine Drive Company (1873); to control street musicians; prevent street cries, and singing; to prohibit, regulate, and restrict the use of sky-signs, vehicles, and boardings for advertisements, together with sundry other local improvements. The Commissioners of the Borough of Bournemouth, co. Linnhlgow, propose to make a new road from the Church Wynd to Starks Brae road, and to sell the harbour and docks to the Caledonian Railway Company. Mr. David Lewes (or a Company in that behalf) promotes a Bill to authorise the erection of new markets, for provisions and merchandise, at the Twyn, and elsewhere, in Caerphilly, for live stock, fodder, &c., in Tonypandy Meadow, with powers to alter and improve the existing markets.

NAVIGATION, HARBOURS, DOCKS, FERRIES, PIERS, BRIDGES.

BILLS.—By the Corporations of *Birkenhead:* To buy the entire undertakings of the Rock Ferry and New Ferry across the Mersey, and construct a pier at Rock Ferry slip, 267 yards long, east-north-eastwards, and a floating landing-stage. *Caernarvon:* To acquire the ferries to Anglesey, construct a pier, 600 ft., south-eastwards at Barras, and a swing-bridge across the Selont at the entrance from the quay to the Eagle Tower, Caernarvon Castle, to Aberly Ferry House, and the *Cornes.* The incorporation of Commissioners to manage, maintain, and improve the harbour, sea-roads and anchorage. *King's Lynn:* To incorporate a Conservancy Board for the port and harbour, with dissolution of the present Harbour Mooring Commissioners; to define the limits of the port as being all the area defined by the charter of a James I., and regulate pilots' charges and surveys of the harbour. *Plymouth:* To vest in them the Lary Bridge at Catwater Harbour, improve and widen approaches of the same; to enlarge the borough boundary to include Lary Bridge and part of Pymstock parish.

North London Railway Company: To widen and otherwise improve the access to Poplar Dock for vessels of larger burden, widen the east side of the entrance between Blackwall Basin and Poplar Dock, and remove the lock gates. *North Eastern Railway Company:* New dock works at Kingston-on-Hull and Middlesbrough; a new dock at east of Victoria pier. *Bradling Harbour and Railway Company:* To sell all their undertaking to the Isle of Wight Railway Company. *Deal Harbour Company:* For revival and extension of powers under the Act of 1893. *Hastings Harbour Commissioners:* For two sea-walls, 850 ft. and 300 ft., with an opening of 100 ft., and two sea-walls, 140 ft., in lieu of the sea-wall and embankment authorised by their Act of 1890. *Mersey Docks and Harbour Board:* To extend their Wallasey landing-stage from its west end for 250 ft. northwards, a fixed pier and bridge to connect the existing river-wall therewith, and for a pier or jetty from near the Canada basin, 950 ft. long, north-westwards, parallel to and 270 ft. distant from the river-wall, with branch piers thereto. *Numbles Railway and Pier:* For extension of the limits imposed by their Act of 1889. *Plymouth and Dartmouth Railway Company:* A pier, 100 yds., southwards, in Deadman's Bay. *Tyne Improvement Commissioners:* For extension of time, and various powers, including the construction of the new ferries.

By various Companies. At Weston-super-Mare—a pier, 200 yds., westwards, from the Caté de Paris, with approach roads; a sea-wall, 600 yds. on the west side of the Grand Parade, to take over the Weston-super-Mare Pier and Grand Pier Companies, and to vest these several undertakings of the new Company in the Urban District Council; by a separate Bill the Grand Pier Company seek for an extension of time under their Act of 1893. At Penarth Flats—for sea-walls, a dock, and railways,

&c. For two piers at Lock Fyne and the Bay of Oban, with enlargement of the quay and sea-wall, Oban. The *Caledonian Railway Company* propose new dock works at Grangemouth, to construct a dock, 32 a. in area, a sea-wall 900 yds. long, with new railways in Lanark and Dumfries.

PROVISIONAL ORDERS.—*Clacton-on-Sea Pier Company:* To widen, improve, and lengthen by 200 yds. the existing pier. *Hunstanton Pier Company:* To extend the pier 100 yds. seawards, widen it, and erect assembly, concert, and refreshment rooms thereon. *Tenby Urban Sanitary Authority:* A pier of 600 yds. at Castle-hill. *Walton-on-the-Naze:* Extension of the pier by 600 yds. or thereabouts. *Whitley:* A marine promenade pier, of iron or steel, with wooden deck, 1,000 ft. north-eastwards from the "Corkscrew" and a pavilion thereon, having a capacity for 1,200 people. By certain "promoters": A pier of jetty at Clacton-on-Sea, 275 ft. south-eastwards from Wash Gap sea-wall; a pier, 400 yds. northwards from the Concert Hall, Llandudno, and with pavilions, shops, bazaars, baths, aquaria, &c., thereon; and by Mr. Reginald J. Weld, for a solid pier or breakwater, about 600 ft. eastwards, from the existing pier at Ilfracombe.

RAILWAYS.

BILLS.—*City and West End:* An underground electric railway from Cannon-street (Budge-row) to Broadway, Hammersmith, beneath the blackfriars, Ludgate-circus, Fleet-street, Strand, King William-street, Leicester-square, Piccadilly, and so to Hammersmith, with a generating-power station by the riverside, Fulham; to be worked by electricity, on a 4 ft. 8½ in. gauge. [The proposal is for double tunnels, 11 ft. 6 in. interior diameter, in iron segments, laid at an average depth of 60 ft. below the street levels, and having twelve intermediate stations in the length of six miles; the estimate of cost is from three to three and a half millions.] *Metropolitan District:* A railway or subway from Earl's-court to Mansion House Station, of 4 ft. 8½ in. gauge, to be worked by electricity or cable, or steam-power, with generating-power stations at Walham-green, Parson's-green-lane, and Del Brook-common. The estimate of cost is from three to three and a half millions. Sir Benjamin Baker's report gives estimates for the cost, being 1,000,000. for a double line five miles long, and 453,000. for installation, rolling-stock, and incidental charges.]

Piccadilly to Brompton: An underground railway from Air-street to south end of Exhibition-road, with subways under Piccadilly at Air and Dover streets, to be worked by electric cables or wires, or other motive power; and with a generating-power station at Swan Wharf, Chelsea Creek. *Central London:* To acquire the sites of Nos. 350-2, Oxford-street, at the south end of Marylebone-lane, for a station in lieu of that in Davies-street, as authorised by their Act of 1891. [The latter site is on the Grosvenor Estate, and we understand that the Company feel unable to comply with certain restrictions demanded by the Duke of Westminster's agents.] *Whitechapel to Dow:* A line worked by steam or electricity, from the Metropolitan District at Vallance-road, through Bethnal Green, Mile End, Stratford, and Bromley to the London, Tilbury, and Southend Railway at Campbell-road, Bow. *West Sutherland:* A line from Invergate Wharf-road, Praet-street, to the "Grand Junction Arms" public-house, by the bridge over the Grand Junction Canal, in Willesden parish, worked by mechanical power, with generating works at the Willesden terminus. This line will take 5½ r. of Wormwood Scrubs and Old Oak Common. *Walford, Edgware, and London:* From a Junction with the Walford and Rickmansworth branch (London and North-Western Railway), through Bushey, Aldenham, Elstree, Little Stanmore to Edgware, and thence two lines to Edgware branch of the Great Northern, and to Mill Hill Station of the Midland. *South Eastern:* To widen Cannon-street terminus, their Charing Cross line in Lambeth and Southwark, for three more lines on the north side of the viaduct between New Cross and London Bridge; viaduct from Tanner-street to South Bermondsey; station at Corbett's-lane, with line thence to New Cross; widen goods line at Bricklayers Arms, and extend the line thence towards New Cross; widen lines (both sides) at Darford, Ashford, and Hastings; sell the Pavilion Hotel, Folkestone, and for extension of time limit under their Folkestone Harbour Works Act of 1885. *Great Eastern:* A line from Woodford, through Buckhurst Hill and Chigwell to Ilford; widenings and improvements at Broxbourne, Ware, Ilford, and North Walsham; to abandon their authorised line (1890) in Tottenham parish; to purchase the Mellis and Eye, Watton and Swaffham, Thetford and Watton, and Downham and Stoke Ferry Railways and undertakings; lines from their Southtown station, Gorleston (Yarmouth), through Gorleston, Hopton, Corton, and Gunton, to Lowestoft, and from Knapton, on the authorised Mundesley branch (1888) of the Midland and Great Northern Companies, through Paston, Edingthorpe, Bacton, Ridlington, and Walscott to Happsburgh (5 m.). *Great Western:* A line from Acton to Wycombe, through Twyford, Perivally, Greenford, Northolt, Ruislip, Ickenham, Harefield, Denham, Gerrard's Cross, Chalfont St. Peter, and Beaconsfield, with a

branch to their Uxbridge and Rickmansworth line (1896), taking 2 a. of Ickenham Green, $\frac{1}{2}$ a. of the Roundabout, Beaconsfield, and 1 a. of Drayton Green. A separate Company promotes an almost identical scheme for continuing the Ealing and South Harrow Railway, 1894 (with branches at Hillingdon to the Uxbridge and Rickmansworth line, and to Denham), to Temple Farm, Chepping Wycombe, and, eastwards, to the Midland and the South-Western at Willesden, taking 3 r. of Long Bottom at Seer Green, and 2 r. of the Roundabout. The Great Western will rebuild and enlarge the bridges at Westbourne Park and Hammersmith stations. The "Bristol Harbour Extension Railways" (four), and the "Canon's Marsh Railways" (four), in Clifton, Bedminster, and North and South Bristol, an opening foot-bridge and swing-bridge across the Avon: line from their West Cornwall Railway at Chacewater to their East Wheel Rose branch at Newlyn, through Kenwyn, St. Agnes, Perranzabuloe and St. Allen. "Great Northern": Line from their Bulwell Forest station (Leen Valley) at Bestwood Park, to Basford, Notts; wide main line, both sides, from Sandy to Offord (14 m.), and from Yaxley to Fletton (4 m.); dissolution of the Royston and Hitchin Railway Company; to establish a savings bank for their officers, workmen, and apprentices, and their wives and children, being minors, and to erect dwellings for the labouring classes on the Company's lands. "Midland": A line from New Mills, Derby, through Glossop, Newtown Disley, Marple, Bramhall, Stockport, and Cheadle to Heaton Mersey, Lancs; and to take over the Kettering, Thrapston, and Huntingdon Railway. To fill up and embank the spaces under the viaduct carrying their goods and mineral lines at St. Pancras-gardens (burial ground), and for sundry minor powers. "Midland and Great Northern Joint Committee": An "Austin-street" branch from North Runcion to St. Margaret, King's Lynn; lines from their Union line at Caister-road to the mackerel and herring market, Lowestoft (10 m.), through Great Yarmouth, Runham, Vauxhall, Southtown, Gorleston, Hopton and Gunton; a dock at Gorleston; to take 10 a. of Southtown Common for the new line and dock; wide line at King's Lynn station; (vide also ad hoc under "Great Eastern.") "London and South-Western": For the Meon Valley line from their Farham station to Alton (about 25 m.), on their Farham and Winchester line through Titchfield, Wickham, Soberton, West Alton, East Meon, East Tisted, Newton Valence, Farington, and Chawton; to widen their line at Alton. Various powers: Wide main and suburban lines at Clapham Junction and Wandsworth, main line between Basing and Woking, and branch between Farham and Alton; to take certain lands, &c., including Battersea Grammar School and $\frac{1}{2}$ r. of Newnam or Hook Common, with the same, jointly with the London, Brighton, and South Coast Railway, Portsmouth Harbour station. "Sheffield & District": A line (with branch to the Midland) from Midland main line between Attercliffe and Brightside stations to their authorised line (1895), which connects the manufacturing quarters of Sheffield with the East of West Railway; by means of the Lancashire and Derbyshire and the Sheffield District lines the Great Eastern obtain access to Sheffield and the coalfields around, the first-named line from Beighton and Chesterfield to Lincoln, 55 m., being nearly completed, and now opened for mineral and goods traffic. "Hall and South Yorkshire Extension": Incorporation of a Company to construct railways from the Hull and Barnsley Railway at Elmsall to Wath-upon-Dearne, where a junction will be made with the Manchester, Sheffield, and Lincolnshire (S. Yorks) Railway; taking nearly 4 a. of Moorhouse and Hooton Pagnell Commons. "Woodhouse and Conisborough": From Handsworth through Orgrave and Rotherham, to Treeton; from Treeton through Rotherham, Thrybergh, Ravenfield, Firby, Denaby, and Mexborough to Conisborough. "Deane Valley, W. R. Yorks": Lines in connexion with the Midland, Manchester, Sheffield, and Lincolnshire, Hull and Barnsley, and Swinton and Knottingsley Railways; a dock at Mexborough, by the confluence of the Rivers Deane and Dun; and to take 5 a. of Mexborough Low Pastures. "Skipton to Linton": From the Midland at Embay, through Stirton, Gargrave, Burnshall, Flasby, Hetton, Rilstone, Croaco, and Threshfield to Linton (14 m.). "Macclesfield to Leek": Line from Prestbury (L. & N. W. Railway), Macclesfield, through Sutton, Gawsword, Besley, Wincle, Heaton, Tittesworth and Lowe to Leek (15 m.), with a branch to the North Staffordshire Railway at Sutton, Manchester, Sheffield and Lincolnshire: From their line at Eydon, Northants, through Canon's Ashby, Moreton Pinkney, Thorpe Mandeville, Cropredy, Edgote, Chalcombe, and Banbury, to join the Great Western Railway at Warkworth (14 m.); to acquire further lands in Marylebone parish, London, and to change the Company's name. "Chatham Loop": A line from the London, Chatham and Dover Railway at Chatham, through Rochester, Strood, Gillingham, Rainham, Upchurch and Luton to that Company's line at Newington, near Sittingbourne (9 m.). "Crowthurst to Bevilhill": For a line from the South Eastern at Crowthurst, through Hollington and Sadley, to Bevilhill, taking $\frac{1}{2}$ a. of Bevilhill Downs. "North Pembrokehire and Fishguard": Lines from Litterston to Clynderwen,

and Carmarthen to Gowerton and Aberdare; abandonment of their Llandilo Loop line (1895). "Bute Docks Company": New lines with branches 10 or near Pontypridd and Treforest, and at and near Cardiff; diversion of the river Taff for about 1,170 yds. from the head of their low water pier to the entrance channel into the Butts Docks; and to take 3 acres of Coed-pennryn Common at Pontypridd. "Vale of Rheidol": for a company to make a light railway, of 2 ft. gauge, from Aberystwyth to the Devil's Bridge, co. Cardigan. "West Highland": Various short lines in Inverness-shire, and near Spear Bridge, with one from Fort Augustus to Inverness. "Caledonian": New railways in Lanark and Dumfries. "Cullinstee and Oban": New lines, and to widen their line at Oban. "Dublin, Wicklow, and Wexford": A line from their New Ross extension at Rosbercon to Ferrybank, Waterford, on the Waterford, Limerick, and Western Railway. "Fishguard and Rosslare": New line from Rosslare to Waterford. "Hastings": A company for lines from the old Fish Market to Ore (S. E. Railway) and from Ore to Silverhill and the district; also for a sea-wall and parafores from the harbour works to Ecclesbourne Glen. By another company, for a line from the harbour to Hollington (S. Eastern Railway), and thence to Balverthly (L. B. & S. C. Railway). For extension of time under authorised Acts: For London Walthamstow, and Epping Forest (1894-95), which works, under an Act of 1891, is to be abandoned: Charing Cross, Euston, and Hampstead (1893); Ealing and South Harrow; and Birmingham, North Warwickshire and Stratford-upon-Avon (1894). For abandonment of their authorised undertakings by the Kingstown and Kingsbridge Junction (1887), and the S. Yorkshire Junction (1886). To the Light Railways Commissioners for an Order for a light railway from Clevelenham (Midland station) to Wincoboeam, Glouc.; 4 ft. 8½ in. gauge. TRAMWAYS. BILLS.—London County Council: To purchase the undertakings of the North Metropolitan Tramway Company (1896) and the Great Northern Tramway Company (1870). "North Metropolitan": Two bills for lines* from Shore-ditch to Cambridge-road, Amhurst Park to Upper Clapton-road, Barking-road to East Ham, Manor Park to Ilford, Holborn Town Hall to the "Angel," Theobalds-road to Bury-street, Bloomsbury; Pentonville to High-street, Islington; Islington and Camden Town to Holloway, and in Hackney. By the Corporations of Swansea,* Sheffield, and district around.* Southampton: For additional lines, and purchase of the Southampton Tramway Company; Neath, additional lines in the borough and its vicinity, and to acquire the Neath and District undertaking (1873), and Halifax.* "Manchester, Carridge, and Tramway Company": Lines in and through Eccles, Manchester, Ashton-under-Lyne, Worsley, Altrincham, Droylsham, Withington, &c. "Swansea Improvements and Tramway Company": For use of mechanical power and electrical works. "City of Birmingham Tramway Company": Lines in the City, Aston, Yardley, King's Norton, &c. "New General Traction Company": Lines in London, in Norwich and Coventry, by electricity (overhead or otherwise). "Bristol Tramway and Carriage Company": Several lines* in Bristol and the suburbs. "By certain 'promoters' for lines in Hastings and St. Leonards, from the Albert Memorial along the sea front to West St. Leonards;" in Newport, Mon.; for taking over the South Staffordshire and other local tramway companies, with new lines in Wolverhampton, Wednesfield, Handsworth, Bilston, Kingswinford, Wednesbury, Dudley, Stourbridge, Birmingham, &c.; and Dublin United Company, new lines. PROVISIONAL ORDERS.—By the Corporations of Blackpool and Huddersfield.* "Cardiff Tramway Company": Several new lines* within the borough, by electricity (overhead or otherwise). "Great Grimby Street Tramway Company": New lines,* by electricity (overhead or otherwise). "Imperial Tramway Company": In Middlesbrough, Stockton-on-Tees, and Thornaby. "Liverpool United Tramway and Omnibus Company": To work all the tramways in Liverpool, Bootle, and Litherland by electrical power, and using the overhead, or trolley, or traction, or other system. "Reading Tramway Company": For Reading and Caversham. "Worcester Tramway Company": Several lines (3 ft. gauge) within the city. By certain "promoters" for lines in Carlisle,* Manchester,* Moss-Side (Lancs.), Morecambe; Yarmouth and Caister,* with acquisition of the undertaking authorised by the Yarmouth and Gorleston Tramway Order of 1883; Cardiff to Penarth,* and in Weston-super-Mare.* In most of the foregoing provision is made for the adoption, if deemed expedient, of mechanical power. ELECTRICITY AND ELECTRIC LIGHTING. PROVISIONAL ORDERS.—To produce, store, and supply electricity, electrical energy, and power, and to erect, install, and maintain machinery, by the Corporations of Bangor, Bingham, Darwen, Dudley, Ipswich, Morley, Southampton (an enlargement of their Order of 1895, so as to include the entire borough), and Wrexham; by the Urban District Councils of Baking, Wimbledon, Ambleside, Bexhill, Dorking, Droylsham,

Farnworth (Lancs.), Garston, Kearsley (Lancs.), Levenshulme (lighting only), Morecambe, Moss-Side (Lancs.), Newmarket, Ramsbottom (Lancs.), Redditch, Stretford (Lancs.), Swadlowne (Derby), Tonbridge, Wallasey, Wilmslow (Cheshire), Withington (Lancs.), and Ventnor; and the Vestries of Fulham and St. Mary, Newington, with acquisition of so much of the London Electric Supply Corporation's Order (Act, 1895) as applies to the parish, and to light within two years from the date of the desired order, Borough High-street, Newington Causeway, Great Dover-street, New Kent-road, Newington Butts, and Kennington Park, Walthow, and Cambridge-road. By the following companies—London Electric Supply Corporation: For such parts of St. Margaret and St. John, Westminster, parishes as lie south of the bridge, Bridge-street, Parliament-square, and Victoria-street. County of London and Brush Provincial: In Bardonsey, Kotherthie, Brixton, Tulse Hill, Herne Hill, and St. Mary, Newington; Holborn District B.W. district (east of Gray's Inn-road), the Liberty of the Charterhouse, and parts of St. Leonard, Shoreditch, west of the City-road; St. George's-in-the-East, Bethnal Green, Mile End, Limehouse, and Poplar; and Fulham parish. "Blackheath and Greenwich District": For Greenwich, Charlton, Eltham, Kidbrooke, Lee, and Lewisham. "Bournemouth and District": Poole and Branksome. "British Insulated Wire Company" (of Prescott): Huyton-with-Roby, Whiston; and the Urban district, and Eccleston. "Leatherhead": For the urban district. "Llandridnod Wells": For the urban district. "Rottlingdean": For Rottlingdean, Ovingdean, and Wooddean. "Walton-on-Thames": In Walton, Hersham, and Oatlands; and by the Weymouth Consumers' Gas Company. By J. C. Howell, of Liphook, to supply the borough of Tenby, and Pembroke, and Pembroke Dock; also by the "John de la Warr and Robert Kersey" to supply certain parts of Bexhill. Also for Bury St. Edmunds, Mount Embo and Donorch, Fornsiorad, Melorch, and Port Skerrat, Dundalk, Ballymena, Clontarf, and Hill of Howth. WATER SUPPLY. BILLS.—London County Council: For acquiring, by agreement or arbitration, the undertaking of the East London (1853), and in that event to proceed with those of the Kent (1869), West Midlands (1866-10), New River (first Act, 13 Eliz. 2, and 3 and 4 Jas. 1, c. 8 and c. 12), Lambeth (1848), Southwark and Vauxhall (1852), Chelsea (1852), and Grand Junction (51 Geo. III, c. 169), companies; for raising money therefor by creation of consolidated stock or annuities, and powers to include in their county rate precepts such sums as may be requisite for the purpose of such purchase. "Kent River": Acqueducts and lines of pipes from their Staines reservoirs to new reservoirs and filter-beds at Kempton Park; from their new pumping station there to an equalising reservoir and pumping station at Cricklewood, and thence to a new service-reservoir, with pumping station, at Fortis Green, with subsidiary and filter stations at New Wood, Westbury, Twyford, Willesden, Hendon, Finchley, and Hornsey; taking 1½ acres of Hounslow Heath, but reinstating the ground surface. The aqueduct from Cricklewood to Fortis Green is to be laid by Golders Green, the "Spaniards" at Hampstead Heath, and the Mutton brook. "East London": Two joint water reservoirs, with aqueducts, &c., at Edmonton and Tottenham, taking a total of 100 acres of Chingford, Wild, and Mitchley Marshes in Chingford and Tottenham parishes; and to divert and impound waters from the Lea, Ching Brook, and Tottenham Mill Stream and Lead. A Water Board for Beckenham, Bromley, Dartford, Erith, Pexley, Bromley, and Sevenoaks districts, purchase of the Kent Waterworks Company, and so much of the Lambeth Company's undertaking as relates to Kent. For additional works and extended area of supply: by the following Corporations—Chichester, taking over the Chichester Water Company; Eastbourne, taking over the Eastbourne Water Company; Harrogate, and purchase of the Harrogate Water Company; Loughborough, with a reservoir at Whitbyck; Maidstone; Manchester, and to buy the Manchester Water Company; Newark; Newport, Monmouthshire, with reservoir at New Church West by an embankment across the Castrogroy brook, and one in Llanvaches by embanking the Llanvaches brook; Nottingham; Southampton, taking over the South Eastern Water Corporation; and Weymouth, with acquisition of the North Shields Water Company. By the Deal and Walmer District Council for a Joint Water Board, taking over the "Company of Proprietors of Deal Waterworks," the minor provisions include the registration and control of plumbers; and a Water Board for Gravesend and Northfleet, with purchase of the Gravesend and Northfleet Water Company—this same purchase is proposed by a separate Bill of the Gravesend Corporation. A Joint Water Board of representatives of Blackpool Town Council and the Urban District Councils of Fleetwood, Lytham, St. Anne's-by-the-Sea, and Kirkham, with purchase of the "Hyde Water Company," East Warwickshire Water Company, with reservoir at Astley; Weymouth Water Company; Lowestoft Water, Gas, and Market Company; Harrogate Water Company,

* 4 ft. 8½ in. gauge.
* 3 ft. 6 in. gauge.

* The Eastbourne Waterworks Company promote a Bill for new works with pumping-station at Holywell.

with reservoir by an embankment of Scargill brook; new Companies for supply of St. Neot's and Crowborough (Sussex) and the districts around; reincorporation of the Newhaven and Seaford Water Company, with new works and extension of area. The Reigate Corporation seek to alter and reduce the existing charges of the East Surrey Water Company, to prescribe a fresh scale of rates chargeable within the borough, and to require the Company to supply the Corporation for public purposes, and other persons for trade or business purposes, by meter, at a prescribed charge per 1,000 gallons.

PROVISIONAL ORDERS.—For new works and extension of area of supply by the Royston, Gosport, South Hayling, and Frith Hill, Godalming, and Farncombe Water Companies; and by certain "undertakers" for works to supply Steyning, Bramber, and Upper Beeding, Benliff, Hadleigh, and district (Essex), and Dumtöcher and Dalmuir.

GAS.

BILLS.—By the Urban District Councils of St. Anne's-on-the-Sea (Lancs.), with purchase of the existing Gaslight and Coke Company; Swadincote, with extension of area and acquisition of the existing Gas and Coke Company; Malvern, with purchase of the Malvern Link Gas Company, and additional works; Malvern Link, with that same purchase; and Coves, with purchase of the Coves Gas Company, and extension of area. A Company to supply Tuxford and district (Notts); by the Crays Gas Company, and Weymouth Consumers' Gas Company, for extension of area; and by the Ashford, and the Arundel Gas and Coke Companies, for reincorporation and extension of area. The South Metropolitan Gas Company seek for powers to alter the qualification of a director.

PROVISIONAL ORDERS.—For additional works and extended areas, by Droitwich Corporation; and the Market Harborough, Harrogate, and Wimborne Gas Companies.

GAS AND WATER.

BILLS.—By the Corporations of Lowestoft, for extended area and purchase of the Lowestoft Water, Gas, and Market Company, and Falmouth for purchase of the Falmouth Gas Company and Falmouth Water Company. By the Urban District Councils of New Hunstanton, with acquisition of the Hunstanton Gas Company and Hunstanton Water Company; and of Caerphilly, for three new reservoirs at Eglwysilan and Llanfahan, by damming three brooks; for dissolution into a new Company of the Hunstanton Water Company and the Hunstanton Gas Company, with additional works and area; for a Company to supply Rhyemey and the Aber Valley district, with acquisition of several local gas and water Companies, and to take 3 a. of Gelligaer Common.

The Tending Hundreds Water Company and Clacton-on-Sea Gas and Water Company apply for a Provisional Order for waterworks at Ardleigh (Phoenix Mill) and enlargement of area of supply.

THE SANITARY INSPECTORS' ASSOCIATION.

The first monthly meeting for the year of this Association was held on the 2nd inst. at Carter's Hall, London Wall, with Mr. W. W. West (Chairman of Council) presiding. After the election of thirty new members and the adoption of the terms of a letter of condolence to the widow of the late President (Sir B. W. Richardson), Dr. Newsholme (Medical Officer of Health of Brighton) read a paper on "The Prevention of Tuberculosis." A discussion followed the reading of the paper, on a resolution of thanks, proposed by Mr. Dee (Westminster), and seconded by Mr. Gardiner (Worthing). The motion was supported by Mr. Billings (Holborn), Mr. Pettitt (Kennington), and several members of the Council. Mr. Alexander (Shoreditch) concurred in the statement that the overcrowding, dampness, and insanitary surroundings of the dwellings of the poor made consumption the most prevalent among the poor. Mr. H. Thomas (Bernoldsey) suggested that the paper should be printed, and circulated widely, the attention of County, District, and Town Councils, and members of Vestries and Local Boards, being especially called to the paper. Mr. Grigg (Fulham) said he could have wished that certain country members, in districts containing a large number of back-to-back houses, who were advocates of that class of dwellings, could have heard the paper. He inquired whether there was any means of ascertaining if a higher death rate from consumption prevailed in districts where back-to-back houses abounded than in other districts where the houses had through ventilation. Mr. Lightfoot (Chelsea) adverted to the difficulty, among certain classes of the population, in getting people to keep their houses clean, referred to the decision of a London magistrate to dismiss a summons brought against a householder for not properly cleaning his house. The magistrate

said that if the house was unfit for human habitation he could give a "closing order," but he had no power to give a "cleansing order." The Chairman, in closing the discussion, said Dr. Newsholme had told them that the abolition of private slaughter-houses was one of the means to be adopted for the prevention of tuberculosis. He thought that the building of proper houses for the people to live in was no less important. Sanitary inspectors should insist upon the houses of the poor being constructed not simply with regard to the drains, but with due regard to thorough ventilation. The vote of thanks having been accorded with acclamation, Dr. Newsholme briefly replied, and the meeting terminated.

Correspondence.

To the Editor of THE BUILDER.

COPPER ROOFS.

SIR,—I should be glad to know if any modern copper roof can be referred to which has been erected within the last three or four years and which has acquired that green colour we so much admire in ancient roofs. My experience, as far as it goes, is that if the green colour does not come at once it never comes at all, not even in the air of the Cumberland Lake district after an exposure of ten years.

In order to try it on the East coast I have for two years had a specimen of sheet copper exposed on the roof of one of the masons' sheds at Bamburgh Castle, 150 ft. above the sea level, with no apparent change in colour. On the other hand, copper gratings in an unoccupied building adjacent to these sheds turned a beautiful green colour in a few days; the cast metal was, of course, an amalgam. It had been suggested to me that such an amalgam as Muntz metal, which, I believe, 1'50 of copper to 1 of zinc, would give the desired colour on roofs as it does when applied as sheeting to ships' bottoms. I shall be glad if any of your readers can tell me if it has ever been so applied, and with what result.

CHARLES J. FERGUSON.

THE RIGHT TO ARCHITECTS' PLANS.

SIR,—With reference to your report and observations in your issue of 26th ultimo, the following is a case for the consideration of the profession:—

An architect was employed to design a pair of villas. The work was carried out, and both the architect and contractor were paid, and the houses are occupied. The client now demands the plans, specifications, and map of sewers. There was no stipulation that these should be given, and the question is, would a court be likely to hold that these documents, having been all along in the architect's possession, should now be given up? If so, see how unjustly such obligations might work—that after one pair of villas are built the client can use them, *ad infinitum*, without further charge.

ARCHITECT.

HEATING HOUSES FROM KITCHEN FIRE.

SIR,—I have read with interest your comments on my hook, and should like to say a few words. With reference to incrustation formed in heating apparatus, my experience has been that in the winter months, when heating apparatus is in operation, no incrustation takes place in an apparatus where the water passes from the boiler at 180 deg. Fah. But in the summer months, when the heating apparatus is shut off, incrustation is liable to take place in the boiler, tank, and domestic supply pipes unless care is taken to shut the damper, to prevent the water being over-heated.

THOMAS POTTERTON.

GOOD TEMPLAR HALL, PERTH.—Alterations and improvements at the Good Templar Hall, King-street, Perth, have just been completed. On the first floor is the main entrance of the hall, and a committee room has also been provided, besides lavatory accommodation. The south part of the floor has been fitted up as a shop, with entrances to both Canal-crescent and King-street. On the upper floor is the main hall, with waiting and retiring rooms and lavatories. The hall has been seated for between 400 and 500 persons. The buildings have been designed and executed under the personal supervision of ex-Baillie Smart, architect and surveyor, Perth, and the contractors for the different works are the following:—Mason, Thomas Dick, Broughty Ferry; carpenter and joiner, David Morrison, Perth; plumber and heating, A. & J. Davidson, Perth; plasterer, Charles Law & Sons, Perth; slater, Alexander Adie, Perth; glazier, Charles Alexander, Perth; ironwork, George Barker, Perth; painters and decorators, Hugh Mackay, Perth.

The Student's Column.

SPECIFICATIONS.—II.

EXCAVATOR.

IN dealing with this portion of the work it is advisable to prepare the site plan with rather more care than is too often done. The determination of a datum line and the careful levelling of the site before any work is commenced, and, indeed, before the plans are finally settled, will materially assist in producing accuracy in the arrangement of, and contracting for, the excavator's work. The architect should determine what are to be the levels at which the ground is to be left at the completion of the works by the contractor. The simplest way is to prepare a block plan of the site with the levels marked in different colours, say blue for those existing before the work is begun, and red for those to be left at completion. If the site is at all irregular in its surfacing before the building operations, or is intended to be so after them, it is well to add sections to the site plan. This site plan will also serve as the plan of drains, the arrangement and position of which should be determined, and shown clearly on the drawings, before the contract is made.

In order to promote even tendering amongst the competing contractors it is particularly necessary to be clear in the specification of the excavator's work. More contracts are lost and won, and more unsuspected profits made on the excavator's trade than probably on any other in the bills of quantities. In the interest of his client it is the architect's duty to give every tenderer an unquestionable basis on which to form his estimate, for it too often happens that a contractor whose general pricing is below his competitors is put out of court by a mistaken reading of some loosely expressed or improperly defined stipulation in a specification. The student therefore should guard against any temptation to the vagueness and indecision which are too frequently characteristic of the part of the specification relating to the excavator's work.

The specification should state clearly what is to be done with the earth from excavations, whether it is to be used for filling up depressions or for forming banks or terraces, or whether it is to be removed and carted away. Other points we shall notice in detail, as the clauses relating thereto are given.

Levels.—The datum line shown on the drawings is 2 ft. above the level of curb at north end of site (or define by reference to an ordnance bench-mark, or some easily accessible and well-defined point). The levels shown by the blue figures on site plan are those existing, and by red figures the finished levels.

Surface Digging and Filling.—Remove vegetable soil one spit deep, and wheel and deposit at spot where marked on site plan. Remove present superfluous surface soil, and use earth for filling where required to make up finished levels, and cart away superfluous earth; made-up soil to be well rolled with a heavy roller to finished surface.

Excavate under boarded floors to a depth of 2 ft. 6 in. below floor level, and below paved floors to a depth of 1 ft. 6 in. below floor level.

Trench Digging.—Excavate for trenches (and haesement, if any) to the depths shown on drawings, and of the following widths: for 9 in. walls, 2 ft. 6 in. wide, for 14 in. walls, 3 ft. 6 in. wide (or as the architect may desire). Level and consolidate earth at bottom.

The depths of foundations shown on the drawings are believed to be sufficient, but should a firm bottom be not reached at those depths, the contractor is to call the attention of the architect to the fact before putting in the concrete. (N.B.—Or the specification may state that the bottoms of foundations are to be approved before the concrete is laid.)

Filling-in.—All trenches to be filled in as soon as walls are above ground level. All filling-in to be well punned in layers, and watered when so directed.

Pipe Trenches.—Excavate for all water and drain pipes, and fill in and pun over same as before directed.

Surplus Earth.—All surplus earth from trenches is to be removed and carted away (or otherwise, if so desired).

Pumping.—Pump or bale out water from the trenches, and keep same dry till filled in, and supply and remove any temporary drainage requisite for this purpose.

Planking and Strutting.—Execute all planking, strutting, and shoring which may be

necessary for maintaining sides of excavations. The contractor will be required to cut out to a square section for concrete any trenches that may be allowed to fall in through insufficient support, and the concrete will have to be filled in to the extra width thereby required at the contractor's expense. (N.B.—Contractors are prone to neglect adequate support for sides of trenches, and it is important that trenches should have vertical sides, and the concrete be filled in to the full width of trench.)

Concrete.—The concrete for foundations to be composed of fresh burnt blue lias lime, and ballast of clean hard river or pit gravel, broken to pass a sieve of 2-in. mesh, and clean sharp sand, and to be mixed on a clean boarded or stone platform, in the proportion by measure of one part of lime to five parts of ballast and two parts of sand, with a sufficient quantity of water; and the whole to be thoroughly incorporated and tipped into trenches. (Or otherwise describe concrete as desired.) The concrete to be filled in to the full width of square-cut trenches, and not between boards.

(Then describe any other varieties of concrete for pavings or fireproof floors.)

Brick Rubbish.—The concrete under pavings to be laid on a bed of hard, dry brick rubbish, in, thick, and well rammed.

Provision.—(Specify any provision desired of digging or concrete for filling in to cesspools, &c., making it clear what description of digging and of concrete is required.)

Roadways and Graveling.—(Specify what is to be done by the contractor, or provide a sum of money.)

Grubbing Up.—(If there are any hedges or trees to be removed and roots to be grubbed up, this must be specified.)

DRAINAGE.

Drains.—The drains to be laid as shown on plans with Albion Clay Company's patent Paragon pipes (or whatever is intended; but make it quite clear whether "London-made" or "tested" pipes are wanted or not. Do not say that the pipes are to be of "approved" manufacture without indicating what will be approved, as the quality varies considerably. If there is to be a difference between the rain-water drains and the soil-drains describe it thus:—

The rain-water drains to be of "A" form and the soil-drains of "B" form, all to be laid truly with joints formed and filleted with Portland cement, and the latter to rest on bed of concrete 6 in. thick, the full width of the trench.)

Testing.—The contractor will be required to test the drains in the presence of the architect. (State what test will be required, whether water test, and to what head of water, lamp test, straightness of line, and gradient, &c. If the work is within province of Local Authority, add: The drains are to be laid in such a manner as to satisfy the requirements of the inspector to the (Local Authority).)

If the drains are not satisfactory in all respects, the whole shall be taken up and relaid at the contractor's expense.

Connection with Sewer.—Give notice to the (Local Authority), and pay their fees for making connection with sewer. (The Local Authorities in nearly all cases now require that the connexion with sewer shall be made by them, and their charges paid for same.)

Cesspools.—(If there is no public sewer, these may be required. Then specify size, depth, and whether steined, dry, or in cement, as the case may be; also, whether cemented and made water-tight, as required by some Local Authorities. Specify the brick dome and manhole cover, and ventilation, if any.)

Soak-away Hts.—(These are allowed in some districts. Specify size and depth, whether steined, dry, of course, and whether filled with gravel, or brick, or stone rubbish.)

Lidded Pipes.—All bends and junctions, except in inspection chambers, to have lidded pipes.

Gullies.—(Specify as required also the slippers or open channels for sink and bath wastes. Also grease traps where wanted.)

Disconnecting Chambers.—Disconnecting chambers to be built in accordance with detail drawing by _____ in the clear, and _____ deep.

The sides to be built one brick thick in white glazed bricks in cement, and to be corbelled over at top to receive iron covers, 24 in. by 18 in. The bottoms to be formed of Portland cement concrete, in, thick, and sloped in cement to channel. (Specify also the trap, the ventilating pipe, foot-irons, air-tight manhole cover.)

Inspection Chambers.—Inspection chambers to be _____ in the clear (if of varied size, letter on plans and describe them separately) and

without trap and ventilating pipe, but in other respects similar to disconnecting chambers.

Lamp Holes.—(Specify if any are required.)

Flushing Tank.—(Describe if any with Field's syphon or other automatic arrangement. State size and construction.)

(N.B.—With reference to special items connected with the drainage, it is generally better for the architect to decide beforehand what he means to adopt, and specify by a manufacturer's name, as So-and-so's gully trap No. _____, p.c. Care should, however, be taken to find out if these special articles are kept in stock, and, if not, how long before they are wanted the order must be given, and this should be stated in the specification, as Builders often do not order special articles till the day before, or even the day after, they are wanted on the works.)

OBITUARY.

MR. E. HOWARD DAWSON.—We regret to have to record the death of Mr. E. Howard Dawson, of Lancaster, architect, and Associate of the Institute of Architects, at the early age of thirty-three, and under very sad circumstances. Mr. Dawson had gone to Manchester on business, and was taken ill in the train, whence he was carried to a hotel in Manchester where he died on the night of December 31. He had been married only three years, and leaves a widow and daughter. Mr. Dawson had carried out a considerable amount of work, and during the last seven years had been principally engaged in extensions and re-erectments at the County Asylum, Lancaster. He carried out the County Police-station at Skerton, and three others in the district; the Phoenix Hall, Lancaster; the Congregational churches at Grange and Carnforth; and a good deal of work on building estates.

HERR FERDINAND SCHIFFER.—We regret to have to record the death of Burath Ferdinand Schiffer, whose name has long been associated with the great railway works of Germany.

HERR JULIUS HOFMANN.—In a special article, the *Deutsche Bauzeitung* refers to the excellent work done by Oberbaurath Julius Hofmann, of Munich, recently deceased, whose principal work was in connexion with the numerous castles erected and decorated for Ludwig II. of Bavaria, and explains the curious relationship of client and architect, which existed between the Bavarian King and Oberbaurath Hofmann, and the origin of what have been considered as meaningless eccentricities in these particular buildings. Herr Oberbaurath Hofmann was born in 1840, and his technical education was obtained at Vienna. He had the curious fortune of obtaining the post of Court Architect to Emperor Maximilian of Mexico, into whose service he entered in 1864, and he was responsible for two well-known royal residences in that country. After frequent changes, holding important offices, Herr Hofmann became the successor in 1884 of Professor Dollmann, as Court Architect at Munich, and it was from that date that he was particularly occupied with work on the castles of Herrenchiemsee, Linderhof and Neuschwanstein, as well as on the designs for many castles which were never built. His last work was the design of a memorial chapel to the deceased King, which will now be carried out by Professor Thiersch.

GENERAL BUILDING NEWS.

PREMISES, SELKIRK CO-OPERATIVE SOCIETY.—New premises for the Selkirk Co-operative Society, Limited, have been erected as an addition to the existing buildings. The frontage is 114 ft. long, with an average depth of 30 ft. The work has been carried out from plans prepared by Messrs. J. & J. Hall, Galashiels.

BUILDING TRADES, THE POTTERIES.—In the Potteries, bricklayers, for the time of the year, are well employed. Joiners and carpenters report trade exceptionally good for the time of the year, hence hands being well employed. There are a few outside carpenters and fixers suspended through the weather. There are, practically speaking, no joiners out of work in the district. At Leek in all branches of the building trade there is great activity for the time of the year. At Crewe all joiners and bricklayers are working full time. At Stafford trade is dull, with a few out of work in all branches.—*Staffordshire Sentinel.*

POST-OFFICE, SOUTHEND.—A new post-office has been opened at Southend-on-Sea in West-on-land. The architect was Mr. Henry Tanner, and the builders were Messrs. Lavis & Leaney, the fitting being supplied by Messrs. Everett & Son, of Colchester.

RESTORATION OF MORLAND CHURCH, WEST-MORLAND.—The ancient church at Morland was reopened recently after undergoing restoration at a cost of about 1,800*l.* exclusive of the chancel, which was restored by the Ecclesiastical Commissioners. Among the principal alterations was the new transept, the end of which was pulled down to the bottom of the old window and rebuilt with three windows to agree with those in the south transept. The vestry had to be pulled down so as to open out a window which was built up in the chancel

wall, and that entailed the building of another vestry. The old ceiled roof has been taken away, with the exception of the principals, and replaced with a new open one. In the tower three Saxon windows have been opened out. Inside, the old pews have given way to new stalls in oak. The old three-decker pulpit has been removed to the other side of the church, and reconstructed on modern lines. The choir has been brought into the chancel, and the communion rails lowered. A new heating apparatus has been put in. The contractor for the work was Mr. Edmondstone, Morecambe, and Mr. C. J. Ferguson was the architect.

BANK, EXMOUTH.—A new building in Rolle-street, Exmouth, which is to be the new branch of the Exeter Bank in that town, has just been opened. The old premises have been altered and extended in accordance with the plans of Mr. Chas. Cole, architect, of Exeter. The building work has been carried out by Mr. A. Hayman, Exmouth.

WORKING MEN'S CLUB, NEATH.—The memorial stones in connexion with the Neath Working Men's Club were laid recently by the mayor (Councillor A. R. Thomas). The architects are Messrs. Lambert & Rees, Neath and Bridgend, and the contractor Councillor Abraham George. The new premises will have a pressed brick front, and will contain reading rooms, a library, billiard-room, skittle-alley (97 ft. long), bar, and committee and cart-tyer's rooms.

PROPOSED KURSAL AND MUNICIPAL BUILDINGS FOR CHELTENHAM.—At a meeting of the Cheltenham Town Council, on the 4th inst., the Town Improvement Committee made its report on the proposed spa scheme, &c., for the town. The Committee had engaged the services of Mr. E. R. Robson, architect, Westminster, and he had had several interviews with the Committee, and had prepared plans for the erection of a kursaal and baths at the south end of the Winter-garden, and for the conversion of the existing Winter-garden into municipal offices and a winter-garden. Mr. Robson estimates the expenditure to be as follows, viz.:—50,000*l.* if all the work is done at once, and 53,700*l.* if done in sections. The Committee, and had prepared plans for the erection of the buildings be advertised for in such sections as the Committee may decide on, and that application be made to the Local Government Board for their sanction to a loan. After a brief discussion, it was decided to adjourn the whole matter to a special meeting of the Council, to be called for the 22nd inst.

SCHOOL NEAR LOWESTOFT.—A new voluntary school has just been opened at Carlton Colville, by the Lord Bishop of the Diocese. The architect is Mr. F. W. Richards, of Lowestoft, under whose direction the school has been built, at a cost of 1,100*l.* Mr. W. J. Searle carried out the brickwork, and Mr. A. G. Beckett the wood work. The interior of the building is 98 ft. by 22 ft., divided by a sliding partition, both girls and boys being accommodated. It is constructed to hold 200 children.

RESTORATION OF ST. PETER'S CHURCH, BARTON-ON-HUMBER.—This church is about to be restored. The work is to be put in hand at once, under the superintendence of Mr. C. Hodgson Fowler, of Durham. The scheme comprises the building of a new chancel, the north side of the new gery vestry, restoration of the tower, renovation of the interior walls, and the purchase of a new organ.

NEW ACCIDENT HOSPITAL, ALLOA, N.B.—This new building is to be erected on a site immediately to the west of the existing Hospital, and is to be designed by Mr. James Bryden, architect, Glasgow. There will be two entrance gates on a new road leading to the hospital buildings. The main building will consist of a central administrative block, and two wings. Each of the wings will contain one ward for six beds, one ward for three beds, and two private wards for one bed each. All these wards will face the south. The wards will be approached from the central part of the building by wide corridors. From these corridors the latrines will enter at the back; ward sculleries are also provided entering off the corridors. Observation windows are arranged in the wards. The floors of the wards are of pitch pine, and all corners are rounded. The lower walls of the corridor are lined with tiles, and the upper part has an exit porch for convalescent patients, obtaining access to the grounds in rear of the buildings. The central part of the building contains toward the front, the entrance vestibule, doctor's room, and men's and women's day-room, behind which are placed the operating-room, doctor's store, kitchen and scullery service, pantry, and matron's storeroom, &c. The central building is two stories in height, and the upper floor contains matron's rooms and seven bedrooms. In the rear of the main hospital building will be erected the offices required, comprising washing-house, laundry, boiler-shed, store for patients' clothing, mortuary, and post-mortem room.

BUILDING IN HIGH STREET, SHEFFIELD.—The progress of Sheffield in the direction of the improvement of the city has been greater and more marked during 1896 than in any previous year since the City Council woke up to the fact that so large and important a centre was despoiled behind the times in the character of its buildings and main thoroughfares. The

widening of High-street was in this connexion the most notable event of the year. A change which brings the converging thoroughfares of Vargate and Church-street and the noble block of Cole's buildings into the line of vision of the pedestrian standing at the Post Office, and affords a fine, spacious thoroughfare in the place of one that was tortuous, narrow, and awkward, is so decided an improvement in the city's main artery that the lethargy of preceding Councils on this subject only evokes surprise. The buildings in High-street completed during 1896 include the London and Midland Bank, at the corner of York-street, the lofty pile raised by Messrs. Foster & Sons, and the pretty terra-cotta building of the Grand Clothing Hall. The Café Company's premises consist of the original premises set back to the prescribed line. The new premises of Messrs. F. L. & S. Smith were the first to appear behind the disappearing bricks and mortar, and now the vestry is practically completed. As yet the new roadway is only temporarily laid, awaiting the solidifying effect of the traffic, and the completion of the connecting link of the new sewer, which extends from the Monolith to the Church Gates, and from Change-alley to the top of Commercial-street. This sewer replaces the rotten and ineffective drain which in places simply carried out of the rock in its course.—*Sheffield Telegraph.*

RESTORATION OF ST. GEORGE'S CHURCH, WOLVERHAMPTON.—This church is undergoing restoration at a cost of 2,500*l.* Among the alterations being carried out is the entire removal of the galleries, the re-flooring with wood blocks, a new organ, modern oak seats in place of the old high pews, a new choir vestry is provided, and the chancel window is filled with a representation of the Crucifixion, and a carved oak screen is erected across the entrance to the chancel. Mr. T. Skett has the contract, and the architect is Mr. Beck.

LABOURERS' DWELLINGS IN MILK-STREET, BIRMINGHAM.—The Birmingham Improvement Committee, in their report to the City Council, recall the proceedings that have been taken in relation to the improvement scheme for the insanitary area in Milk-street, under which the land was acquired by the city and cleared of its objectionable buildings. The Committee now report that they have been unable either to sell or let the land as subject to the conditions laid down by the Local Government Board, and have therefore given their most careful attention to the preparation of plans for houses suitable for the labouring classes. 103 dwellings suitable for the artisan class, at rents varying from 5*s.* to 6*s.*, each with three bedrooms, have been erected in the vicinity of Ryder-street, and the committee, having provided so many houses of this class, feel they would like to supply a dwelling suitable for that portion of the working class who are earning a labourer's wage. Drawings are submitted by the Committee showing such suggested dwellings from which it will be seen that it is proposed to erect upon the site sixty-four dwellings, each having a living room 12 ft. 6 in. by 11 ft. 3 in., bedroom, 12 ft. 6 in. by 9 ft.; bedroom, 11 ft. 3 in. by 8 ft.; water-closet; scullery to every two houses, 10 ft. by 8 ft. 6 in. These houses are designed on the dual-house system—viz., one house built upon another, the upper storey of the first of houses being obtained by a balcony running the whole length of the rear of the dwellings, and are estimated to cost 6,250*l.* The rent proposed to be charged is for the lower houses 4*s.* 3*d.*, and the upper 3*s.* 6*d.* Although, in accordance with the requirements of the Local Government Board, only one half of the houses has been completed, the remaining part is wholly unoccupied, and the materials in the buildings rapidly disappearing; under these circumstances it is suggested that the scheme be carried through in one contract, and the committee therefore recommend that the proposed scheme be approved, subject to such modifications as they may deem advisable, and that the Finance Committee be authorised to borrow a sum not exceeding 6,250*l.* for the purpose of carrying out such scheme.—*Birmingham Post.*

NEW HOTEL NEAR THE CENTRAL STATION, MANCHESTER.—Before the details of the new hotel proposed to be erected close to the Central Station by the Midland Railway Company are finally decided upon, Mr. C. Trubshaw, F.R.I.B.A., the Architect of the Company, and Mr. William Towle, the manager of the company's hotels and restaurants, are to proceed to America in order to make a tour and inspection of the large hotels in the States. The new hotel, which it is proposed to make one of the largest and finest in the country, will occupy the site at present bounded by Lower Mosley-street, Windmill-street, Mount-street, and Peter-street. One of the chief features will be a large courtyard in the style of a winter garden. To take the place of the Gentlemen's Concert Hall, which is one of the buildings to be demolished to make way for the new hotel, a large concert room will be attached to the hotel, but the entrance will be a separate one.—*Manchester City News.*

THE STATE OF BOCKING CHURCH.—A vestry meeting was held at Bocking recently, Col. Savill presiding, to consider the report of the architect (Mr. F. Chancellor) upon the condition of the church fabric. The report urged the necessity of a thorough examination of the whole of the roof of the church.

Mr. Chancellor had examined the chancel arch and the pillars supporting it, and had come to the conclusion that they would have to be taken down and rebuilt. About 500*l.* or 600*l.* was required to carry out this work. The Chairman said this sum would not put the church into a thorough state of repair, but only the roof and chancel arch. A committee was formed to collect the money for the carrying out of the work.

BAPTIST CHAPEL, BEXHILL.—The new Baptist place of worship in Clifford-road, Bexhill, was opened recently. The new building is in the Gothic style. The chapel proper is about 45 ft. by 27 ft., and there are two vestries in the rear. The contractor was Mr. C. Thomas, the architect being Mr. R. W. Moore, of Brighton.

BUILDING TRADE, STONEHAVEN.—Trade in Stonehaven during 1896 has been on the whole of most satisfactory character. The building trades have had a busy year. The large amount of work carried over from 1895 kept all well employed during the early months of the year. During summer a slight lull set in. Towards the end of the year, however, a number of important contracts were settled, and from the number of buildings now in progress or projected the coming spring is certain to be a busy one.

NEW SCHOOLS, BELFAST.—A new school has been erected in Mayo-street, Belfast. Messrs. Young & Mackenzie, architects, superintended the work of erection, which was in the hands of Mr. William Kerr, builder.

HEADQUARTERS FOR LEEDS MEDICAL STAFF CORPS.—The Leeds Volunteer Medical Staff Corps have commenced the erection of offices and hall in St. James's-street. The drill hall will be 68 ft. in length, and will have a width of 35 ft., with a wood block floor resting on a bed of concrete. The roof is to be of wrought iron. The other buildings will comprise quartermaster's office, stores, and residence of the staff-sergeant, while outside the main block a lavatory will be fixed, and a shed erected for the service wagon. The whole of the work is to be carried out in accordance with plans prepared by Mr. William Bakewell, of Leeds.

CONDITION OF THE PARISH CHURCH, TARNWORTH.—Owing to the anxiety felt as to the safety of the south-west pinnacle of the tower of the old church at Tarnworth, the vicar and churchwardens considered it advisable to take the opinion of Mr. Basil Champneys, who has made a careful survey. In a report, Mr. Champneys states that, in regard to the tower, there is a considerable inclination towards the west. He advised that the top of the spirelet be at once taken down to the level of the bed above the second crocket from the top. Steps are being taken to have the more dangerous portion of the pinnacle at once removed, and when funds are obtained the remainder will be taken down, and the whole re-erected in a substantial manner. The three other pinnacles of the tower have all been rebuilt during the present century.—*Birmingham Post.*

THE NEWCASTLE INFIRMARY SITE.—In connexion with the proposed erection of a new infirmary for Newcastle, the question of sites has been advanced another stage by the receipt of the report of Mr. Waterhouse, who was called in to advise the House Committee on this matter. Mr. Waterhouse, it is stated, favours the erection of a new hospital on the present site. He considers it will afford ample space for the erection of a first-class modern hospital, of 400 beds, with the necessary administrative buildings, and accommodation for eighty nurses. Mr. Waterhouse is further of opinion that the work of constructing the proposed new hospital may be carried on without in any way interfering with the work of the Infirmary during the period which will be required for the construction of the building.

CHURCH FOR THE WREXHAM DISTRICT.—The plans sent in by Mr. J. H. Swainson, Wrexham, for the new church, to be called St. Peter's and to be erected at Rhosrobin, in the parish of Rhosddu, a suburb of Wrexham, have been adopted.

RESTORATION OF TOWER, HINDERCLAY CHURCH, SUFFOLK.—The tower of Hinderclay Church has for some time been in a critical condition. It was lately inspected by Mr. W. Fawcett, F.S.A., of Cambridge, and by his advice, the work of restoration was undertaken.

SANITARY AND ENGINEERING NEWS.

LIGHT RAILWAYS, ABERDEEN.—There are two rival schemes for light railways from the City of Aberdeen to the Skene and Echt districts. That promoted by a private syndicate, which has met with most favour in the localities to be served, is estimated to cost 103,571*l.* The other, promoted by the Great North of Scotland Railway Company, is expected to cost 60,000*l.*, and is proposed to be worked in conjunction with the city tramways and with a proposed circular railway to be formed by making through the suburbs of Aberdeen a connexion between the Deeside line and Great North main line, there being already a through connexion at the existing joint passenger station. The G.N.S.R. shareholders have approved of the application and order in this connection will be considered at the first sitting of the Light Railways Commissioners in the North of Scotland.

BRIDGE, NEAR DURHAM.—Mr. C. A. Harrison, Engineer to the North-Eastern Railway Company, has designed a bridge to cross the Browney stream at Rely Mill, about a mile south of Durham. The new bridge will be of red brick, and includes five arches, each with a span of 60 ft.; and when completed the bridge will measure 300 ft. long, and 70 ft. high at the deepest arch.

DRAINAGE OF RUABON.—On the 1st inst., at the Court-house, Ruabon, Colonel Marsh, R.E., one of the Inspectors of the Local Government Board, held an inquiry as to an application by the Wrexham Rural District Council for a loan for the purpose of draining the village of Ruabon. The village has an estimated population of about 1,700, and the older portion is at present drained by a system of pipe or brick sewers into the Ruabon Brook. The new portion at Bryn, which has a population of nearly 700, is at present drained into cesspools. Mr. E. B. Martin, of Stourbridge, has prepared a scheme, which he explained. The total cost of the works was estimated at 6,830*l.* There was no opposition.

SEWAGE QUESTIONS IN SOUTHPORT DISTRICT.—The report by Mr. Mansergh on the treatment of sewage in view of the early silt-up, through the Ribble works, of Crossens Channel, has been received and referred to a sub-committee of the Southport Corporation for report. It is understood that Mr. Mansergh advises an initial expenditure for pumping and filtration works of some 30,000*l.*, to be afterwards doubled by carrying out a complete scheme.

SEWERAGE, KNOTTINGLEY, YORKSHIRE.—An inquiry on behalf of the Local Government Board was held recently at Knottingley by Colonel Hasted, R.E., in regard to an application by the Knottingley Urban District Council for powers to borrow 13,000*l.* for works of sewerage. Mr. E. D. Atkinson, clerk, explained the scheme, which has been prepared by Mr. J. Richardson, engineer, Methley.

THE ULLET-ROAD SEWER BURST, LIVERPOOL.—The Health Committee of the Liverpool City Council, at their last meeting, had under consideration a number of letters complaining of the damage done to property by the recent bursting of a sewer in Ullet-road, Sefton Park, and resolved: "That, although the committee consider that the accident to the Ullet-road sewer and the damage done thereby was caused by the exceptionally heavy rains which took place on the evenings of December 24 and 25, they think that, without admitting any legal liability on the part of the Corporation, the Corporation should repair the actual damage to property by the accident, and that the matter be referred to a sub-committee, consisting of the chairman, deputy-chairman, Mr. Campbell, and Mr. Thomas, to see the parties affected, and to authorise any works to be carried out which the sub-committee may think necessary." It was also decided to instruct the treasurer to pay all extra wages on the works as certified and directed by the City Engineer, who was authorised to obtain such machinery and materials as he might require for completion of the works.

STAINED GLASS AND DECORATION.

WINDOW, BRAMSHOTT CHURCH, HAMPSHIRE.—A window to the memory of the late Mr. Alexander Macmillan, the publisher, and to his son, the late Mr. Malcolm Kingsley Macmillan, has been placed in the north aisle of Bramshott church, in Hampshire, in which parish Mr. Macmillan had a residence. The window is the work of Mr. H. Holiday, of Hampstead.

MEMORIAL WINDOW, TRINITY CHURCH, WINDSOR.—A memorial window has been placed on the north side of Holy Trinity Church, Windsor. The window depicts the Annunciation. The work was executed by Messrs. Campbell & Smith, of London.

FOREIGN.

FRANCE.—M. Gougeon, pupil of M. Lalou, has won the prize for the competition of American architects, the subject of which was "A large factory in Alaska."—M. Scellier de Gisors, architect to the Luxembourg, has been elected Inspector-General of "Batiments Civils et des Palais Nationaux," in place of M. Daumet, who has reached the limit of age.—M. Roly has just been elected President of the Académie des Beaux Arts, and M. Emil Barrias has been elected Vice-President.—There is a talk of uniting the Seineaux line of railway with the line of the Ouest, by means of a branch line of railway, the cost of which is estimated at three million francs. It will leave the Robinson station and end at Clamant, going by Plessis Piquet, Bagnaux, and Châtillon.—There is an exhibition in the Rue Volney of the new works of the Russian painter Vereeschagin. The most interesting picture in the collection is one of the retreat of Napoleon I. in the Russian Campaign.—The thirteenth exhibition of impressionist and symbolical painters has just been opened in the Gallery "Barc de Bouville," in the Rue Pelletier.—A new bridge is shortly to be built over the Seine between Genevilliers and Cléchy.—The municipality of Bourges has just voted a sum of 250,000 frs. for the... These schemes will be considered at the first sitting of the Light Railways Commissioners in the North of Scotland.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Table with 4 columns: Nature of Work, By whom Advertised, Premiums, Designs to be delivered. Includes entries for Working Class Houses and Corn Exchange Spalding.

CONTRACTS.

Table with 4 columns: Nature of Work or Materials, By whom Required, Forms of Tender, ac. Supplied by, Tenders to be delivered. Includes entries for Pipe Sewers, Residences, and various industrial buildings.

CONTRACTS—Continued.

Table with 4 columns: Nature of Work or Materials, By whom Required, Forms of Tender, ac. Supplied by, Tenders to be delivered. Includes entries for Drainage Works, Gravel and Shell, and various engineering projects.

PUBLIC APPOINTMENTS.

Table with 4 columns: Nature of Appointment, By whom Advertised, Salary, Applications to be taken. Includes entries for Manager, Works' Department and Borough Engineer's Assistant.

Those marked with an asterisk (*) are advertised in this Number. Competitions p. iv. Contracts, pp. vi, vii, & viii. Public Appointments, pp. xvi, & xix.

under Puerrefitte, is being actively carried on.—The municipality of Châlons-sur-Marne have just decided to suppress the Chapel belonging to the College, which from its size and decoration constitutes one of the finest ornaments of the town. This chapel dates from the seventeenth century.—The works undertaken by M. Fournigier for the restoration of the Théâtre at Orange have now been nearly completed. The vaults supporting the ranges of seats to right and left of the scene have been rebuilt.—An interesting exhibition of archeological objects and documents relating to the primitive races of America, will shortly be held at the Trocadéro.—There is a question of placing in the Council Hall of the Tribunal de Commerce the beautiful marble bas-relief by M. Puché, "La Seine," which was exhibited a few years ago at the Champs Elysées.—Some measures are soon to be taken by the Municipality of Saint Maudé to put into some sort of repair an old tower which is situated at the angle of the Grande Rue de Paris. It is considered one of the last vestiges of the park of Philippe Auguste.—The death of M. Aumont, architect, in Paris, is announced.—A distinguished architect, M. Ludovic Douillard, has just died at Nantes, at the age of seventy-three years. He belonged to the Société Centrale since 1873, and had founded an atelier for young architects. M. Douillard, who was a Catholic priest, built the church of Paimbœuf, near Nantes, and the convent of the Capucins at Nantes. It is a monument of a pure and harmonious style, remarkable for its cloisters.—There is a talk of erecting a statue to the artist Troyon in one of the public squares of Sevres.

GERMANY.—The architectural journals are much occupied at the present time with a controversy as to the fairness of public building officials entering into open competition against architects in private practice. At present it is permissible, and a common occurrence, but it appears that the private architects would prefer to see some limitation.—The "Vereinigung Berliner Architekten," under the presidency of Herr von Hude, has held a special meeting in honour of the three architects of the Berlin International Exhibition of last year.—Messrs. Griesebach, Hoffacker, and Schmitz. The subject of the lecture for the evening was "Exhibition Buildings," by Herr Kyllmann, who gave much valuable information as to former exhibitions.—In connexion with the difficulties in obtaining a suitable design for a monument to the Ex-Chancellor Bismarck, at Berlin, we understand that a limited competition has now been opened for the ten candidates in the open competition of 1895 whose work was considered the best.—In the course of the

present year considerable works are to be carried out in connexion with the new Botanical Gardens at Leipzig, bearing the name of the "Palmengarten." Premiums have been offered in competition for the necessary designs, and the scheme will be decided on in the course of a month. The premiums offered are very large as compared with the amount of work required from the competitors. The cost of the work will amount to at least 50,000. In the competition which has been held at Leipzig for the design of a National Monument, as a memorial of the battle of Leipzig, the premiums have now been awarded, the first of the value of 3000, being given to an architect—Herr Wilhelm Kreis, of Charlottenburg; the second premium was given to another architect—Herr Otto Kiehl, of Berlin; and of other premiums the fourth was given to Professor Bruno Schmitz. There were sixty-eight candidates, and the average merit of the contributions was exceedingly high.—The Dortmund-Ems canal has made rapid progress during 1896. The expenditure up to this time being about 2,600,000. A great deal of the soil has already been moved, though there are still fully 2,000,000 cubic metres to be dug. All the brickwork for the twenty locks is well in hand; also the embankments for the harbour at either end.—Thirty designs were sent in for the S.übbel monument at Dresden, and the first premium has been given to Messrs. Schilling & Grächner, architects.—In the course of 1897 the Municipality of Dresden proposes erecting a monument to the present King—Alfred of Saxony—on the twenty-fifth anniversary of his reign, and a competition has been opened with a view to obtaining a suitable design, the premiums amounting to 6000. A very influential committee, including Professor Walot, will act as assessors, and the competition will be decided during May.

DURBAN.—The Durban Corporation Building Committee passed forty-two plans for the week ending December 7, including new premises for the South African Mutual Assurance Society, to cost from twenty-five to thirty thousand pounds. Arab merchants are also building warehouses. All new buildings are of a substantial character, wood and iron being nearly wholly discarded.—Johannesburg Standard.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. Charles Barry, architect, is removing at Ladyday from his offices at the Westminster Chambers, Victoria-street, to Parliament Mansions, Victoria-street. He has taken into partnership his eldest son, Mr. Charles Edward Barry, and the new

firm will be "Messrs. Charles Barry & Son."—Messrs. Leopold & Co. have opened Japanese paperhanging show-rooms at 24, Cecil-court, Charing Cross-road.

APPOINTMENT.—Mr. E. B. Newton, of the City Surveyor's office, Carlisle, has been selected out of a large number of candidates for the appointment of Engineering Assistant to the Borough Engineer of Rochdale. Mr. Newton secured his articles with the late Surveyor of Carlisle, Mr. W. Howard-Smith.

THE DIVINING ROD AT FAULT.—A difficulty having arisen with regard to the supply of water at Grandborough, the Rugby Rural District Council, at the request of the village authorities, called in the services of a water-diviner, who visited the place a short time ago, and indicated several spots where water might be found. At the meeting of the District Council recently, it was stated that a well-sinker had sunk a well at one of the spots where water was said to be obtainable at a depth of 25 ft., and although he had bored to a further depth of 25 ft., making 50 ft. altogether, no water had been found. It was suggested that the diviner should be asked to return the fees paid to him, but it was eventually decided to test another place before doing so.—Birmingham Gazette.

NATIONAL GALLERY OF BRITISH ART.—We are asked to state that the Portland stone used in this building was specially selected from the quarries of Mr. F. J. Barnes, Isle of Portland, and that the whole of the wrought-iron sashes and steel doors were made by Mr. Joseph Stone, of St. George's-road, Southwark, S.E.

THE WORKING MEN'S COLLEGE, GREAT ORMOND-STREET, LONDON.—An appeal is made for funds whereby to erect, at an estimated cost of 7,000, a building for the Working Men's College, which was established in 1854 by the exertions of F. D. Maurice, Thomas Hughes, J. M. Ludlow, and others. The present premises, No. 46, Great Ormond-street, have proved too small, and a laboratory and gymnasium are much desired. It is calculated that a further sum of 8,000, is needed for the equipment and maintenance of more efficient buildings. The house, now numbered "46," is remarkable for its handsome main staircase, has been identified with that occupied by Lord Chancellor Thurlow in 1784, when, on the night of March 2, thieves entered from over the garden-wall and carried off the Great Seal. It is commonly stated that the loss occasioned a long delay in the issue of documents under the name of "46." Mr. Thomas Major, engraver to the Court, and Stamp Office, then living at No. 5, Tavistock-row, Covent Garden, supplied within twenty hours a perfect fac-

substitute in brass of the Great Seal. Major then made one of silver, which continued in use until the end of the year.

AN OLD-ESTABLISHED FIRM.—To celebrate the completion of the 40th year of the firm's existence, Messrs. Joseph Chater & Sons, glass, lead, oil, and colour merchants, of St. Dunstan's Hill, London, entertained their staff on the 2nd inst. at the "City Arms," St. Mary-ave, when about fifty sat down to dinner. During the subsequent proceedings the toast of "Prosperity to the Firm" was proposed by Mr. Humphreys, who has been in the firm's employ since 1857, and upwards of forty years, and the partners, Messrs. Leathley Chater & F. Clive Chater, were presented with two silver cigar-boxes, subscribed for by the whole of the staff, the lids being engraved with the dates 1746-1896, as a memento of the occasion.

THE PRESERVATION OF GREENBANK, SEFTON PARK, LIVERPOOL.—Subject to approval by the City Council, the Finance Committee have entered into an agreement with Mr. Herbert Rathbone with the object of preserving, for the purposes of public recreation, an extensive piece of land, containing about 90,000 square yards, situate between Sefton Park and Greenbank-road. This estate, which contains a large and picturesque mere of natural formation, has hitherto been used for building purposes by Messrs. David Roberts & Son, but as the erection upon it of rows of houses of the ordinary type would not only ruin the beauty of the district, but seriously depreciate the property of the Corporation leaseholders who have built villas on that side of Sefton Park, the Finance Committee have agreed that if Mr. Rathbone purchases the property from Messrs. Roberts for 12,000l., the Corporation will repurchase it from him for 13,000l. upon the condition that whilst they shall have power to lease the frontage to Greenbank-road as sites for houses of a superior class, they shall maintain the lake and surrounding land for the use of the public, and make a public access to it from Sefton Park and Greenbank-road also. In the present estate is in possession during his lifetime.—Liverpool Post.

THE PLUMBERS' COMPANY AND EX-BAILIE CRAWFORD.—In accordance with a resolution passed by the Court, the Freedom and Livery of the Plumbers' Company were on Tuesday, last week, conferred at the quarterly Court, held at the Guildhall, on ex-Bailie Crawford, late Chairman of the Health Committee of Glasgow. The resolution which was read by the Clerk, set out that the honour was conferred on Mr. Crawford "in recognition of his timely aid and eminent encouragement of the movement for the national registration of plumbers by personal efforts and official influence, securing the alliance of the representatives of the health and educational authorities and plumbers of the locality, with the District Council for Glasgow and the West of Scotland, and the active co-operation of that body and others in promoting the higher technical training of plumbers, and the certification of qualified men in the interests of the public health." Mr. Philip Wilkinson, Master of the Company, presided, and spoke of the useful work which Mr. Crawford had done as Chairman of the Health Committee of Glasgow. Mr. Charles Alderman Sir Stoddart, and Mr. W. H. Bishop, also bore testimony to Mr. Crawford's valuable services to the cause of sanitation. The customary oath having been administered by the Clerk, Mr. Crawford was formally admitted by the Master as a freeman and liveryman of the Plumbers' Company. In thanking the Court for the honours bestowed on him, Mr. Crawford referred to the progress made in sanitary matters during the past few years as being largely due to the work of the Plumbers' Company. Their efforts to impart technical instruction to plumbers had necessarily been of advantage to the community as a whole. He believed every householder was now beginning to realize that it was his business to ascertain that the plumber he employed was a registered man. The freedom of the Company was afterwards conferred on Mr. E. R. Collins (Sanitary Inspector to the Camberwell Vestry) and Mr. W. Moss (of Manchester), they having become entitled to it through having passed the examinations in practical workmanship and knowledge of plumbing prescribed by the Company. The Court afterwards entertained ex-Bailie Crawford and the other honorary freemen, and the London Registration Committee to dinner at the Guildhall.

ELECTRIC LIGHT, SOUTH SHIELDS.—Major-General Crozier, R.E., an inspector of the Local Government Board, recently held an inquiry in the Town Hall, South Shields, into an application of the Corporation to borrow the sum of 7,500l. for the purpose of extending the electric-lighting works. Amongst those present were the Town Clerk (Mr. J. Moore Hayton) and the electrical engineer (Mr. J. A. Jeckell). The Town Clerk stated that the electricity works, which were in the hands of the Corporation, were opened in September last, and so successful had they been, and so well had the light been taken up, that the capacity of the station was now taxed to its utmost extent.

THE NEW GENERAL HOSPITAL, BIRMINGHAM.—The new General Hospital, Birmingham, is expected to be ready for opening in June. Certain branches of the work in connexion with the new

building have already been completed, and as the number of men employed there will now begin to diminish from week to week, Mr. J. C. Holder (the chairman of the New General Hospital Building Committee) took advantage of Saturday last to give a dinner to the workmen before any of them were moved to other jobs. The dinner took place in the evening at the Masonic Hall, New-street, and as many as 400 workmen of various grades were present. Mr. Holder presided. The Chairman proposed "Success to the New General Hospital Building," Mr. W. Henman (the architect) and Mr. T. Barnesley (the builder) responding. Mr. J. B. Clark next proposed "The Workmen," and said they had engaged on the work 70 carpenters, 40 bricklayers, 20 plumbers and painters, 110 labourers, 90 plasterers, 11 were working in connexion with the electric-light installation, 3 with the telephone, 10 laying down asphalt, 12 glaziers, 13 masons, 10 tilers, 4 well-sinkers, 6 working in connexion with the ventilation, and 4 slaters. Mr. Berrill (for the carpenters), Mr. Randel (for the bricklayers), and Mr. Roddy (for the plasterers) responded. Other toasts followed.

CAPITAL AND LABOUR.

COVENTRY BUILDING TRADE: DEMANDS FOR RISE IN WAGES.—Some months ago, when the building trade was at its height, a demand was made by the bricklayers for an increase in wages, but the request was refused by the employers. The workmen remained at their posts, but intimated that at the proper time—December 31—a general application would be made. This has now been done, and the bricklayers have asked for an advance in wages from 8d. to 9d. an hour, to come into force on April 1. In addition to this the Operative Bricklayers' Society have framed a new code of rules, which they ask shall be substituted for those now in operation. If accepted, they will have the effect of reducing the hours of labour by two and a half hours a week, the payment of overtime after 5.30 p.m. instead of 8 p.m. as hitherto, and limiting the number of apprentices (who shall be bound by the age of 16 for at least five years) employed by any firm to two. The bricklayers are not the only workmen desiring to profit by the present trade activity—similar applications have been received from the different societies of carpenters and joiners, masons, plasterers, scaffolders, labourers, &c. It may be said that, with the exception of the painters, the demand for increased wages is general among the building trade employees throughout the city. The carpenters and joiners ask for a minimum rate of wages of 9d. an hour and likewise submit a new code of rules. The masons demand an increase from 8d. to 9d., fixers to be paid 8d. The operative plasterers ask for an increase from 8d. to 9d., bricklayers' labourers from 5 1/2d. to 6d., and scaffolders and plasterers' labourers from 4 1/2d. to 5d. The alterations of rules proposed by the workmen are of considerable importance on account of the extraordinary state of trade and the number of employees affected. At the present time there are nearly 5,000 men working in Coventry in different branches, and the coming year promises little slack time for builders. A meeting of the Master Builders' Association is to be held shortly to consider the demands of the employees.

SWANSEA PLUMBERS AND THEIR WAGES.—A meeting of Swansea builders has been held to consider the demands of the plumbers for an increase of wages. Eventually the meeting decided to agree to pay the men 8d. per hour all the year round, instead of 7 1/2d. as at present; but not to accede to the request for a minimum of 30s. for the 48 hours per week worked in the winter.

MEETINGS.

- SUNDAY, JANUARY 10. Sunday Lecture Society.—Professor Vivian B. Lewis on "Artificial Light." 4 p.m. MONDAY, JANUARY 11. Royal Institute of British Architects.—Business meeting and election of new members. 8 p.m. Surveyors' Institution.—Mr. Howard Martin on "The Future Development of the Surveyors' Institution." 8 p.m. Clerks of Works Association (Carpenters Hall).—Paper by Mr. H. W. Handley. 7.30 p.m. The Architectural Society.—Mr. C. E. Mumford on "Belgian Churches," illustrated with limelight. TUESDAY, JANUARY 12. Institution of Civil Engineers.—Professor W. Ripper on "Superheated-Steam Engine Trials." 8 p.m. Society of Biblical Archaeology.—Anniversary Meeting. 8 p.m. Carlisle Architectural, Engineering, and Surveying Society.—Mr. F. J. Nickols on "Disposal of House Refuse." WEDNESDAY, JANUARY 13. Northern Architectural Association.—Mr. W. H. Allen on "Fireclay Manufactures." 7.30 p.m. THURSDAY, JANUARY 14. Society of Antiquaries.—Ballot for the election of Fellows. 8.30 p.m. Institution of Electrical Engineers.—Inaugural Address of the President, Sir Henry Mance. 8 p.m. FRIDAY, JANUARY 15. Architectural Association.—Mr. E. Prioleau Warren on "Decorative Plaster Work," with models. 7.30 p.m. Institution of Civil Engineers.—Society Meeting. Mr. Walter Beer on "Monier" Girders and Arches. 8 p.m.

PRICES CURRENT OF MATERIALS.

Table with multiple columns listing materials like Timber, Iron, Steel, and various types of wood and metal, with their respective prices per unit.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us not later than 10 a.m. on Thursday. N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the best Tender is under £100, unless in some exceptional cases and for special reasons.]

BURNLEY.—For the construction of a subway beneath the Leeds and Liverpool Canal, for the Corporation.—J. Simpson £1,707 10 0 S. Taylor £1,318 2 6 Sun. Bros. £1,347 15 0 J. & J. Lee £1,299 5 0 (accepted) £1,227 5 0

DAVENTRY.—For additions, &c., to police-station, for the Northamptonshire County Council. Mr. E. Law, County Surveyor. Quantities by architect: J. Neal £2,397 J. W. Wharve, Northampton (accepted) £2,399

FENNY STRATFORD (Bucks).—For the erection of school buildings, for the School Board. Mr. John Chadwick, architect. Fenny Stratford. Quantities by the architect: Mann & Sons £5,717 2 6 Thos. Yerrill £1,495 0 0 Wm. Wade £2,648 0 0 Thos. Hy. Coleman 3,444 0 0 S. Grist, Ltd. 3,988 0 0 Slaymaker & Hilliar £2,400 0 0 H.A. Williams 2,800 0 0 Northampton £1,387 16 4 C.E. Fishers 3,629 19 3 * Accepted, subject to approval of Education Department.

GALWAY.—For the erection of school buildings in convent grounds, Taylor's Hill, for the nuns of the Dominican Convent. Mr. J. Conroy, C.E., County Surveyor. Office, Galway. Lyden £10,116 10 5 T. Griffin £1,300 0 0 Ryan £9,394 0 0 J. Concha, Gal. £1,000 0 0 Emerson 9,296 0 0 way £853 0 0 * Accepted.

LEAMINGTON.—For the execution of street works, for the Corporation. Mr. De Nounville, Engineer, Town Hall. Jacob Hughes £7,072 0 0 Richard Bowen, Tavistock-street, £2,000 0 0 Martin 6,257 0 0 Leamington £15,000 15 0 Geo. Bell 5,429 0 0 * Accepted.

LEIGHTON BUZZARD.—For drainage and water supply works at the "White House," Leighton Buzzard. Mr. T. H. Bishop, architect, Leighton Buzzard. Dawson £200 10 0 Cook & Son £200 0 0 Tull £105 0 0 (accepted) £175 8 0 Butcher £117 3 3 Speers £175 8 0 * Accepted.

LINSLADE (Bucks).—For the erection of a detached house in Stoke-road, Linslade, Leighton Buzzard. Mr. T. H. Bishop, architect, Leighton Buzzard. Dawson £1,791 0 0 Cook & Son £1,000 0 0 (accepted) £1,791 0 0 Yirrell £300 0 0 * Accepted.

LONDON.—For alterations and fittings at the "White Hart," 30, High-street, Whitechapel. Messrs. Houn & Sons, architects, Shoreditch.—Lancaster £445 Walter Boun & Co. £750 C. M. Henry £439 J. P. Goodwin £348 J. Valentine £374 * Accepted.

LONDON.—For building a Baptist School, Queen's Park, Kilburn. W. M. George Baines, architect, 5, Clement-street, Strand, W.C.

Table with columns: Main School, Infants' School, Offices, Total. Lists various contractors and their bids for the Baptist School project.

LONDON.—Accepted for alterations and fittings at No. 124 Southwark street, for Mr. J. H. Richards— John Appleby, Cornwall-road, S.E. £185 (No competition)

LONDON.—Accepted for constructing, fireproof strong rooms, easter closets and lavatories at Suffolk-lane, Cannon-street, for Messrs. Jas. Truscott & Son. Mr. G. Gordon Stanham, architect, rock, Queen Victoria-street. John Appleby, Cornwall-road, S.E. £320

LONDON.—For rebuilding the Royal Cambridge Music-hall, Commercial-street, Shoreditch, E., for the Consolidated Contract Corporation, Limited. Mr. Harry Ferriell, architect, 22, Buckingham-street, Adelphi, W.C.1.— Kirk & Randall, £27,665 W. Wallis, £20,409 Lascelles, £19,972 Patman & Fotheringham, 20,417 Johnson & Co., 21,724 Kilby & Gayford, 23,221 McCarthy Pitt, 21,773 Widdelbank & Co., 20,170 M. Patreck, 21,620 Beer & Gosh, 20,930 Leslie & Co., 21,929 Wimpsey & Co., 20,462 Laing, 21,465 Dearing & Sons, 20,443 Holloway, 20,340 S. K. Jambelle, 19,239 Revised and accepted.

LONDON.—For proposed new laundry and conversion of premises into sale rooms at the St. Mary's Day Nursery, Finsbury, E., for Miss T. Green Wilson, Messrs. Newman & Jacques, architects, a Fen-court, E.C.1.—

Table with 3 columns: Name, Laundry, Sale Rooms. Includes Batstley, Sons, & Holness; Hoasking; Gregor & Son; Heaste & Farrow.

LONDON.—For alterations to 89, High-street, Whitechapel, Messrs. Brown & Son, architects, 101, Commercial-street, Shoreditch, for Mr. Heathman, architect, 101, Commercial-street, Shoreditch, N. Lancaster, £245; P. Bond & Co., £238; W. Henry, £420; J. P. Groomer, £395; Valentine, £370.

MAIDSTONE.—For the execution of road works, &c., Charles-street, for the Urban District Council. Mr. T. F. Bunning, Borough Surveyor, Four Meadow, Maidstone.— W. J. Logan, £157; J. H. Bridge, Maidstone (accepted), £150

MANCHESTER.—For sewerage, kerbing, &c., Lacy-street, Stretford, Mr. J. Bowden, surveyor, 14, Ridgefield, Manchester.— Thos. Cooper, £285; J. R. E. Jones, Patn, Etheridge & Clark, 75, 2nd crst*, £250; Geo. Bayson, £75; 0 0 *Accepted.

NEWPORT (N.W.).—For erecting imbecile and receiving wards at the Union Workhouse, Park-road, for the 15th of Wight Board of Guardians. Mr. John I. Barton, C.E., architect and surveyor.— Cullinan, £1,851; 15 0 Barton, £5,150; 0 0 Jolliffe, £450; 0 0 Jenkins, £459; 0 0 Jenkins & Son, £273; 0 0 Leader, £407; 0 0 Barton Bros., £220; 0 0 G. Hayes, Shanklin, £300; 0 0 Day, £173; 0 0 *Accepted. [Architect's estimate, £5,500.]

SOUTHAMPTON.—For the erection of store premises, Town Quay, for the Harbour Board. Mr. E. Cooper Toole, surveyor, 4, Portland-street, Southampton.— W. J. Clinch, £1,500; Dyer & Sons, £2,618; H. W. Bull, £2,825; F. Osman, £2,618; R. Hasley, £2,825; Roe & Grace, Southamp., £2,825; Jenkins & Sons, £2,825; 100 (accepted), £2,500 [Surveyor's protecting estimate, £2,735, 12s.]

SOUTHEND-ON-SEA.—For the erection of a pair of villa residences on the West Cliff Parade, for Mr. J. Kerry, Mr. Frank E. Smee, architect and surveyor, 22, West Smithfield, E.C.1.— J. Dupont, Southend (estimated amount accepted), £2,597

RETFORD.—For the erection of a malling, for Messrs. Walker & Hemfrey, Ltd. Mr. Richard Hardy, architect, Beatrix Buildings, Whitegate, Nottingham.— John Wilson, £1,050; 0 0 Mackenzie & Son, £6,273; 0 0 Preston & Hirst, £6,990; 0 0 W. Smith, £6,990; 0 0 F. Messon, £6,978; 0 0 Geo. Hirst, £6,215; 0 0 C. Jones, £6,550; 0 0 Brown & Son, £6,222; 0 0 E. Rigley, £6,626; 12 0 J. Gen. Farnham, £5,618; 0 0 C. Barnes, £6,425; 0 0 F. Partinson, £6,754; 12 7 T. Love & Sons, £4,240; 0 0 J. H. Vickers, Nottingham, £5,990; 0 0 H. Vickers, £5,990; 0 0 *Accepted.

WHITCHURCH (Tavistock).—Accepted for building four houses on the Chalkwell Estate, plumbing, glazing, and painting excepted. Mr. B. Priestley Shires, architect, Central Exchange, Plymouth.— W. H. Higman, Tavistock, £1,450

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The Builder.

VOL. LXXII No 285.

JANUARY 15, 1897.

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School of Science, Liverpool: View showing Approach to Lecture Hall.—Mr. E. W. Mountford, F.R.I.B.A., Architect	Single-Page Ink-Photo.
New Wing to Boarding House, Rugby.—Mr. C. A. Nicholson, Architect	Double-Page Ink-Photo.
New Business Premises, St. Helens.—Mr. Frank S. Biram, Architect	Single-Page Photo-Litho.
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Peterborough Cathedral.



THE latest phase in the futile agitation of the Society of Antiquaries and their henchmen the Society for the Protection of Ancient Buildings against the

action of the Dean and Chapter in respect of the west front of Peterborough Cathedral is really colossal in its impertinence. The Dean and Chapter have taken the advice of Mr. Pearson and Sir Arthur Blomfield, who, it is not too much to say, have had a more extensive experience in church building and restoration than any other architects now living. Acting on the advice of these counsellors, they employ Mr. John Thompson, the builder, who has had a larger experience in dealing with dilapidated cathedrals than any other in England, to carry out the work the experienced architects recommend. Then a Committee of the S.P.A.B., the Secretary and four others, produce a so-called "preliminary specification," and a number of other architects, who "have not examined the west front of Peterborough Cathedral from the scaffolding," express their approval of this specification, which professes to teach the Dean and Chapter a better way than that proposed by Mr. Pearson and Sir Arthur Blomfield.

Part of this specification, with the names of the architects approving it, will be found in another column, and a considerable portion of it has appeared in the *Times*, and the British public may be supposed to imagine that the Dean and Chapter are doing something very wrong and foolish.

When the practising architects of Great Britain look through the names of those who thus question the judgment of experienced advisers, the great majority will wonder who some, at least, of these "architects" are, and what they have done or learnt, that they should speak so loudly and confidently. Those who do recognise the names of these signatories will know at once that youth and inexperience are their best qualifications for dealing with the west front of Peterborough Cathedral; that the majority were babes unborn when

Mr. Pearson and Sir Arthur Blomfield were architects of experience in church building and restoration; that the whole of the nineteen signatories between them have not carried out a tithe of the church work that either Mr. Pearson or Sir Arthur Blomfield has done,* and we doubt very much if Mr. John Thompson, with his experience of the construction of Peterborough Cathedral, would care to risk his reputation or the lives of his workmen in carrying out the scheme propounded under the official hand and seal of the Society of Antiquaries.

The fetish of the S.P.A.B. is non-disturbance of the visible work, the panacea of their committee is underpinning. They would first underpin the foundations of the piers and the porch, then work upwards, still underpinning, although above ground. They would tunnel into the piers from behind, putting in a new core to the old facing, underpinning to the defective work above, gradually reaching the spandrels of the arches, tunnelling into these also from the back, working upwards, and underpinning again the defective work above, and so on to the top.

This sort of suggestion is good enough for the Society of Antiquaries and the general public, but readers of the *Builder* scarcely need telling what these cocksure critics seem to forget, if they, indeed, have ever learnt, that you cannot underpin unless you have sound work above to pin up to, sufficiently sound to stand whilst the new work underneath is being brought up to support it. The authors of the specification admit that the substance of the walling must, "to a greater or less extent, be in a state of disintegration," and "that careful and persistent watching of the building when applying the supporting constructions would be very necessary, so that every sign of possible weakness might be met from time to time as the different works were being carried out." These gentlemen also rightly enough insist as a prime necessity for their method upon an elaborate and "effectually contrived" system of shoring, strutting, cradling, and

* It may be added that there is an obvious amount of partisan spirit in the matter which the public, who know nothing about architectural parties or politics, do not of course perceive. With the exception of Mr. J. J. Stevenson, the whole of the architects signing the document are of the party who refuse to belong to the Institute of Architects or to have any dealings with it. That is no crime; only the fact shows that this agitation proceeds from a clique.

centering, so that "the narthex would be securely sustained from the ground upwards, and in the direction towards the west wall of the church." The specification itself, indeed, contradicts the report of the representatives of the S.P.A.B. that it was "obvious to any practical man that the Society's recommendations could be carried out in their entirety with ease and safety," and in fact the description in their specification of the proposed methods of burrowing into disintegrated stone-work and pockets of vaulting, with the elaborate provisions which even they must perceive to be necessary at every step to prevent the building coming down on the workmen—all this to prevent the crime of taking off the facing stones and numbering and replacing them, reads to us, we must frankly say, like the lucubrations of people who are hardly in their right minds; unless the truth is that they really never expected their advice to be taken at all, and that all this extraordinary description is only something intended to influence the minds of the uninstructed public. At all events, it is probably well for the signatories that they are not allowed to try the experiment, for we believe the result would be that either they or the Dean and Chapter (according to the view the law took of responsibility in the matter) would be exceedingly likely to find themselves placed on their trial for manslaughter.


The Committee of the S.P.A.B. "were much interested in the varied curves of the ribs resulting from the slow strain put upon them by the settlement of the piers." They wish, in short, to retain all the accidental effects of time, weather, bad construction and failure, and the President and Secretary of the Society of Antiquaries affix their signature to the statement that the method proposed "is also better for the subscribers to the Restoration Fund as being obviously less costly than rebuilding." We appeal to "any practical man" amongst our readers as to whether it is even remotely possible that the elaborately constructed timber supports and the replacing of the defective core of the walling by small tunnels, each timbered and strutted in turn, would be "less costly than rebuilding."

The method of working by tunnel might be possible if the core were in fairly good condition; but in all seriousness we ask who are the best judges of this: Mr. Pearson and Mr. Thompson, who have found out by

past experience what the internal construction of the walling at Peterborough is like, or the irresponsible and comparatively inexperienced architects who by their own confession have not been able to make a sufficiently close inspection of the wall, even from the outside, to render their specification complete.

One consideration is very strongly impressed upon one in connexion with the subject, viz: that the preservation from ruin of our great mediæval buildings ought to be regarded as a matter of national concern, on which public money should be expended. The custodians of our cathedrals in almost all cases are without the funds to make even necessary repairs to the structures for the safety of which they are responsible. There is Salisbury spire evidently in considerable danger; there is no question here of taking down or rebuilding, but only of making it safe, but evidently it is doubtful whether or when funds can be collected from private sources for such a purpose; and the collapse of Salisbury spire would be a national loss. The architects of Leicester, the largest town in the Peterborough Diocese, have, as mentioned in another column, subscribed somewhat over 70*l.* towards the Peterborough repairing fund, partly as a practical testimony of their reliance on Mr. Pearson; but how far can such sums go towards doing the necessary work? It is a matter of national interest, and should be taken up by the nation at large.

PRIZE DRAWINGS AT THE INSTITUTE.

 HE always interesting exhibition of drawings submitted for the various Institute prizes is this year hung in rather cramped spaces in the council chamber and meeting room. The officials have done better than could have been expected under the circumstances, but the result is less satisfactory than in the old days when the large galleries were available.

The designs of the Soane medallion, Tite prize, and Grissell medal are in the lower room; the first-named, for which thirteen designs were submitted, occupying by far the largest part of the room. The subject set for the Soane competition was "A Provincial Market Hall," and the plans naturally bear a strong family resemblance to one another—an open space on the ground level, generally vaulted, with a large meeting room above, one or two staircases, and retiring rooms on both levels appear in all cases, usually somewhat similarly arranged in the manner that naturally suggests itself. This being the case, the interest centres chiefly on the architectural treatment of the building; and this varies over a wide field, the most marked feature of which is the almost entire absence of the "very latest, entirely original" manner, which has appeared in several students' exhibitions lately.

Mr. J. A. R. Inglis, who is the successful competitor, has chosen a "Palladian" style, skilfully modified, and treated with restraint and good taste externally; inside he seems to have succumbed to the danger, which any one using the style must run, of being rather uninteresting and commonplace. His draughtsmanship is excellent, especially in the neat and effective perspective, and he has certainly well earned his success. It is less easy to understand why any lesser awards were given. Mr. J. A. Swan receives a

medal of merit, and Mr. C. H. Holden honourable mention; but their designs, though certainly good, hardly seem to us to rise so much above the level of some others as to merit especial distinction. The chief points in Mr. Swan's work are excellence of draughtsmanship in the elevations and details, a rather weak water-colour perspective, and minute attention to heating and ventilation. Mr. Holden takes a unique view of the requirements, and gives a direct entrance to the upper hall and no connexion between the two: his perspective is drawn as if it were to be cut on wood, but has a certain effectiveness. Among the other designs the most striking is one under the device of a scallop shell. It looks as if imported from the Netherlands, and has a great slated or shingled turret which, however, is very inadequately supported. One other, "Neath Southern Skies," deserves notice as an unsuccessful attempt to imitate the style of a certain prominent architect: it is a very gorgeous production but might please some persons' taste.

The subject for the Tite prize was the fascinating one of an Italian Villa and Garden, but it has attracted only two competitors, one of whom has designed a large country house which, moreover, is more English than Italian. The other competitor has well grasped the general idea, but failed to produce a satisfactory design, especially as regards the garden, to say nothing of the draughtsmanship, which is very poor. The prize is not awarded.

"A bay of a church, vaulted in stone throughout" has produced what we think is the best competition design for the Grissell gold medal since it was first offered. There is no doubt that Mr. S. K. Green-slade, the successful candidate, has well earned the honour by his charming design, and his neat pencil drawing. There is, however, one other competitor who has succeeded in being exceptionally interesting. He has constructed his arches and vaults on strictly scientific lines, using catenary curves, and has produced something which is by no means very ugly, and seems to us to show that, in the hands of the right man, such forms would not be incompatible with very beautiful results.

The competition for the Pugin studentship is better than it has been for many years. It has been awarded to a beautifully executed set of very thorough and workman-like pencil studies by Mr. Wm. Haywood, among which the drawing of the pulpit in St. Chad's, Birmingham, is conspicuous for the effective use of pure outline and for patient labour. He has not been afraid to deal with the richest and most complicated work, nor has he neglected what is simple and useful. His drawings are all to measurement, except two illustrative perspective sketches and some studies of carving. Mr. C. De Gruchy receives a medal of merit for a mixed collection of measured drawings and sketches, most of them useful and interesting and all very well drawn: the pretty pictures got up for show being in a minority. He has used ink as well as pencil, and in some works a little wash. His *pièce de résistance* is the Chantry of Abbot Ramryge at St. Albans. A medal of merit is also awarded to Mr. J. A. Swan, who has again taken the rather unusual course of submitting drawings of foreign work only. We suppose this is admissible, but it does not seem to be quite what one

would suppose, from its name, to be the intention of the prize. The excellence of some of Mr. Swan's work is, however, unquestionable. He has added to the drawing of the "Skipper's House," Ghent, which appeared last year, an equally effective—perhaps more effective—one of the Meat Market, Ypres, in the same style; and another, which we think is also new, of "pew" in Notre Dame, Bruges. But he continues to rely partly on some rather useless large pencil perspectives. To Mr. W. E. Dobson honourable mention is accorded for some careful and fairly skilful studies and sketches which seem to be the promising work of a youngish man.


We do not think that either of the two sets of drawings submitted for the Owen-Jones Studentship are quite equal to the best work sent in in former years; but there is much that is excellent and interesting in that of Mr. A. E. Henderson to whom the Studentship is given, and Mr. A. T. Griffith, who is awarded the Aldwinckle Studentship, has been very industrious, and has spread his studies over a very wide field. Mr. Henderson has given his chief attention to the early Italian and Sicilian, so-called Byzantine, churches; St. Mark's, Monreale, &c.; Roman mosaics, and pre-Raphaelite frescoes. He would, perhaps, have learnt more by making a few more diagrams of colour schemes, instead of some of the water-colour sketches. Mr. Griffith's best drawing is a water-colour sketch of a church tower and other buildings at Colwall. The drawings by Mr. Corlette, last year's Owen-Jones student, are most interesting. They consist of fairly complete studies of a church—St. Savin—near Poitiers, of late Romanesque type, with the original barrel vaults and colour decorations still existing, and four carefully finished drawings of the coloured statues at Albi.

Three candidates have chosen St. Mary-le-Strand Church as their subject for the silver medal competition, and one, Mr. F. J. Wass, Melrose Abbey. We think, on the whole, that justice has been done in giving the medal to Mr. Wass; but none of the sets of drawings are really altogether good, and in neatness and finish the competitor signing himself "St. Mary" is nearer to the usual standard than the winner. It would, we fancy, have done no great harm to withhold this prize.

Some drawings by Mr. Crouch, the Tite prizeman last year, and several sets of the "testimonies of study," submitted by candidates for examination, are hung with the competition works.

As a whole, we think the Institute competitions must be considered a distinct success this year. Those for the Pugin studentship and Grissell medal are quite exceptionally good, and that for the Soane medallion is above the average. The other work submitted is perhaps a little below the highest standard reached before, but the only real failure is in the Tite prize competition.

THE SEWERAGE OF NEW BUILDING ESTATES IN RURAL DISTRICTS.

 T is a matter of common knowledge that building estates are being constantly laid out all round the coast of the United Kingdom. Places which in one year are comparatively barren agricultural land are

next year seen to have become covered with houses. It is for this reason that a case recently decided by the Lord Chief Justice of England and Mr. Justice Wills deserves something more than mere cursory notice. For it appears to lay down a rule of conduct both to proprietors of estates who are developing them and to the Local Authorities within whose jurisdiction they lie. The decision to which we refer is that of the Queen v. The Tynemouth Rural District Council which will be found reported at length in the Law Reports for 1896 (Q.B. Vol. II. p. 219). Probably the most satisfactory course for any one interested in the question would be to read this report *in extenso*, but for the benefit of those who are not able to do so, we may point out the salient features of the case.

In 1894 Lord Hastings proposed to lay out an estate at Seaton Delaval, in Northumberland. He therefore deposited with the Rural District Council plans which showed the new street which he intended to lay out, and also other plans which showed some of the new houses proposed to be built in a new street called Avenue-road. To these latter plans the following note was appended:—"It is proposed that the street and outfall sewers should be made by the Rural District Council and not by the landowner." The Council approved the street plans, but refused to approve the house plans, upon the following grounds, which were also appended to the plans:—"Disapproved of until it is shown into what sewer or other means of drainage the house drains are to communicate and empty, and for want of a proper and sufficient mode of drainage and sewerage. The Council object to the proposal that they should make the street and outfall sewers except under agreement with, and at the expense of, the landowner or the depositor of these plans. Otherwise than this, the Council require the same to be made by such landowner or depositor." There was thus a direct conflict between the landowner and the Sanitary Authority, one which, it is obvious, might occur any day in any part of England where extensive building work is about to be carried on. The question was next brought into the law courts on an application by Lord Hastings for a mandamus to compel the Council to approve his plans—so that the Court had to lay down a rule which would obviously affect, not only this dispute, but future and similar cases. The practical question may be stated in the words of the Lord Chief Justice: "Can a Local Authority, who have no objection to the plans of the buildings as such, decline to approve of a building owner's mode of laying out his property unless that building owner undertakes to have a system of sewage carried out at his own expense, including an outfall sewer?" The answer to this question obviously depends on the authority and power given to Sanitary Authorities by the Public Health Act. Under section 277 of the Public Health Act, 1875, a *rural* Local Authority can obtain from the Local Government Board an order constituting the area proposed to be built on, or any proper modification of it, a special drainage area, in which case the whole of the cost of the new drainage will be thrown upon the area. On the other hand, the new area will then be exempt from the drainage rates of the district generally. But if a rural Sanitary

Authority wishes to keep the building owner as a contributor in respect of the area in question, to the rest of the drainage, then the proper course would be to apply to the Local Government Board to give them urban powers in respect of new street and when the authority was invested with such power, it would be able to proceed under Section 150 of the Public Health Act. That section empowers an Urban Sanitary Authority to give notice to owner or owners of a new street to sewer, pave, or metal it at his or their expense. The street can then be taken over by the Public Authority. The action of the Tynemouth Rural District Council was therefore illegal. They were disapproving of Lord Hastings' plans on untenable grounds. The proper course was to approve of them and set to work to take the necessary legal steps to enable the Council to see that the work consequent upon them, namely the construction of sewers was undertaken at the proper time under one of the two systems which we have mentioned. As the Lord Chief Justice remarked, if only a few houses under the building scheme were erected "it might be perfectly possible to deal with the sewage of that limited number of houses by means which need not necessitate or require any expensive scheme of sewerage." In other words, the Local Authority might adopt some temporary expedient. On the other hand, it is the postponement of extensive sanitary operations which has over and over again landed Sanitary Authorities in difficulties. As soon as a building scheme is proposed, which, on paper, at any rate, requires sewers to be made, it is clearly the right policy to proceed to get the necessary plans drawn out. If the building scheme halts in its execution, the authority may well wait to see that it is really executed before going to any expense in the matter. One thing, however, is quite clear from the decision in this case, that a Rural Sanitary Authority cannot proceed as did the Tynemouth Council: they must approve the land owner's plans for the buildings if they are in accordance with the prevailing by-laws, and then make up their minds which of the two courses open to them they will follow, and, having taken this decision, they should inform the building owner of the work which he will have to do.

On the other hand, the building owner should be on his part aware of the proper course of procedure. The somewhat off-handed note appended in the present instance by him to the plans was provocative of disapproval of the terms on which the plans seem to be put forward. In fact, the present case is illustrative of the way how this kind of matter should not be managed for both building owner and Local Authority appears to have acted in a somewhat heedless manner, resulting, it is true, in a useful decision and in some grist for the legal mill.

NOTES.

M. BOURGUET, of the French School at Athens, publishes, in the current number of the *Bulletin* (1896 I-X., p. 197), two important inscriptions from Delphi, dealing with the accounts of the temple officials for building and restorations. They are of considerable interest to all students of ancient architecture, as throwing light on the meaning of certain technical terms, and giving many inter-

esting details as to price of work and salaries of officials. Both inscriptions were found to the north-east of the treasury of the Athenians, near the Sacred Way; they are engraved on large slabs of bluish calcareous limestone, and in all amount to over 200 lines. Their date is fourth century B.C. They are evidently meant to be read consecutively, and are a statement of the sums given by the Council of Delphi to a commission of *procuratores* for payment of expenses incurred in the sanctuary. For details, which are given with extreme minuteness, we must refer our readers to M. Bourguet's commentary. We may note that an architect, Xenodoros, gets for six months' salary 350 drachmas, which cannot be regarded as excessive. The existence of the *procuratores* was, of course, known before; but little had been made out with certainty before as to either their constitution or functions.

WE have received particulars of the International Art Exhibition at Dresden, which will be held this year at Dresden on the occasion of the twenty-fifth anniversary of the reign of King Albert of Saxony. Perhaps the most noteworthy feature of this Exhibition will be that the number of works to be shown will be limited to one thousand, which is, of course, a comparatively small number for an Exhibition of this description. The Dresden Exhibition buildings will be arranged for the purposes of the collection under the supervision of Baurath Wallot, who has 10,000*l.* at his disposal for alterations and decorations. Particular care will be taken in respect to the hanging of oil-paintings, and a number of preliminary experiments have already been made with this view. The great success of former art exhibitions at Dresden would seem to promise success for this one. Full particulars can be obtained from the offices of the "Internationale Kunst Ausstellung," at Dresden, and it is to be hoped that English artists, not omitting architects, will be well represented.

FROM time to time we have referred to the progress made in the restoration of the Marienburg Castle, which was the subject of a lecture at the Architectural Association last year. From official reports we understand that no less than 115,000*l.* are still necessary to complete the work, and that it has been decided to raise the funds by a State Lottery. According to the amount of work being done under the present estimates and contracts, quite 100,000*l.* is being expended at present, for which the necessary funds are forthcoming, as no less than 50,000*l.* were in the hands of the Society, which is undertaking the alterations, and there was nearly 50,000*l.* promised. It is interesting to observe to what an extent contributions have been raised for the completion of what may be termed "A National Restoration" of one of the great landmarks in the history of Prussia.

WE drew attention recently to the discovery of the ancient road to the Academy at Athens. We are glad to learn that this has been speedily followed up by the identification of a precinct of Artemis, which Pausanias notes on his way to the Academy

Architectural Accounts at Delphi.

Excavations on the Academy Road at Athens.

(1, 29, 2). All that he says is that there was an enclosed precinct (*περιβολος*), with xoana of Ariste and of Kalliste, of the Best and the most Beautiful; these tiles, he adds, are, in his opinion—confirmed by the poems of Sappho—epithets of Artemis. Exactly what traces of the *περιβολος* have come to light is not yet reported, but inscriptions have been found relating to the priest of Artemis. Long ago, near to the Dipylon, was found a small square altar of Pentelic marble, bearing in letters of Macedonian date the inscription, "Mitrobates dedicated (it) to Artemis;" also a stele built into a wall near the Dipylon, bearing a long inscription (*circa* 262 B.C.) dealing with a thiasos. This stele it was directed should be set up in the sanctuary of Artemis. Immediately after the peribolos of Artemis, Pausanias noted "a temple of no great size, to which the image of Dionysos is conducted every year on appointed days." This we hope may be discovered, and who knows but that the monuments of Solon, of Perikles, of Thrasylbulus, of Phormio may come to light.

We have received from the British Electric Traction Company a pamphlet describing, in a popular manner, various methods of tramway working. The overhead trolley system is treated at greatest length, and quotations from the reports of deputations appointed by the Glasgow Corporation and the City Council of Belfast to inspect the tramways of the United Kingdom and the Continent are given to show what an excellent thing the trolley wire really is. The Glasgow deputation, after a further lengthened tour in the United States, say, "We are perfectly reconciled to it, and feel that it only wants to be seen to be appreciated." It is odd that so many Corporations send deputations all over the world instead of having a consulting engineer. There are many excellent books on electric traction published, and quotations from these would be far more interesting and instructive than badly-worded Corporation reports. The British Traction Company say that they possess the British patents for the only practicable surface contact system. This is a mysterious statement, as we know several practicable surface contact systems. There is the Westinghouse system, which Dr. Hopkinson has recommended for some streets in Leeds, and there is the Claret-Vuilleumier system, adopted in Paris by the tramway between the Place de la République and the suburb of Romainville, which was opened last June. Both these methods are excellent and practicable.

A DECISION of Mr. Justice Stirling is reported in the current number of the Law Reports which, though turning on a strictly legal point, is one of much practical importance. A Sanitary Authority gave notice to the occupier of a leasehold house, under the Public Health (London) Act, 1891, to do certain sanitary work. He also gave a similar order to the agent who collected the rent of the house on behalf of the owners. These owners were trustees, who, of course, handed over the net proceeds of the rent to certain beneficiaries. The work in question was done, and cost 122*l.* odd. Then the question arose whether the sum was to be paid out of the rent or out of the capital;

that is to say, was the money to come out of the pocket of the tenant for life or out of that of the remainder-man. In the opinion of the judge these works, drainage repairs and alterations, disconnecting sinks from drains, and supplying new traps and pipes in place of old and defective ones, were not "ordinary repairs," and therefore should come out of the capital or "corpus." We have nothing here to do with what may be called the financial policy of the management of estates, and as to whether it is good or bad management to come upon the capital for such work as here mentioned. But there can be no doubt that when such work may be charged by trustees against capital, there is often a larger fund available, so that the work may be done more efficiently, and thus the sanitary condition of house property is likely to be better in consequence of this decision. Nor, again, are we criticising the judge's definition of ordinary and extraordinary repairs, though it must be confessed that, as traps and other sanitary articles wear out, it is doubtful if the phrase "ordinary repairs" was not looked at in rather a narrow spirit.

A Patent Museum.

THE President of the Society of Patent Agents recently suggested the establishing of a Museum of Patents at the Patent Office. Bacon said that he took all knowledge for his province, and patents are connected with every form of mechanism. It is difficult, therefore, to see how any Museum of Patents can be really complete. Where is it to begin and end? How is it to be limited so as to be brought within reasonable proportions? What are required appear to be rather museums of various branches of applied mechanism, in which patents applicable to such mechanisms can be studied, both historically and practically. It is said that without a Patent Museum ingenious persons are misled. Sometimes they proceed to take out patents for what are not new inventions; sometimes they fail to take them out under the erroneous impression that they have already been patented. One can hardly see how a necessarily limited Patent Museum can be of real service in many of these instances, since it is obvious that in it can only be contained what may be termed cardinal or guiding patents, whilst the ingenious inventor is in doubt over some subsidiary piece of mechanism which cannot be exhibited except in a museum strictly confined to one subject.

The Priory, Birkenhead.

It is proposed to raise a fund for acquiring the ruins of the Priory, at Birkenhead, and conveying them to the Corporation in trust for the burgesses. Hamon de Massey, third baron of Dunham Massey, founded the priory, dedicated to SS. Mary and James, for sixteen Benedictine monks, in the twelfth century; in 1282 a charter was obtained for ferry-rights across the Mersey. The rights of ferry at Birkenhead formed a cause of litigation that extended over a long period, beginning with a suit against the prior in 27 Edward III. in respect of the Monks' Ferry, and the controversy was not determined until about fifty years ago, when the Ferry was bought by the Town Commissioners. Leland says the priory was subordinate to St. Werburgh's Abbey, Chester;

Tanner considers it was independent. The priors sat in the Parliaments of the Earls of Chester, enjoying the rights and dignities of barons of the County Palatine; the revenues were valued at the suppression as worth 10*l.* 16*s.* 10*d.* yearly, *teste* Speed. The priory, garrisoned by the Royalists, was captured in 1644 by the Parliamentarians. The ruins comprise a portion of the refectory whereof the principal entrance has been described by Rickman and other writers for the variety and beauty of its mouldings. As at Chester, the church stands south of the quadrangle: there are a plan and two views (after G. Pickering) in Ormerod's "Cheshire."

THE loan exhibition of the Burlington Fine Arts Club. late Mr. Alfred Hunt forms one of the most beautiful collections of artistic work which has ever been seen in that well-known room. Once again we see illustrated the remarkable variety of Mr. Hunt's landscapes, in which there is no trace of mannerism or trick of style, but which seem almost as various as the varied aspects of nature herself. The two main objects which Mr. Hunt seems to have placed before him were to study nature faithfully and unremittently, and, in reproducing her effects on paper, to endeavour to escape as much as possible from the mere materialism of pigments. This latter end he achieved to a wonderful extent in many of his works, which seem more like small aerial visions of landscape than collections of brush touches on paper; though he could be vigorous enough in touch, too, when the style of subject suited it. Among those which convey most completely the feeling of the scene while concealing the mechanism of execution is that of the "Stiff North-Easter" (49) in Robin Hood's Bay; also the "Wind of the Eastern Sea" (68). Compare with these the solidity of "Schloss Elz" (72); the exquisite gradation of light and tone in "Climbing Shadows" (62), the grand contrast of the dark and light hills in "Ben Sleoch and Craig Roy" (91); the wonderful rainbow light in No. 102; the fine architectural effect in the drawings of Durham. But one might go on to mention every drawing in the room; there is not one that has not its special beauty.

We understand that there is a movement on foot on the part of Mr. Pearson and the Petter borough Dispute, of some of the leading architects in London and elsewhere to make some kind of formal testimony of their respect for and confidence in Mr. Pearson, in view of the fact that he has been, as they consider, the object of a most violent and uncalled for attack.

ARCHITECTURAL ASSOCIATION OF IRELAND.—We have received the printed book of the Constitution, By-laws, and Syllabus of Meetings of this Association. The following is the list of papers already promised: "Hospitals and Hospital Construction," by Mr. F. Batchelor; "Medieval Embroidery and Ancient Vestments," by Mr. M. J. C. Buckley; "Electric Lighting of Buildings," by Mr. J. W. Boucher; "Early Irish Art and Contemporary Work on the Continent," by Mr. W. G. Doolin; "Some Old Buildings in Antrim and Down," by Mr. W. J. Fennell; "Method of Shorting Buildings by Iron Frames," by Mr. C. Geoghegan; "Artificial Heating of Buildings," by Mr. W. R. Maguire; "Drainage and Sanitary Construction," by Mr. W. Kaye Parry; "Open Roofs," by Mr. Pentland Howard. The actual dates at which each of these papers will be read are apparently not fixed yet, though the dates of ordinary meetings (on alternate Tuesdays) are arranged.



Fig. 1.

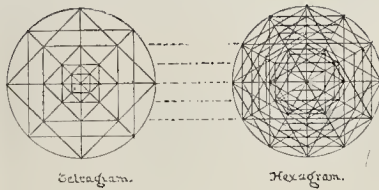


Fig. 2.



Fig. 6.

Fig. 3.

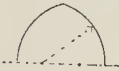


Fig. 4.

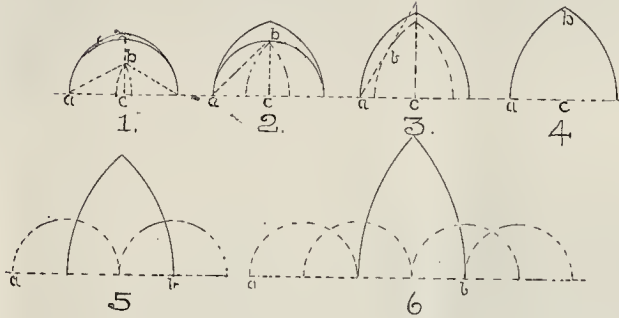


Fig. 5.

THE USE OF PRACTICAL GEOMETRY IN DESIGNING BUILDINGS.

By W. R. CORSON, ARCHITECT.

IN 1846 R. D. Chantrell, of Leeds, architect, had a paper to the Royal Institute of Architects upon proportioning churches by means of a geometric system. This system had been suggested to him by finding, on the bed of a stone that had been a portion of a medieval building, a diagram of interlaced equilateral triangles. The figure, which is called by Freemasons the Royal Arch, the root of the diagram (fig. 1).

About the same time a paper by Professor Lockyer, read before the Archaeological Institute, was published in their Transactions, 1845, was upon proportions geometrical, illustrated by Winchester Cathedral.

Some time before this Mr. Kerrick, in "Archæologia," vol. 19, 1821, propounded a system based upon the use of the pointed oval, called *vesicae piscis* (a hallucination).

Mr. Pettit Griffith, of London, architect, published several thin quarto books, applying geometry to Classic and Gothic buildings, but his methods were fluctuating and uncertain, and led to nothing.

A book by Matthias Roriczer, 1486, was re-published in Germany, and partly reproduced in "Archæologia," 1846. It shows the use of intersecting squares in designing pinnacles.

Cesar Cesarianus (early sixteenth century) gives a plan and a section of Milan Cathedral; the former designed by using squares, and the latter by equilateral triangles.

It was in consequence of reading Chantrell's paper that I sought out these and other books, and that in 1847-8-9 I made a study of diagrams founded on the square and the triangle equilateral, and the pentagon, with the result that I began the use of the hexagram—the Royal Arch being the basis—in planning, and in designing all parts of a building—elevations, sections, and mouldings. In planning, however, I have in later years found the square and its diagram to have been most certainly used by Medieval architects, and to be very valuable.

It was probably used by Egyptian and Greek architects, and surely by the Moors, but I have not followed out an investigation in these styles any extent. The Temple at Jerusalem was planned on squares, and five cubits was the dimension of the initial square. On linear paper the entire plan of the buildings, which cover, including courts, about eight acres, may be drawn without using a scale.

When four intersecting triangles are drawn,

they form a dodecagon in the centre of exactly one half the diameter of that which may be inscribed about the four triangles; within that space therefore may be drawn again the diagram of four triangles to half the scale, and outside may be drawn the diagram to twice the scale, thereby giving a series of equal divisions, and making it possible to repeat on a larger or smaller scale any figure that may be drawn within the diagram, by using the corresponding lines outside or inside the original figure.

Intersecting squares repeat in the same manner, and in the same ratio.

For many years I used only the hexagram in planning, but latterly I have sometimes used the tetragram, or, rather, the square (fig. 2). For the elevations and sections, instead of a network of triangles, as shown on Milan Cathedral, I used the hexagram, basing the initial circle on the floor line. It has advantages over the former, which gives simply equal divisions, vertical and lateral. This gives in addition others not equal, but yet always proportional. It also gives lines that are full of suggestion; this, indeed, is a grand feature of the system as used in elevation, or in section, or in mouldings.

It also, I think, tends to compress dimension, to avoid bulkiness, and yet to give the effect of greater dimension than the real. For mouldings it is invaluable, no matter what the style.

I am satisfied from recent investigations that the Medieval architects used the diagram in designing sections and elevations, and not the web of triangles as shown by Cesar Cesarianus. I had often tested the latter method on drawings of old churches, but it was never satisfactory. Viollet le Duc favoured it, but neither was his application of it satisfactory. Here and there were coincidences of lines, and that was all. I tested also the "diagram" on drawings, but the difficulty I felt was to find and use the initial dimensions: it had not occurred to me, I think, to take the dimension of one bay, although, strange to say, after I had begun to use the diagram in my own work, that was what I myself did in designing street buildings and churches—any building which naturally is divided into bays or severies, or, as the French say, *travées*. Since I began to write these memoranda, however, I have tested drawings on this basis, and am now satisfied that it was what the old architects did. Next, it will be asked, "How did they arrive at the bay?" It has been to me a puzzle to determine the initial work of men long since dead, and whose modes of thought we are ignorant of, but at present my idea is that circles were first drawn—two, three, or four it may be—in a line, each of them divided

into four by the leading lines of the diagram, and each of these divisions became a bay, which then became the subject of design by squares, defining the pillars and their size, the walls and buttresses. Beginning at the west end, and marking off the number of bays according to the intention, there is generally, in the case of a transept church, a break, and the dividing of the eastern portion is sometimes difficult to trace. Very often the bays are slightly less in width than those in the nave, but we do not know what was in the mind of the designer, and cannot follow his footsteps. In doing these things it was not necessary or imperative to work to a scale and to definite dimensions; the whole plan might be drawn and the dimensions determined afterwards. It was usual to begin to build a large church at the east end, and work towards the west; but the plan, when it was being designed was to my mind—began at the west end, the entrance.

There is one proportion which in pointed architecture seems to have been adopted invariably, or almost so, in all churches having aisles. An equilateral triangle, which has the floor in cross section for its base, defines by its apex the height of the nave. It is this rule which gives the great height to the Cathedrals on the continent of Europe, that is, of those which have double aisles, the base of the triangle being thereby extended nearly a half, and the height nearly a quarter. Sir C. Wren adopted this proportion in the nave of St. Paul's. In the case of churches without aisles, like the Saint Chapelle at Paris, that at St. Germain, and that at Rheims, the line of the floor is continued as though there were aisles, and the proportion of height determined in the same way. (In the E. P. Church, Wittington, the ceiling of the nave is determined in height in this manner, and so also that of the billiard room at Broadock, Wittington.)

When planning a house there is usually, to begin with, a definite idea of the size of the principal rooms; say that it is 24 ft. by 16 ft., or 27 ft. by 18 ft., I would take 16 ft., or 18 ft., as my normal dimension, draw the diagram with that dimension, and extend it for the length. Sometimes I have taken the length instead of the width, but whichever it may be, upon a diagram of that dimension all the drawings are worked; plans, sections, elevations, enlarged portions, and details; full size these last generally. To do this with ease it is necessary to choose a series of scales, such that being multiplied by two continually will end in full sizes. This led me to use the series which does so, $\frac{1}{2}$ in., $\frac{3}{4}$ in., $1\frac{1}{2}$ in., 3 in., 6 in., and 12 in., or full size. The first for sketch designs, the second for working

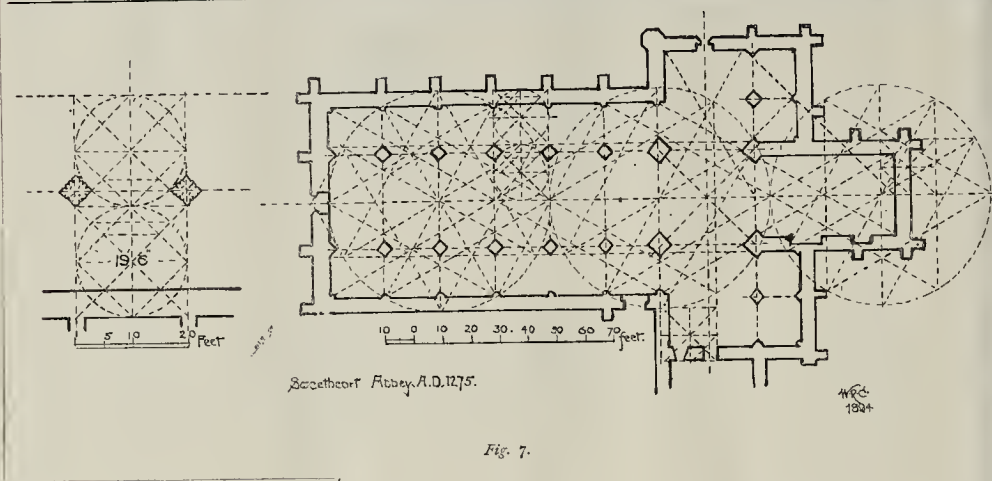


Fig. 7.

drawings, and the third for enlarged portions, such as doors, windows, &c. It follows that every detail bears a reference to the normal dimensions on which the rooms are drawn. In the rooms planned with either the diagram or intersecting squares, the position and the size of every door, window, fireplace, or other feature may be found geometrically. The relation of the leading features of a house to one another also is determined by the diagram, but how to use it each architect working with it would determine for himself. It is a tool, not a machine.

Gilbert Scott used, I believe, for gables a numerical proportion, 7 ft. base to 5 ft. height of the triangle, or something of that kind. Viollet le Duc, in a similar way, gives a proportion for a pointed arch, intermediate between a semi-circular one and an equilateral one, 8 ft. base to 5 ft. high. I do not think the medieval architects worked that way.

For the gable take $a b$ (fig. 3) for the height; the result is the same nearly, but the method much better. The other way is simply a rule for copying.

For the arch: $a b c d$ (fig. 4) is a square bay of vaulting; in plan, $d a b$ curve is the semi-circular diagonal rib; in profile, with the same radius describe arches and wall-ribs $a b$; $b c$, &c., and you have the proportion which Viollet-le-Duc's formula aims at. By this method one template serves the stone-cutter for all his ribs. (Herein lies the root of pointed architecture, *i.e.*, with groined rib-vaulting came in the pointed arch, and all else followed). This method is much more draughtsmanlike work, and easier, too, than dividing into sevens or any other arithmetical proportion.

Viollet-le-Duc calls the arch alluded to Egyptian. He does not say why, but evidently because the Great Pyramid and others have the proportion 8 base to 5 height. My belief is that the Pyramids were designed geometrically, and that those which have the proportion 8 to 5 have the heptagon for their initial, and that the side has the seventh part of a circle for its slope. Other pyramids have other angles found geometrically, one from the square and its diagonal, like the arch given above; another from the dodecagon.

Besides the proportion for an arch given above there are others found in a similar way by the use of the ruler and compasses, and it may be taken for granted that in this way they were usually by the mason delineated for construction. I have tested many arches in Viollet-le-Duc's "Dictionnaire," and have rarely failed to find them conform to one or other of these methods. To transfer a design to full size a workman needed only the width of the arch—no figures required to define centres, or to give radius. The radius, where it is found on the above diagrams (fig. 5), is marked a , b , in each example. The choice of which of these to use in each case rested with the designer, and its fitness depended on his judgment (except when, in vaulting, it determined itself). No. 2 is, perhaps, more frequently found than any other. In No. 1 the angle, b, a, c is 30 deg.; in No. 2 it is 45 deg.; in 3 and 4 it is 60 deg.

It is worth noting that the radius of No. 3, $a-b$, which is the minor radius of a hexagon,

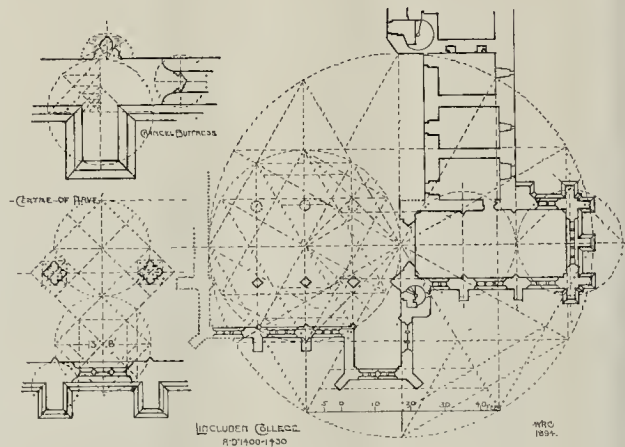


Fig. 8.

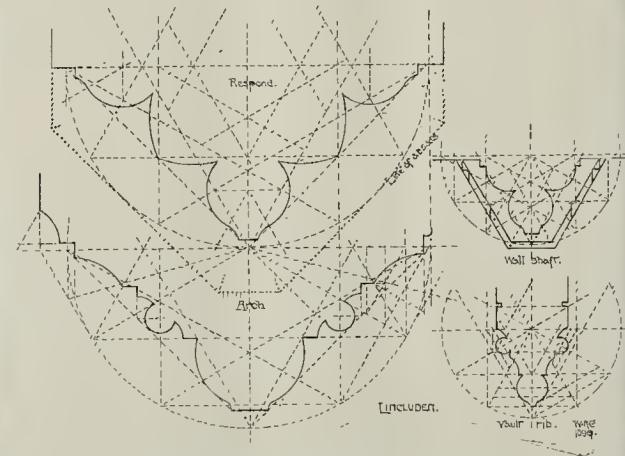


Fig. 9.

gives the length of a side of a heptagon, a fact which I have not found noticed in any book. But, farther, on the fully-developed diagram may be found lines giving the length of the side of polygons up to one of eighteen sides, and also one of twenty-four sides; that is, within a circle of, say, 8 in. diameter, delineate the diagram, and within that a second (4 in. diameter), and in these may be found the length of the sides of polygons of 3, 4, 5, 6, 7, &c., sides up to 18.

It is worth while for an architect to fix in his mind, or have a memorandum at hand, of the numerical relations of the side of a square to its diagonal, 5 to 7.071; and of the side of an equilateral triangle to its height, 5 to 4.33 (or 10 to 14.14; and 10 to 8.66).

It is important to notice that equally in the hexagram and tetragram the radius is bisected, and consequently the two diagrams correspond at that line and its repetitions in diminishing (or increasing) ratio. Coincidences therefore will be found when the two are used on the same plan.

The proportion of gable shown (in fig. 6) is often found in parish churches. In cathedral churches the equilateral triangle is required because of the greater height of the building. When the proportion shown is used in domestic work, and there are dormer windows, it will be found desirable to use the equilateral for the window gable, otherwise the angle will seem less than that of the gable. (The angle is 54° 42', the same which polarises light.)

I have used the plan of Sweetheart Abbey (fig. 7) church because:

- 1st. The plan is from my own measurements.
- 2nd. It has never been altered or added to.
- 3rd. Early examples like this are likely to show a more simple use of the system than those of later date or those which have been partially rebuilt. The date is 1275.

It will be noticed that the position of the piers, and the position and thickness of the aisle walls are determined by either hexagram or squares.

I have found in a number of cases that the orange form which includes three bays seems to have an influence on the design, particularly in determining the length of the chancel and the transept, but it is difficult to say whether this is a leading feature, or only incidental to the method adopted—probably the latter.

Errors or adjustments which have been made by the builders in setting-out their work are, of course, disregarded. For instance, in this church the respond at the west end being less than half a pier, the first pier is brought a few inches westward to equalise the arches; also, the piers at the crossing being larger than those of the nave, that one next to the crossing is also brought some inches westward with the same view. Again, the south transept is 3 in. longer than the north; this difference is accidental, no doubt, while the former are intentional adjustments.

The transept chapels are the only parts of the church that were vaulted.

The plan of Lincluden College Church (fig. 8) is a contrast to that of Sweetheart. Originally founded for a convent of nuns in the thirteenth century, it was changed into a college for men some time previous to 1400 by Archibald the Grim, Earl of Douglas, and a rebuilding was then commenced. When my drawings of it were made in 1846, the west wall and the north, and the north arcade piers, which are those of the original church, gave no sign. Since then their foundations, or such part of them as remain, have been laid bare, and their position I have taken from a plan given to me by Mr. Barbour, the architect who directed the work. I am not sure, however, that the north wall is from actual remains or from conjecture only.

The oldest portion of the rebuilding is the wall separating the nave from the chancel. The lower part of the wall has a doorway, and supports a roof-loft. Its architectural features indicate a different architect from him who carried out the remainder of the works, and are markedly inferior to these. The normal dimension of the nave—13 ft. 8 in.—is that of the original church, but the plan is rearranged in the position of the piers and of the south wall. The chancel normal is one-eighth more—15 ft. 4 in.—externally, but internally 14 ft. 8 in., and there is, therefore, a complication which it was not easy to unravel. The 14 ft. 8 in. is used for all the features of the chancel internally, including windows. The manner in which the diagram is applied to the different parts shows a man of independent thought, and all his work indicates a man of consummate ability and taste. It must be noticed that the normal dimension is used

throughout the details—*i.e.*, 13 ft. 8 in. in the nave and 14 ft. 8 in. in the chancel, but here and there with an accommodation—for instance, 7 ft. 2 in. for 7 ft. 4 in.—in several places. In the case of the windows it has been apparently for the purpose of having the glazing dimension exactly 2 ft.

The chancel was rebuilt, there is no doubt, at the instance of the Princess Margaret, daughter of Robert III., and widowed Countess of Douglas, who made gifts to Lincluden in 1429, and who was buried in a sepulchre in the north wall of the chancel. The architect, there is as little doubt, was John Murdo, who designed the finest parts of Melrose Abbey about the same time.

The respond and arch mouldings (fig. 9) given are from the work of John Murdo's predecessor, and are not, in my opinion, elegant, but they show the manner of using the diagram.

Since beginning to write these notes I have thought me of a plan of the Parthenon in my possession—a stray print from some French book, well engraved to a scale of about 18½ ft. in an inch. The scales given are in French feet and mètres, and some dimensions are given in English feet. The plan is probably a copy of that in Stuart and Revett's great work.

I rather expected that a diagram of squares would be found to rule the plan, and was surprised to find that the same mode of setting-out the leading lines had to be followed in this case as in Mediaeval work.

Two circles on the centre line would divide the fronts into eight bays and the flank into sixteen, and give the position of all the external pillars, provided there were no variation in the intercolumniations; but those at the angle being smaller, the operation is not so straightforward.

In each circle inscribing the diagram, the leading lines give seven centres of intercolumniations, and consequently the positions of six pillars of each portico; lines connecting the outer pillars define the flank walls outside, and a line of the diagram defines the same inside, thus fixing the width of the treasury and atrium (I am not sure that I use the correct terms). The wall at the rear of each portico is also defined by lines of the diagram. Then, falling back on the older method, the internal space is divided into squares. For the length of the treasury the space is divided into ten, and seven parts of the ten are taken for the width of it; the squares formed by these lines define the position of the six pillars and their size, and the width of the doorways.

The atrium is five squares in width and eight in length; the outer squares define the lines of the pillars, and the centre pillar on each side; the spaces between the corner and central pillars divided into five give the remaining pillars.

Instead of taking the tangent-line of the circles for the line of the step along the flank, the line of the side of a dodecagon is taken.

The line of pillars on the flank is obtained from the intersecting squares in the manner on the plan, and the first interval being made equal to that on front (now defined) the space between the second pillar and the centre one is divided arbitrarily into seven, giving spaces about four inches greater than on the front.

The inner line of portico pillars is midway between pillars and wall, and the space is divided arbitrarily.

It is certain that Sir Christopher Wren designed with the help of geometry, of which he was a master, and his pupil Hawksmoor, to judge by his church of St. Mary Woolnoth, followed his example. That Sir Charles Barry used some system of proportion was evident to me long ago, but I have lately examined a plan (which happens to be among my papers) of the Mansion House of Lord Tankerville at Walton, Surrey, of which Barry was, I believe, the architect. It seems to be a new wing to an older house, or perhaps a rebuilding. There are five principal rooms, all determined in proportion by squares, but not equal squares in all rooms. They are:—

- a. Dining room 33 by 21 ft. — 5 to 3 by 7
- b. Bed room 28 „ 21 „ 4 „ 3 „ 7
- c. Breakfast room 28 „ 21½ „ 4 „ 3 „ 7
- d. Library 29 „ 21½ „ 9 „ 5 „ 4½
- e. Lord T.'s room 28 „ 18 „ 3 „ 2 „ 9

(the dimensions are from scale, not figures). In *a* and *e* the position and perhaps the width of the windows are determined by the squares, but not in *a*, *b*, *d*, (except, of course, the central), and the doors are not in any case, so that the proportioning would seem to have been numerical rather than geometrical. In the approach to the corridor, however, intersecting squares seem to rule.

I have referred to the Temple at Jerusalem

as having been designed on squares of 5 ft. The porches or piazzas which form a main feature of the architecture were 10 cubits wide, each bay 10 cubits, and the pillars 2 cubits. The plan which I give of a bay at the angle of the court shows how probably the size of the pillar was determined, and also the manner of turning the angle. This combination of pillar and pillar is to be seen in the monument called Absalom's; in the ruins of the Synagogue at Capernaum, and elsewhere. I am fainful to think that it was used *per se* in Solomon's Temple, and perpetuated in the succeeding temples and in other buildings, just as the semicircular flight of steps in the Court of the Women has its successors in Jerusalem and elsewhere at the present day.

The plan of the gateways which gave entrance to the Outer and Inner Courts, as minutely described in Ezekiel xlvi., is in its main arrangements preserved to us in that gate of the eastern wall of the Harâm, called the Golden Gate. The geometrical foundation of this plan is well worth study. The circle is of 20 cubits diameter; the third compartment from the circumference gives the diameter of the pillars (1 cubit); then lines being drawn at 45 deg. from the angles *a*, the position of every pillar is obtained, giving bays 6 cubits square (or 7 taking centre to centre of pillars). A space 20 by 15, which is in the proportion of 4 to 3, is converted into that of 3 to 2 by placing the side pillars inside of the fifteen, and the end pillars outside of the twenty; the centres of the pillars are then 21 by 14, and the six square compartments are defined.

A study of the chevets of French cathedrals is not only interesting but very useful, in that it is an example of how much variety can be evolved in one feature. No two are alike throughout. The initial step may be the same in several, but each one is worked out in a manner peculiar to the man who designed it. Notre Dame at Paris (fig. 10) is further peculiar among all those given by Viollet-le-Duc in that its root is a polygon of nine sides, and it alone is so designed that a pillar (of the second Order) stands on the axis line of the church. Viollet-le-Duc highly commends the way in which this chevet is designed having regard to the exigencies of the vaulting and the distribution of the points of bearing and thrust. With regard to effects in perspective it is not perhaps possible to judge from a plan.

An angle of 120 deg. contains three sides of a nonagon; that angle can be divided into three geometrically, and each of these again into three, so that not only a nonagon but a polygon of twenty-seven sides can be constructed by rule and compass, and it may have been the knowledge of this property that suggested and prompted the use of the nonagon instead of the more usual dekagon (*i.e.*, five sides of the one or the other.)

The fact that no other chevet shows a pillar on the axis line has led me to draw the plan called a "suggestion" (fig. 11)—a plan based on the same initial lines, but with ten instead of eleven pillars in the second circle, and consequently a vista on the axis, and towards north-east and south-east. I imagine that the perspective views would be better on this plan.

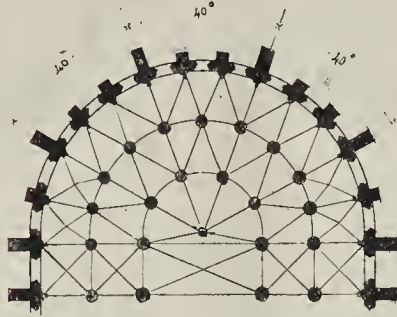
Another use of the nonagon is in the chapels of the Cathedral of Reims; probably also the eastern chapels of Sens and Canterbury.

The apse of the south transept of Soissons Cathedral is a semicircle divided into three, and each third again into three, with subordination of pillars. This arrangement also may be set-out geometrically.

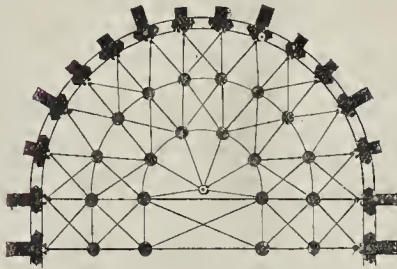
There is one example (in Viollet-le-Duc) of an apse with the angle of the polygon on the axis line, namely, the timber-built church of St. Gilles, at Troyes, a half octagon apse. The arrangement is not to be commended. Having seen two instances of it in modern domestic architecture, one four-sided and one six-sided, I can say that the external effect is faulty in this respect, that there are no lines corresponding with the horizontal lines of the house, and the eye is baffled and unsatisfied. Internally it is always preferable to have a void rather than a solid on the axis line—especially when the windows are grouped.

In Gwilt's Cyclopædia a theory is mentioned with approval that the number of bays in the apse of a church, and the number of bays in the nave have a numerical relation to each other. If there be five bays in the apse, then ten in the nave; if seven in one, then seven or fourteen in the other. Among the plans given by Viollet-le-Duc the following do not agree with the supposed rule:—Soissons, Cologne, Sens, Tours, Mons. If the tower bays be counted in, then Chartres, Amiens, Noyons do not agree. If the tower be left out, then Reims does not agree. There is no logical con-

Fig. 10.



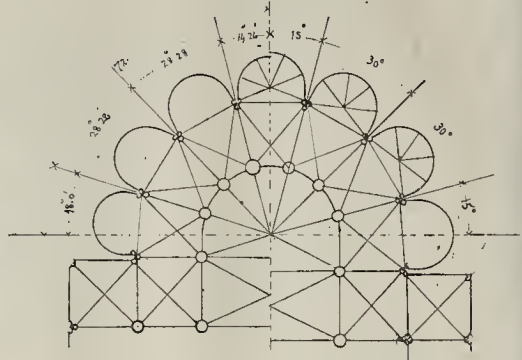
NOTRE DAME - PARIS



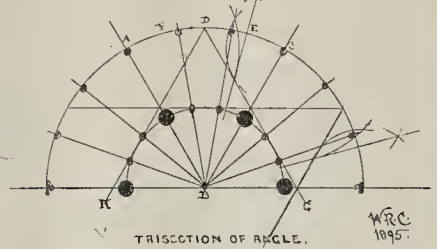
A SUGGESTION.

Fig. 11.

Fig. 12.

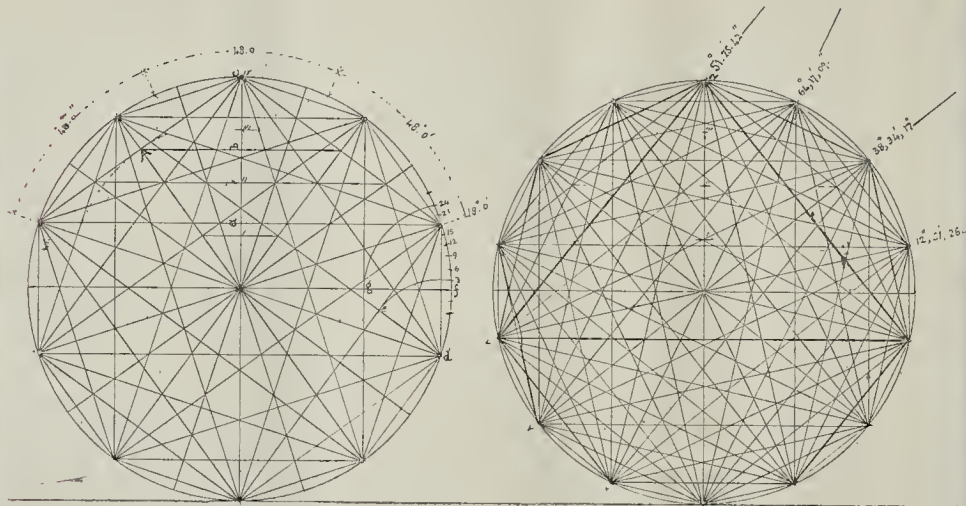


APSE OF SEVEN BAYS
ON PENTAGRAM LINES. ON HEXAGRAM LINES.



TRISECTION OF ANGLE.

Fig. 13.



PENTAGRAM.

HEPTAGRAM.

M.R.C.
1895.

Fig. 14.

nexion between the two constituents. If in any case one has been made to rule the other, it must have been simply the fruit of a whim, a caprice, on the part of the designer: but is there any foundation whatever for the statement that there was such a rule?

In Vol. IX., p. 212 of Viollet-le-Duc is a skeleton plan of the apse of the church of Notre Dame de Vaucelles, taken from the sketch-book of Villars de Honnecourt (church destroyed in 1793). It is

half of a polygon of fourteen sides. This is not often found. The only one I have noted is that of Mans Cathedral of the eleventh century, replaced in the thirteenth century by an apse having seven sides of a dodecagon; this is the usual mode when the apse has seven bays, the reason being that a counter thrust to the arch-ribs of the vault is obtained within the apse itself, instead of being obtained from the adjoining bay of the

The twelve-sided polygon of which seven sides are used in the plans of quite a number of apses is not a regular one of twelve equal sides (at least, not always). They seem to be thus:—The angle which includes two sides of a pentagon (144 deg.) is divided into five bays; and the other two bays are exceptional, and vary in proportionate width (or seem to do on the plans, but these being on a small scale, and not intended to show minute details, the variances may be more

in seeming than in reality). Viollet-le-Duc gives Amiens apse to a larger scale, and according to it the angle contains 142 deg., instead of 144: there may have been a little adjustment, or it may be a slight error in the plan. It happens that one-fourth of the radius of a circle in which a pentagram is inscribed divides the angle (144° 0 deg.) into ten, and thus are obtained the centre lines of each pillar, and each chapel. It is easy to divide a line into four, but it so happens that the lines of a pentagram fully drawn divide the radius into a fourth and a half, and consequently three-fourths.

In fig. 12 are shown these two methods of planning an apse of seven bays, and (fig. 13) the geometrical trisection of an angle. I have not seen any demonstration of this problem.

To trisect an angle $A B C$. Bisect in D , and again in E and F (dividing the angle into four). From D draw two sides of an equilateral triangle. With D as centre draw an arc, touching the radial line $E B$, and with E as centre draw an arc touching the line $D G$:—then a radial line drawn from the intersection of these two curves gives one-third of the angle, and the process repeated with F as centre gives the other third.

Fig. 14 shows the developed diagrams of the Pentagram and Heptagram. The lesser radius of the pentagram divides the angle 144 deg. (which comprises two sides of the pentagon) into three as shown. In the heptagram the lines of the great pyramid at Chizeh (and of others) are indicated by thicker lines of the diagram. The angle is $51^{\circ} 25' 42''$.

† The radius being 100 the chord of 48 deg. is	8134732
And the perpendicular of the pentagon is	8090170
Showing a difference of	0044562
The line $a-b$, or line $b-c$ on the pentagram gives the side of a polygon of eighteen sides, the latter being (with radius 1)	3472964
And the former	3454915
Difference	0018049

With centre d , the radius $d-c$ marks off 21 deg. on the circle; and with centre f the radius $f-g$ marks off 24 deg. These being repeated from the twenty radii, and the arc of 18 deg. being bisected, the circle will be divided into 120 spaces of 3 deg. each.

Chord of 21 deg.	3644710
Radius of curve	3632712
Difference	0011998
Chord of 24 deg.	4158224
Radius of curve	4122147
Difference	0036077

TRIPOD FOR A CHAFING PAN: SIENA.

This is an example of the characteristic mediæval metal-work in which Siena abounds. The square conventional treatment of the animal heads, or rather suggestions of heads, which hold the rings, is a good example of design suited to the material and situation. The treatment of the feet is somewhat more naturalistic, though very free and bold.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

PRIZES AND STUDENTSHIPS FOR 1896-97.

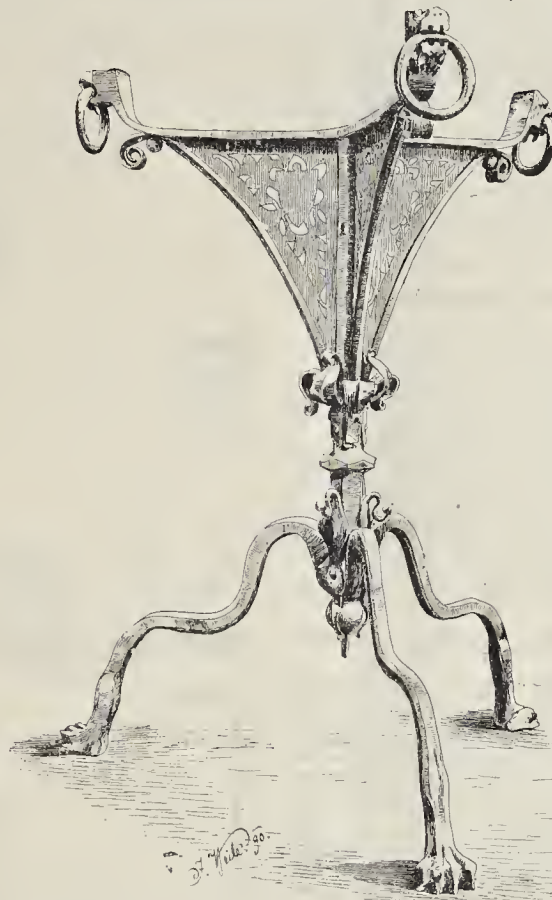
The fifth general meeting (business) of this Institute for the present session was held on Monday last, the President, Professor G. Aitchison, A.R.A., occupying the chair.

The minutes of the previous meeting having been taken as read, the following gentlemen were elected, viz.:—*As Fellows*, Mr. A. B. Pinckney, M.A. Cantab., Henwick, Worcester; and *as Associates*, Messrs. H. J. G. Smith, London; P. A. Robson, London; and H. W. Walker, London.

The Deed of Award of the prizes and student-ships for 1896-97, made by the Council (in accordance with the terms of by-law 66) was then received. The following is the list of successful candidates and competitors:—

Institute Silver Medal and Twenty-five Guineas (Essays).—Subject: The True Value of Tradition and Precedent in Architectural Design.

* I do not say that the division is mathematically true, but it is so nearly true as to be sufficient practically.



Tripod for a Chafing Pan: Sta. Caterina, Siena.

The Medal was not awarded, but the sum of Fifteen Guineas was voted to the author of the essay under motto "Things New and Old"—viz., Mr. John J. Cresswell, A.R.I.B.A., of Grimsby.

Institute Silver Medal and Ten Guineas (Drawings).—Awarded for the drawings, under device of fleur-de-lys within circle, by Mr. Fred. J. Wass.

The Soane Medallion and 100l. (for Continental Travel).—Awarded for design for a Provincial Market Hall, submitted under motto "Russet," by Mr. J. A. R. Inglis, A.R.I.B.A.; Medal of Merit to Mr. James A. Swan, "Labor ipse Voluptas" (Birmingham); Certificate of Hon. Mention to Mr. Charles H. Holden, "Elephant d'Argent" (Bolton).

The Pugin Studentship: Silver Medal and 40l. (for Travel in the United Kingdom).—Awarded to Mr. William Haywood; Medal of Merit to Mr. J. A. Swan; Certificate of Hon. Mention to Mr. W. E. Dobson.

The Godwin Bursary: Silver Medal and 40l. (for Travel outside the United Kingdom). Awarded to Mr. R. Stephen Ayling.

The Owen Jones Studentship: Certificate and 40l. (for Travel outside the United Kingdom): Awarded to Mr. A. E. Henderson.

The Tate Prize: Certificate and 30l. (for Travel in Italy).—Not awarded.

The Grissell Gold Medal and Ten Guineas (for Design and Construction).—Subject: Design for a Bay of a Church. Awarded for design, under device "Heart and Shield," to Mr. Sydney K. Greenslade.

The Aldwinckle Studentship: a Certificate and 30l. (for Travel in Spain).—Awarded to Mr. A. T. Griffith.

The Ashpitel Prize.—Awarded to Mr. T. D. Brooks (Doncaster).

The meeting then adjourned. The next meeting will be held on Monday, when the President will deliver an address to students; and some critical observations on the students' work will be made. Subsequently, the presentation of prizes will be made by the President. Prior to the distribution of prizes, Mr. Alfred Waterhouse, R.A., the new Chairman of the Board of Examiners, will present, on behalf of past and present members of the Board, a testimonial to Mr. Arthur Cates in recognition of his long and valued services as Chairman of the Board.

ENGINEERING SOCIETIES.

LIVERPOOL ENGINEERING SOCIETY.—The fifth ordinary meeting for the present session of the Liverpool Engineering Society was held on the 6th inst. in the Royal Institution, Colquhoun-street. Mr. George Farren, J.P., of Carnarvon (Vice-President), occupied the chair. Mr. James Glover, jun., M.A., Assoc.M.Inst.C.E., read a paper entitled "Some Notes on Current Specifications and Tenders for Public Works." The lecturer dealt with a few points in connexion with specifications and quantities which in many current documents were the reverse of reasonable, and which led to much friction and irritation between engineer and contractor, coupled very often with great financial loss to the latter. After referring to the classes of current risks, and to the arbitration clauses in specifications, and also giving specimens of the most unreasonable he had met with, he concluded by suggesting that a well-thought-out scheme

with variations of conditions and quantities within well-defined percentage limits, and with well-defined corresponding percentage price allowances for plus and minus excursions from the schedule average, together with an arbitration clause removing the final appeal from the engineer to a mutually respected and accepted umpire, must inevitably tend to improve the design, workmanship, quality, and progress of the contract work by enabling the engineer and the contractor to devote their respective special talents solely to the accomplishment of the work in hand, and without the irritating, distracting, and paralyzing disputes so common when the extrinsic risks were not fairly provided for or excluded. A discussion followed.—*Liverpool Mercury.*

Illustrations.

DESIGN FOR DECORATION OF A ROOM IN GRAFFITO.

THE chief object of the artist in the conception of this "Design for the Decoration in Graffito of a Room," was the introduction of the real Italian graffito in monochrome. The graffito is distributed all round the walls, the colouring being introduced in the pictures on the ceiling. The lightest tones of the graffito are cream, and the shadows sepia. The architectural parts should be in marble of some warm colour, or in stucco of the same colour, with some gilding. The principal subject represents the ancient Grecian game of ball. The smaller designs represent various sports, and the subjects on the vaulting are the Elements. C. F.

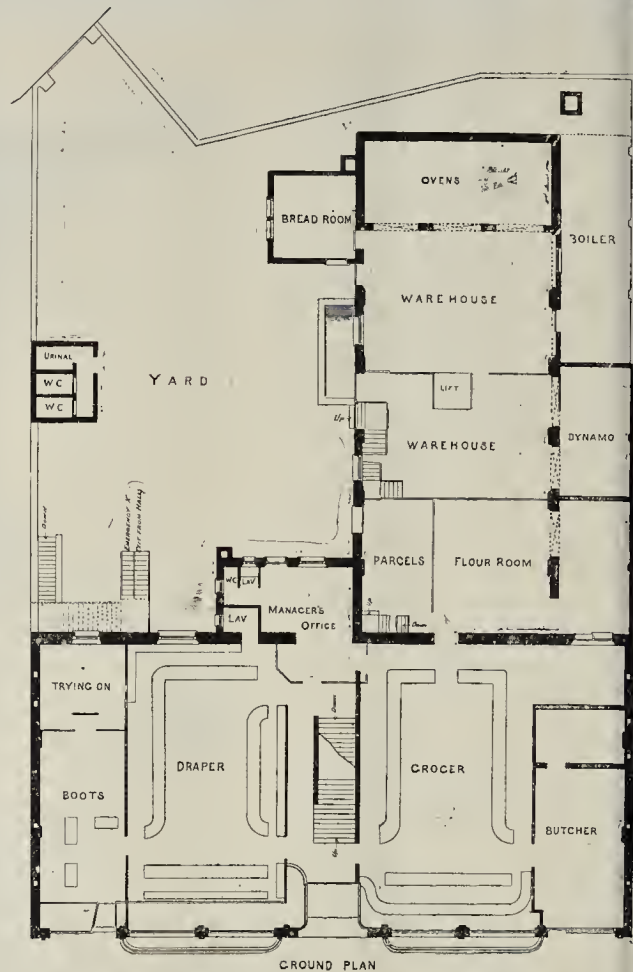
INTERIORS, NEW TECHNICAL SCHOOL, LIVERPOOL.

THE two drawings of the Technical Schools at Liverpool, represent the interior of the entrance hall and of the students' lecture hall, as intended. The former is top-lighted, and has a cloak room upon either side, while the entrance to the lecture hall is seen at the end. The lecture hall itself is about 70 ft. by 40 ft. and 27 ft. high, occupying the height of two floors. It is proposed that it should be vaulted in fibrous plaster with a panelled dado, and the windows kept high up each side. It will provide accommodation for 400 students. It should be added that the drawings were made by the architect for his own purposes since the competition, and were not among the drawings submitted in competition.

NEW WING TO BOARDING-HOUSE, RUGBY.

THE house to which this addition was made in the summer of 1895 is one of the oldest of the Rugby boarding-houses, and the original building is a plain square stucco block of no particular style. Several years back Mr. H. Lee Warner, who was then its "house-master," added a small quad on the east side of the old house, containing a hall, studies, and dormitories. These were built in the then fashionable Queen Anne style, and more recently a further addition was made on the south side of the house in a similar style. The present addition was made for the Rev. W. H. Payne Smith, and forms the north side of the quad. The drawing shows the outer front. As the new wing was to form the front to the boys' block, it was planned to harmonise with the style of the quad rather than with that of the residential portion, though there are many variations from the details of the rest of the boys' block in the new work. The available space was very much cramped, and a good deal of accommodation was required. This explains why some "fancy planning" had to be contrived (a most undesirable necessity). The materials were red sand stock facings with stone dressings and tile roofs. A good deal of rough-cast is introduced, and in the centre of the front is a coloured plaster panel, representing an oak tree—the house crest. This was made very cleverly by the builder, Mr. Linnell, of Rugby, who carried out the work most skilfully and promptly in the short space of the two months' summer holidays. The old buildings were dismantled on the first day of the holidays, and when the next term commenced the boys went straight into their new studies. Mr. Linnell's foreman was Mr. Barber, and Mr. J. T. Franklin, the school surveyor, kindly acted as clerk of works.

CHARLES A. NICHOLSON.



New Business Premises, St. Helens.

NEW BUSINESS PREMISES, ST. HELENS.

THESE premises have just been completed for the St. Helens Co-operative Society, at a cost of upwards of 20,000. The building is three stories in height, with cellar under the whole. The ground floor consists of shops for the various branches of the trade. On the first floor are show-rooms, offices, and board-room, and on the top floor is a large lecture-hall. A feature has been made of the lighting of the basement by forming areas in front and carrying the shop windows down to the bottom. The wing at the back is devoted to warehouse purposes and bakehouse.

The front is faced with Ruabon red bricks and York stone dressings. The building is fireproof throughout, the floors being finished with oak blocks or mosaic; the whole is heated throughout by hot water, low pressure, and lighted by electricity, the lifts and hoists being worked by the same power.

The contractors were Messrs. Whittaker & Woods, of St. Helens; the fireproof floors, wood blocks, and constructional ironwork are by Messrs. Homan & Rodgers, of London and Manchester; the mosaic was laid by Messrs. Diespker & Co., of London; and the architect was Mr. Frank S. Biran, of St. Helens, from whose designs and under whose superintendence the work was carried out.

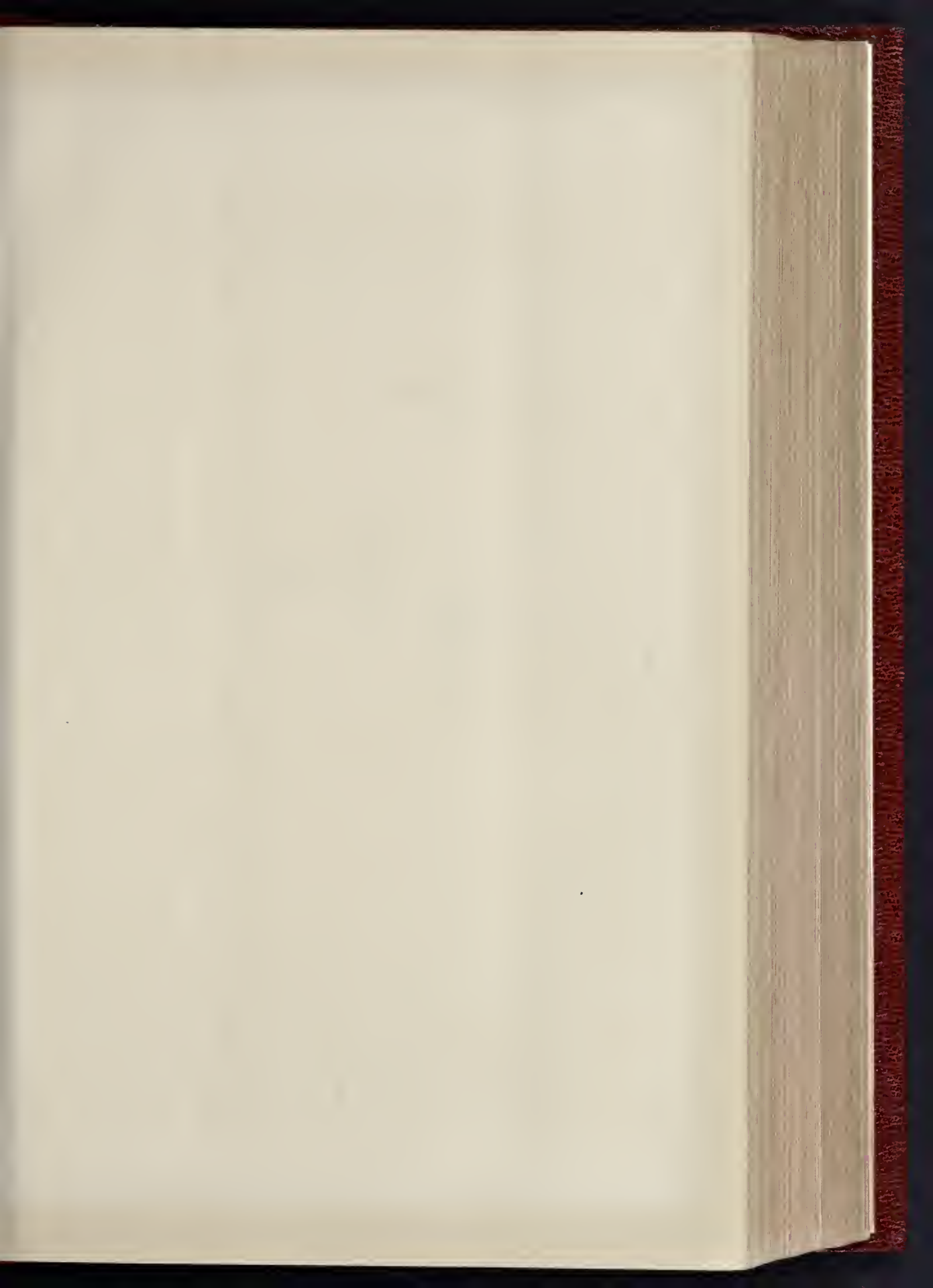
NATIONAL PRESS AGENCY.

THIS building, in course of erection on the Victoria Embankment in Carmelite-street, is constructed of brickwork in cement, faced with red bricks, all the dressings being of a warm, gold brown tint of terra-cotta (Messrs. Doulton & Co.). The building is of fire-resisting construction throughout.

The contractor is Mr. H. J. Williams, of Ipswich, and the architect Mr. Edwin T. H. London.

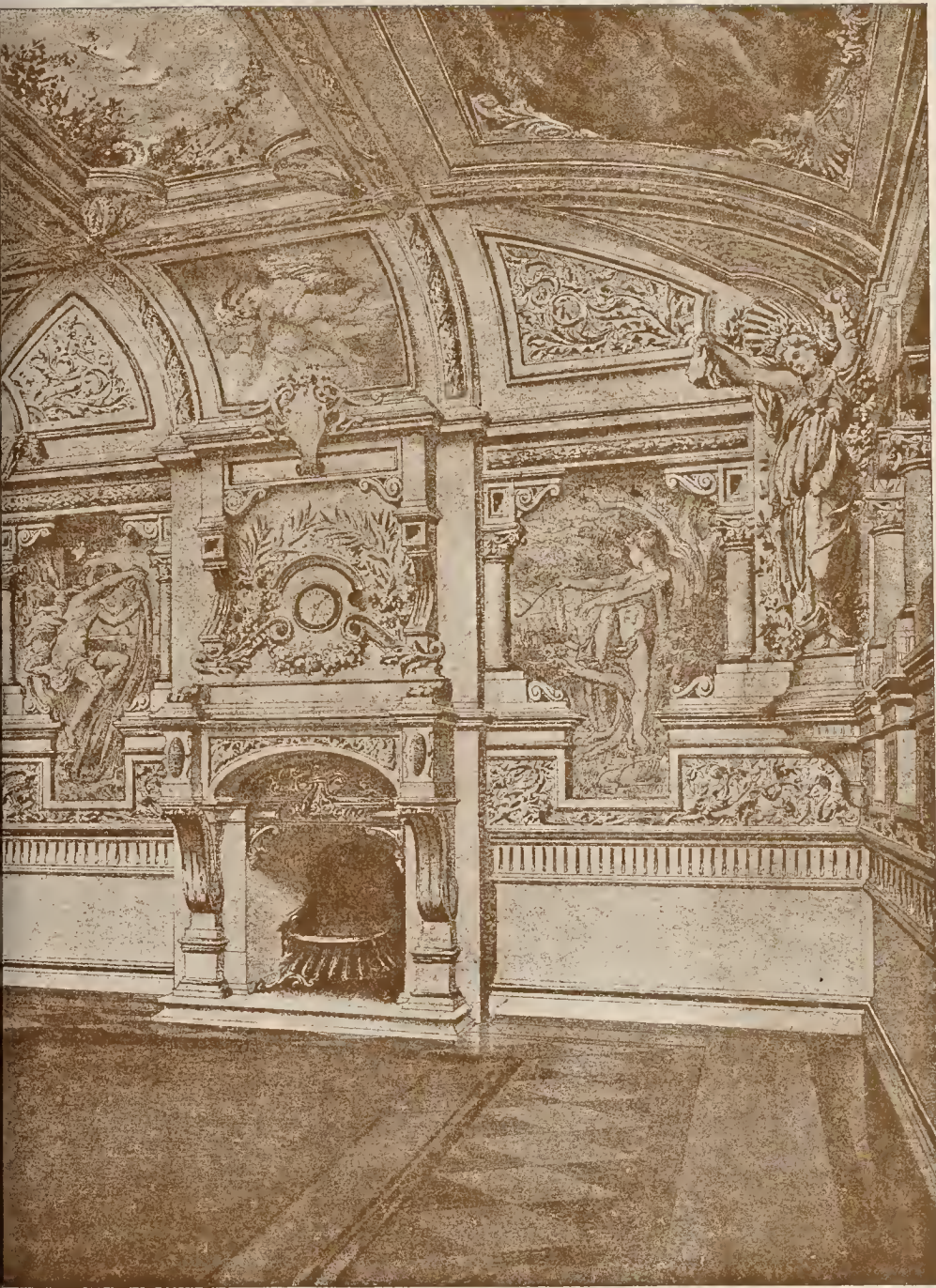
TESTS OF STEEL AND CONCRETE FLOORS.

ON Monday last we had an opportunity of witnessing the testing of two systems of combined concrete and steel flooring, carried out in Manchester under the direction of Messrs. Maxwells, architects. The first test was that of floor patented by the Expanded Metal Company, an arched concrete floor, 4 ft. wide and 11 in. span from centre to centre of the joists for the abutments (11 ft. 6 in. clear span), with rise of 12 in. and a thickness of 3 in. at crown and of 4 in. at the springings, and having a layer of expanded metal (weighing about 1 lb. per square foot) embedded in the lowest part of the concrete, was loaded uniformly with 100 lb. of lead until it broke suddenly under a weight



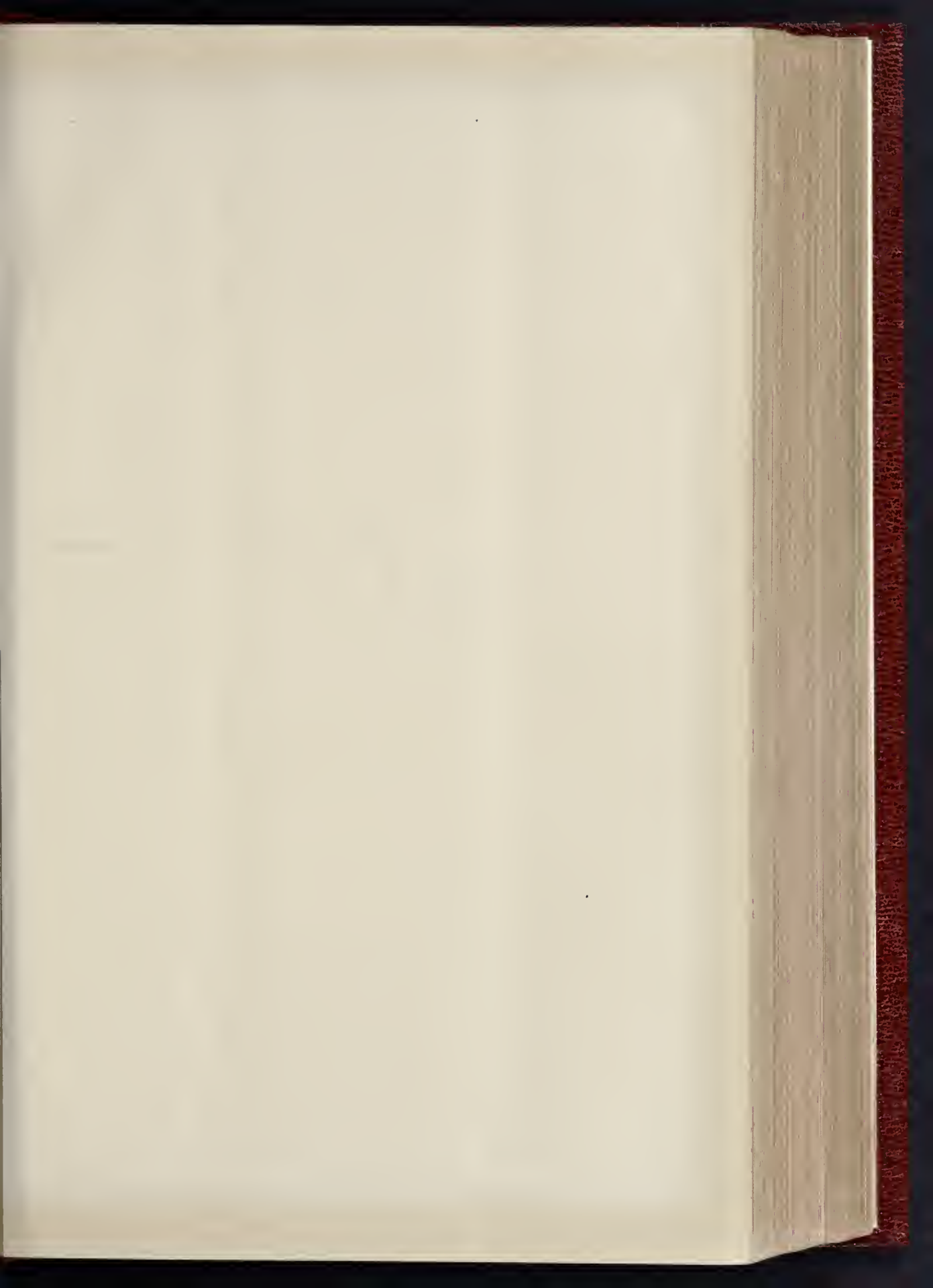


DESIGN FOR THE DECORATION IN



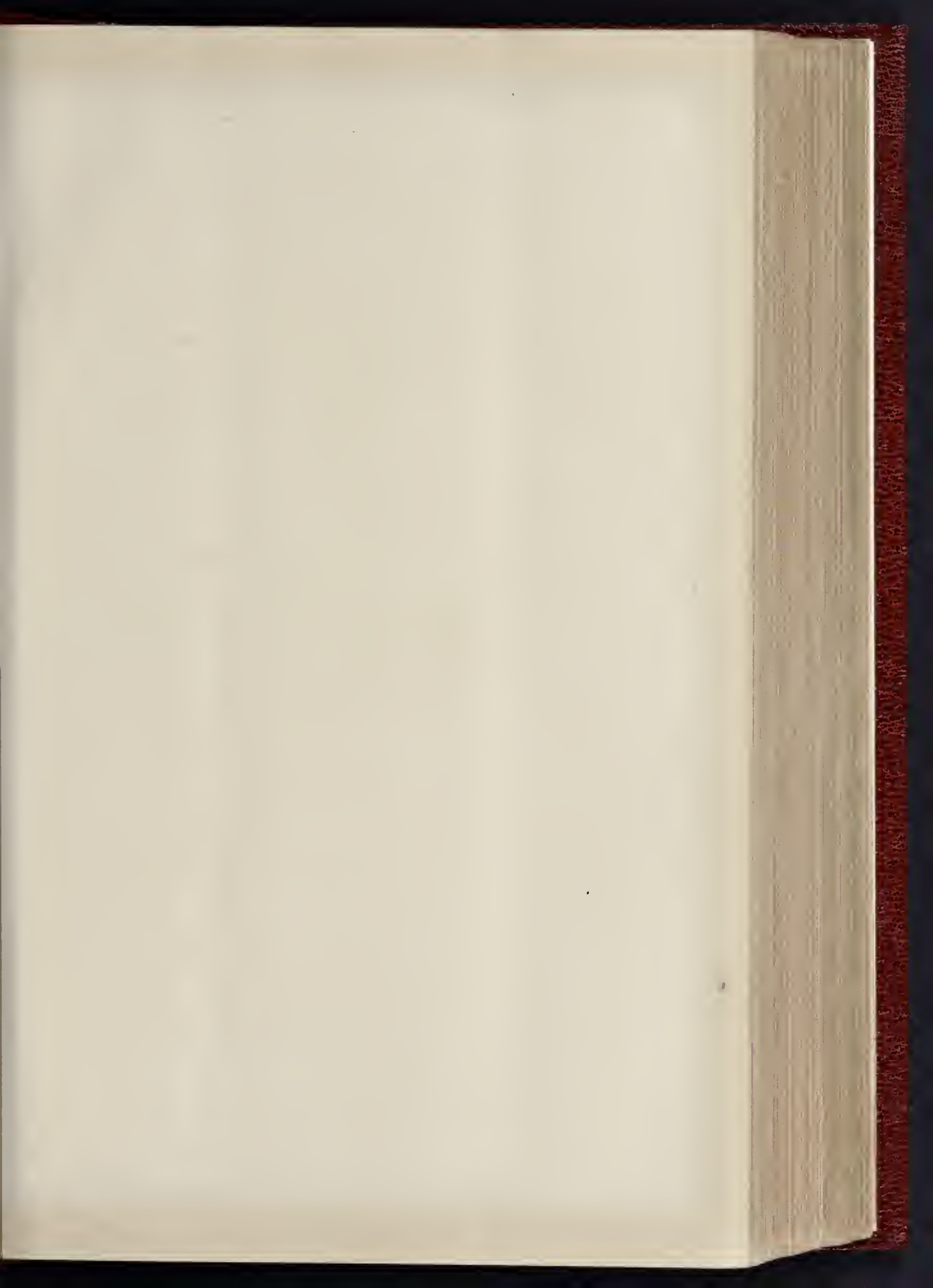
189. PHOTO SPRAGUE & CO. 4 & 5, EAST HARDING STREET FETTER LANE, E.C.

OF A ROOM.—By MR. C. T. G. FORMILL.

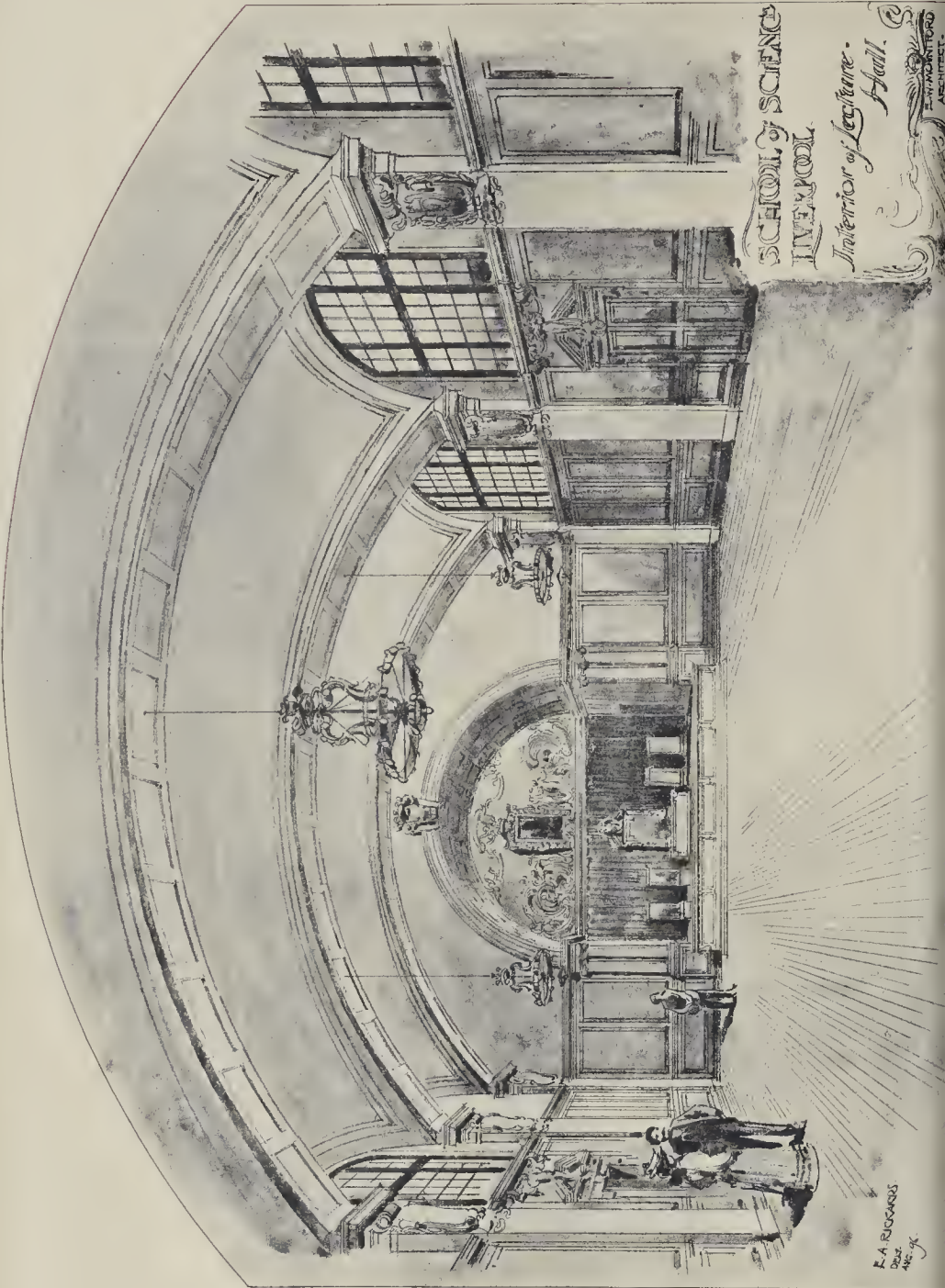


THE BUILDER, JANUARY 16, 1897.





THE BUILDER, JANUARY 16, 1897



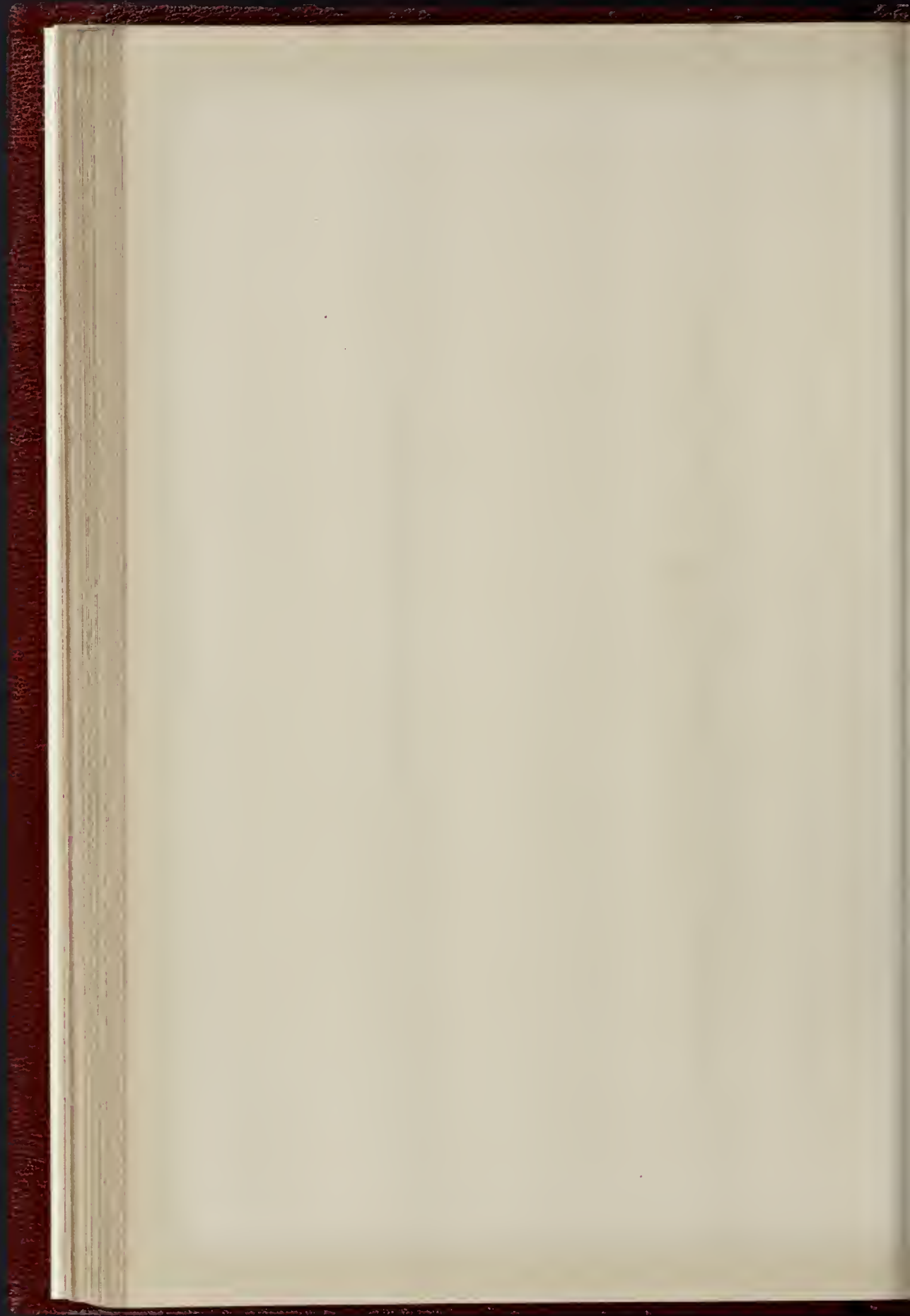
SCHOOL OF SCIENCE
LIVERPOOL.

*Institution of Lecturers.
Hall.*

R. A. RICHARDS
DRAWN
AND
ENGRAVED

ARCHITECT

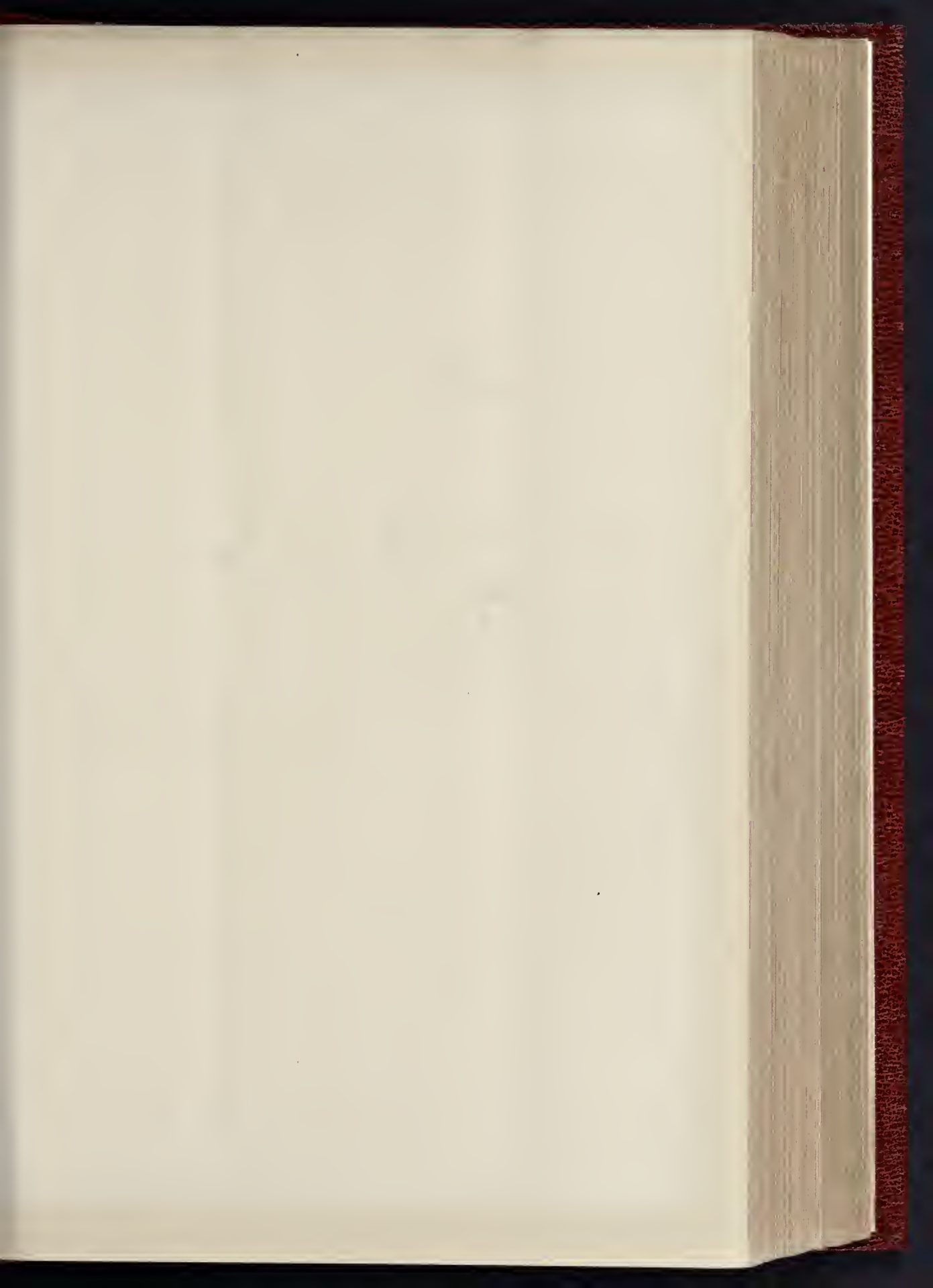




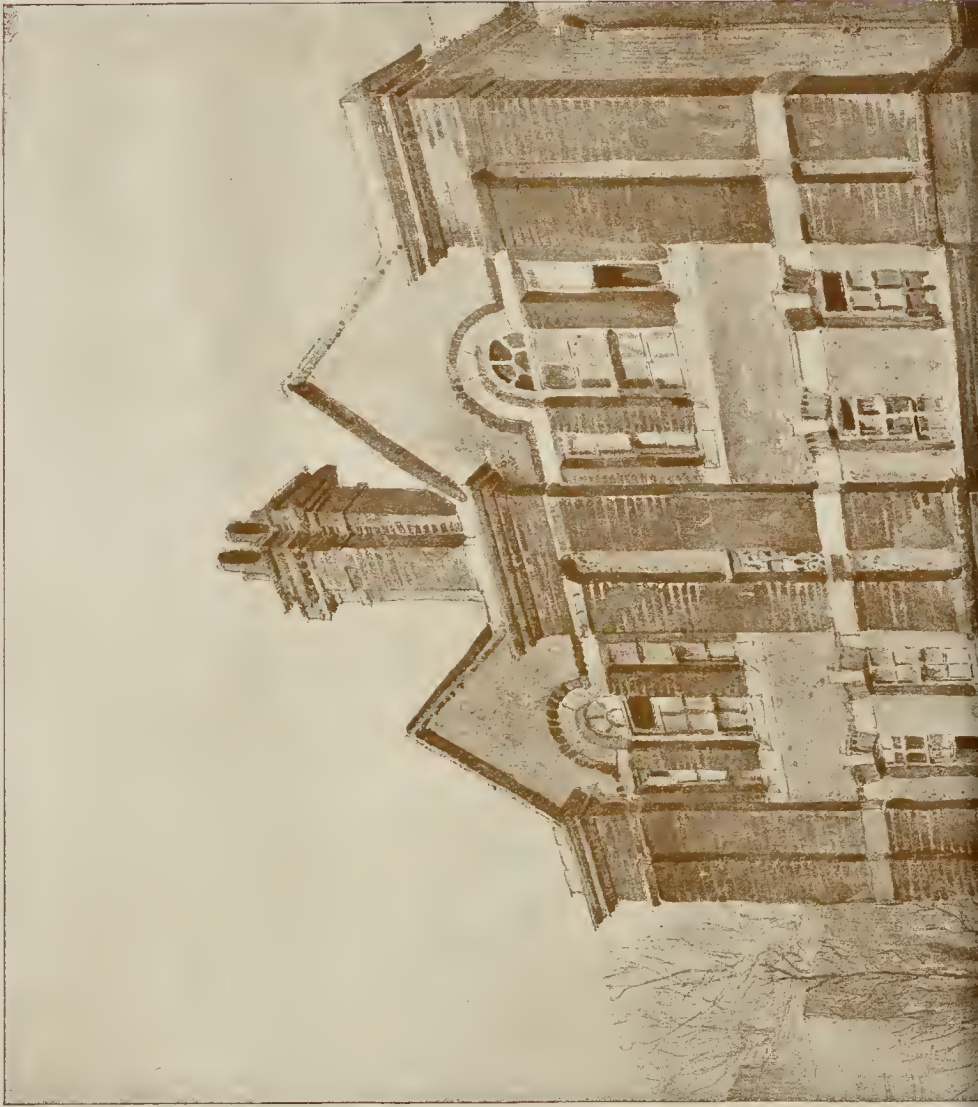
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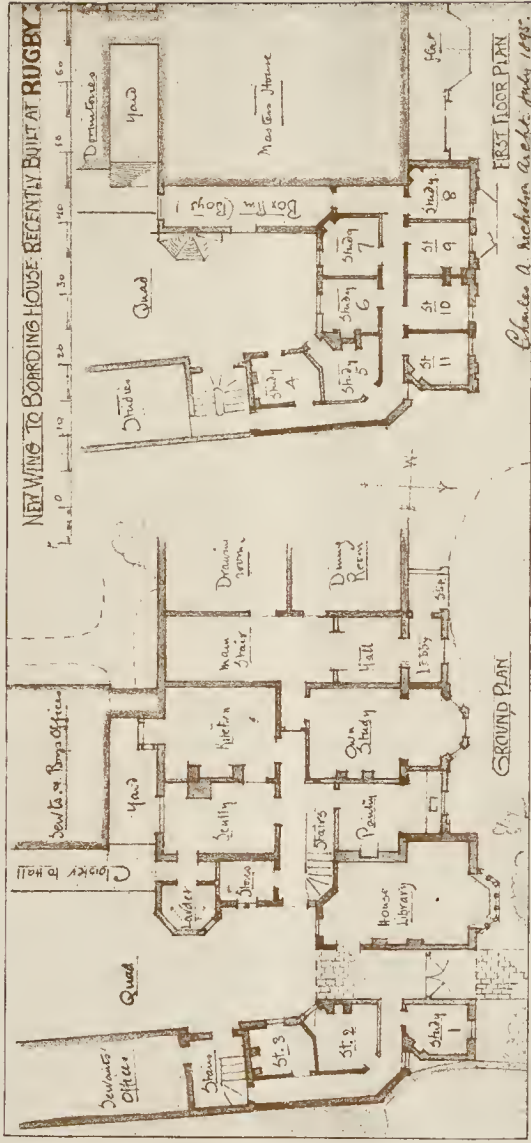
Edwin T. Hall F.R.I.B.A. Archt.





THE BUILDER, JANUARY 16, 1897.





29½ tons, or 12½ cwt. per square foot. The amount of deflection observed before the collapse was rather more than 1½ in. The second test was of the "Golding" floor, a floor which has been already largely used in America. Mr. Golding himself was present at the testing on Monday. The specimen tested had the same span as the arched floor just described, but was 2 in. wider. It consisted of two concrete ribs, spaced 3 ft. 6 in. from centre to centre, and each having the intrados formed with a 6 in. by 2½ in. arched steel channel, weighing 12½ lbs. per foot, and laid flat side down, the rise being 13 in.; over the two ribs, and united to them by the adhesion of the concrete, the floor itself extended, consisting of a flat concrete slab 3 in. thick, with a layer of expanded metal (similar to that in the first test) embedded in the lowest portion. With a load of 12 cwt. per square foot (*i.e.*, equal to that which broke the other floor), the deflection was ¾ in.; but with increasing loads the deflection rapidly increased, until it amounted to no less than 4½ in. under a square load of 40 6 tons, or 16½ cwt. per square foot. Darkness had at this time rendered further loading somewhat difficult and dangerous, and the floor was left unbroken under the load mentioned. When the load had reached nearly 16 cwt. per square foot a crack was observed in the underside of the flat slab, extending across it about the middle of the span, and under this load the deflection was about 3½ in. The greatness of the deflection was undoubtedly due in a large measure to the yielding of the steel framework between which the floor had been constructed, the spreading being no less than 1 in. when the maximum load was reached. The concrete in both cases was composed of 1 part of Portland cement and 3 parts of crushed granite passed through a screen with ¾ in. meshes, and both floors were constructed thirty-three days before being tested.

We reserve comment on the tests just recorded, as we hope in an early issue to give fuller details of these and other tests, together with explanatory drawings. It is clear, however, that both floors attain great strength with a remarkably small quantity of metal, a further proof—if such were needed—of the extravagant waste of metal in most of the systems of fire-resisting floor-construction now in use in England. The tests made last year by Mr. Fowler and Sir Benjamin Baker—which we hope to record when we comment on this week's tests—show beyond question the enormous accession of strength gained in concrete slabs by the insertion of expanded metal, and, indeed, are a far better index of the value of the addition than are the tests made last Monday.

PETERBOROUGH CATHEDRAL.

The Society of Antiquaries have printed and circulated their views as to the whole controversy about the West Front of Peterborough Cathedral, accompanied by the specification showing how they would treat it, which is signed by Mr. Thackeray Turner, Mr. W. R. Lethaby, Mr. Detmar Blow, Mr. Philip Webb, and Mr. T. J. Micklethwaite, with the rider of a testimonial from a member of the Institution of Civil Engineers, Mr. John Carruthers, to the effect that he is of opinion that the method suggested could be safely carried out and would be effective in making the building secure.

The controversial portion we must pass over; enough has been said about it. The specification we have not space to print in full, it can be obtained from the Society of Antiquaries, but we give those portions of it which refer to the question of the condition of the piers and vaulting, and the means proposed to repair them. After describing the work of underpinning the piers the specification continues:—

"The next work would be to look to the condition of the pier itself, vaulting its foundations and the springing of the arch and vault; this would not be the least important part, for much would depend on its solidity. It is possible that disintegration may not have occurred in its substance to any serious extent, but this would have to be ascertained. The signs of its condition, so far as they can have been observed at present, tend rather to the conclusion that the subsidence and pressure outward from the vertical have been so slow from the time it was built that the multitude of its parts have yielded, almost elastically, to the change in stability, so as not dangerously to dispossess its parts, and the core with its ashlar casing may still be in a state of cohesion."

However this may be, no pains should be spared in finding out what its condition is; and after the plumbing, girding, and raising of all its perpendicular lines have been done, the pier should be gently tapped with a wooden mallet on its surfaces, and the sounds at different parts listened to for any indications of hollowness. Should the sounding not be satisfactory, a stone or stones would have to be drawn from the flat surfaces of the pier inside, and

the core examined in one place at a time. The triangular form of the pier in plan, and its being some 25 ft. wide on its inner side, would allow of the examination being made without risk, and of the core being consolidated without serious difficulty, in a similar way to that hereafter described in connexion with the spandrels of the great arches. Any process of penetrating securely into old walls depends upon the care and ingenuity of the men engaged in the operations and their director, with an avoidance of heavy blows, keeping to one hole at a time, and that of the smallest workable size; a watchful foreman of the works, upon the direction of the architects, with a few picked men on whom they could depend, being the most important consideration in such work.

This pier, on which so much depends, having been secured in the whole of its height, attention would then be given to the springing line of the great arch and the vaulting, for complete consolidation here would be the basis for securing the great arch itself and the spandrels right and left of it.

Of necessity, a hole or holes would have to be made just above the springing line inside, where the metal tie-rods, which would have to be arranged at this level, would connect. At present the best opinion is that two tie-rods should be used, so as to lay hold of a larger body of material at both ends than a single rod would allow.

The particular size and form of the rods would depend upon the exact calculation of the holding power on the arch mouldings as they set down on the capital of the pier, and on the least injurious form of anchorage to be found inside the west wall of the nave. At the present time we incline to the opinion that the rods should be at the end of the rods a little behind the quintuple attached shafting, which runs up from the ground to the base of the pinnacle between the spandrels. The form and exact position of this connecting-plate, which would be fixed upon as the work proceeds. Two tunnel passages, to be made in the same way as hereafter described, would be the safest and soundest way of working here, and it may be that copper or tough bronze would be used, instead of iron, &c., or, if not, the most approved kind of iron or steel; in either case their strength would have to be tested before using. The making of one tunnel at a time would allow of taking greater pains with the new consolidating material to meet the strain both above the springing line and below.

The consolidation of the walling here, in connexion with the tie-rods, having been done and allowed to set, the tympanum at the base of the pier, between the decorative arching and the wall rib of the vaulting at the base of the great pinnacle, would afford easy and secure access to the core of the walling in the centre; and further access would be made without difficulty or risk from the hollow pockets of the vaulting right and left.

We now come to the very important point in connexion with the present repair of the front, the manner in which the great arches can be safely and securely strengthened, *without having recourse to rebuilding.*

It has already been noted that the internal parts of the walling of the northernmost arch have expanded from east to west during the slow settlement of the detached pier below; and in a lesser degree this is probably the case in the other arches also. The substance of this walling must therefore, to a greater or less extent, be in a state of disintegration, and its removal and replacement by sound masonry are essential to the permanent stability of the masonry. The manner in which this may be done *without risk or danger either to the building itself or to the men engaged in it*, is as follows:—

In the rubble walling, which has no ashlar facing at the back of the arches, beginning at the lowest point, a hole or tunnel, just wide enough for a man to work in, would be slowly driven by short sections at a time. The sides and roof of each section would be made absolutely secure by timber framing before beginning the next one, and the hole would be gradually carried through the wall to the back of the facing stones of the wall itself. The hole would be made as deep as 6 ft. in length. Any possible danger from the running of disintegrated material would be met by the prompt application of short lengths of 3-in. planking, thickly coated with wet clay, and held in position by stout wire props, with expanding screws are applied to the ends, so as to press each plank well home and keep it in place. Moreover, only one tunnel would be made at a time, and this would be filled and pinned up before another material as hereafter is described before another one is begun; it would therefore bear but a small proportion to the area of the wall bored into. The new filling would thus support the work above it until that in its turn was removed.

Clearly, when doing this underbuilding in the spandrels of the arches, the chief danger in underpinning foundations, namely, the great superincumbent weight, would practically be non-existent, owing to the comparatively slight structure of the gable above. The only danger to be faced, the possibility of the sides or roof of the holes falling in, would be effectually guarded against by the precautions already described.

The process of consolidating the walling of the west front, above the piers and overlying the arches, is simplified by the great thickness of the walling at this part of the work under consideration; and the foregoing indication of a very complete system of timber support to all the weight and thrust of the work above the springing line of the arches shows that any disturbance caused by the execution of the work would be met all points by the counter support. Extra support in detail would have to be supplied from time to time, so as to make sure that no further dislocation of material would happen, as the supporting framework would be brought into action as soon as the slightest movement took place.

The principle underlying this working by tunnel into the walling from the inside, at the back of the ornamental ashlar stonework on the outside, is that of applying horizontal bands of very hard material at certain distances apart vertically, so as to become, as the work proceeds upwards from the springing line of the arch, something analogous to "cantilever" construction used in modern iron bridges; that is, a corbelling out right and left from the central axis of the piers below till the bands from opposite sides meet over the centre of the arch between its two piers. The rods and hard horizontal material thus set, as ribs, and the filling in between them as support to the ribs.

As has been said before, the very thickness of the walling is of assistance to this kind of work, for these bands or ribs, having a great horizontal width, have also considerable power in lateral resistance to bulging.

As this laminated corbelling and its interfilling is passed on to the outer surfaces of the arching, the weight being carried by the arch ribs alone is then shared by the renewed core of the walling. Also, while this process

of relief and strengthening is going on, each of the orders of the arch is caught up and securely connected by natural adhesion bonding, or, when needed, by dowels of hard material; and at the same time the spaces between the rings of the arch, which have opened on account of settlement, would be securely filled and incorporated with the work behind.

The horizontal bands, or ribs, which were constantly used in the best Roman walling, served more than one office in construction, as they were, so to speak, built in compartments, and the rubble or concrete lying on the laminated bond of two or three joint-broken courses stopped the running down of the water from the new rubble above them to the rubble below, that having already been saturated with grout.

It must also be understood that these laminated bond courses would be of the whole thickness of the wall from the back of the facing stones to the inside face of the wall lining, and on these would be built, or put in, the rubble or concrete filling. While the work in each tunnel was being done, these horizontal bonding courses would be thrust into and under the sides of the walling of the holes beyond the general width of each tunnel, so that after one tunnel was filled up, and a sufficient time was allowed for setting, another parallel tunnel would be made, and these outsaucing bond courses would be caught up at the base of the fresh hole, and a continuous line of them would run as far as different circumstances would allow.

In order to make the horizontal courses, or ribs, as strong as possible, we should mostly use the hard blue Staffordshire paving tiles, 1½ in. or 2 in. thick, of the size we would use with smaller sizes of the same material to avoid cutting. These semi-vitrified tiles have great affinity with Portland cement, and are very holding.

We have specified rubble walling or concrete as the composition of the filling-in between the ribs, but this work would be varied by the differences found to exist in the work of the core. Any solid parts of the core which might prove not to have been disintegrated would be washed, and then laid hold of by new filling-in bonding stones or flat bricks, so as to range horizontally with any of the work met with on the way, which should not be disturbed; but the particular use of rubble concrete is given for it can be pressed into the interstices of old walling, and lays hold of any connecting bonding from the internal irregular faces of the ashlar or other facing stonework. At different times, from the end of each tunnel, parts of the ashlar facing would be exposed to view, and all the gaps in it could be securely dealt with; the renewing of the bedding and pointing of the stones (an almost impossible work from the outside only) would be thoroughly secured, and attachments incorporated with the rubble backing.

It is highly probable that the quintuple shafting, up from the springing of the arches to the underside of the base of the great pinnacle between the roofs, will have to be built back with much cube stone, and if this is found so, it will not have to be disturbed (unless in any way dislocated), but carefully embodied in the new filling-in and band work of the spandrels.

So far as can be seen at present, the internal support at the base of these pinnacles is of solid and unfractured work, as is also much of the work of the gable proper, though here fractures or displacement of the stones would have to be dealt with, especially along the range of alternate window opening and niche work.

The gable proper, that is the triangular part resting on the continuous dentilled string-course, would present few difficulties in securing it after the strengthening of the foundation on which it stands (*i.e.*, the spandrels of the arch below) it had been consolidated. The alternation of windows and niches occurring in thinner walling than that covering the great arch, a far larger part of the work here is done in squared stone, and this would allow of the masonry under the base of the wheel window being made quite sound from the inside, so as to avoid displacing the iron-fretted stones of the bottom part of its circle; the joints of this stonework at this point could be thoroughly washed out from above, run in with new filling-in, and incorporated with the solidified work below, which would have been done from the inside. Any disturbance of the ornamental stonework on the outside would be most mischievous.

Doubtless, as the work proceeds from time to time, at the different parts of the walling, any scheme set down on paper now would have to be modified to suit the peculiarities of the various works as they become disclosed; caution while each part was being dealt with would have to be insisted on, and special contrivances put in practice to suit all situations.

We need scarcely here say anything as to the repair and strengthening of the vaulting in connexion with the great arch at this part of the front, save that we were much interested in the varied curves of the ribs resulting from the slow strain put upon them by the settlement of the piers; but they present no serious difficulty in the way of strengthening them as they now stand, when once the work on which they rest and about is made secure.

The following architects add their signatures as approving the proposed method of procedure but admitting that they have not examined the building:—Robert Weir Schultz, F. W. Troup, Edward S. Prior, F. Inigo Thomas, Halsey Ricardo, Mervyn Macartney, P. Morley Horder, J. A. Cossins (Birmingham), H. Wilson, Ernest Newton, E. Guy Dawber, C. R. Ashbee, J. J. Stevenson, F.R.I.B.A., Chas. H. M. Mileham; to these Mr. Horsley and Mr. John Richmond desire to add their names.

COMPETITIONS.

LUNATIC ASYLUM, BELFAST.—A new asylum for 1,000 patients is about to be erected near Belfast. Competitive designs were invited, and Mr. Sydney Mitchell, architect—of Messrs. Sydney Mitchell & Wilson, Edinburgh—was appointed by the Irish Board of Works assessor to select the three best plans. He returned from Dublin on Monday, having given his decision on Saturday, though the names of the successful competitors will not be disclosed for some days yet.

MUNICIPAL BUILDINGS, DOUGLAS.—A special meeting of the Douglas Town Council was held

on the 6th inst. for the purpose of selecting plans of the proposed municipal buildings. Seventeen plans had been submitted by English and Manx architects, and the committee appointed to consider them, acting under the advice of Mr. Woolfall, of the Liverpool Society of Architects, recommended that the first premium should be awarded to the plan signed "Mona." After a prolonged debate this was agreed to. On the letter containing the name of the competitor being opened, the name of the successful architect was discovered to be Mr. Arthur Ardron, London. Manx architects take the second and third premiums.

WORKMEN'S DWELLINGS, SUNDERLAND.—Some time since the Sunderland Corporation offered premiums of 50*l.*, 30*l.*, and 20*l.*, to architects who chose to send in designs for the dwellings the Council propose to erect on the Hat Case site, which has been cleared of its dilapidated property. Mr. J. Slater, of London, was appointed to adjudicate upon the plans sent in. These were fifty-eight in number. The first award the assessor recommends should be given to "Pro Artifice," whose plan shows accommodation for 468 people in forty-two three-roomed dwellings and fifty-four two-roomed dwellings. Each tenement is provided with a bath. The total cost is estimated at 20,000*l.* The second premium the assessor awarded to "Homes," whose design is estimated to cost 23,351*l.* in carrying out. The number of persons provided for is 448. "Salis Populi" takes third premium, with provision in his plans for 402 persons at an estimated cost of 20,000*l.*

ARCHITECTURAL SOCIETIES.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—The monthly meeting of this Society was held on Tuesday at the School of Art, Arundel-street, Mr. C. Hadfield, the President, in the chair. A lecture was delivered by Mr. Beresford Pite, President of the Architectural Association, on "The Study of Architectural Design," illustrated by numerous drawings, photographs, and blackboard sketches. He stated that the modern architect suffered from lack of artistic motive. He sought it in archæology and mere picturesque quaintness, there being now no traditional style or intuitive sense of beauty in architecture. No doubt this was as characteristic of our age as if it were quite otherwise, but it was impossible that the architectural student should be left without direction or serious intention in his study of design. Present purposes could perhaps best be served by seeking to excite enthusiasm from interest in detail work, and by understanding and analysing the beautiful qualities in the means employed in plans and working drawings, which were the instruments by which a beautiful building was obtained, and thus made up for the loss of genuine national architectural style. An architect's plans had a beauty of their own, and this was pointed out in some detail from many examples. This beauty was indiscernible in the building, and belonged to the embodiment in the drawings of the building. In the same way the sectional plans of buildings were examined, and the means illustrated from them of obtaining different architectural effects by a carefully-studied interest in the sections. Elevations were grouped in different classes dominated by general ideas, such as verticality or horizontality, concentration or distribution of ornament, a picturesque grouping of sky-line, or dignified severity. These points were illustrated from photographs and sketches, as well as grandeur of line, simplicity of rhythm, luxuriousness, a simple line with a rich surface, or a rich line. The students were exhorted to thoughtfulness in detail as being pre-eminently the road to good architecture. In conclusion, architecture was vindicated as a decorative art, and as such was the foundation of all art other than imitative. A vote of thanks was unanimously accorded to the lecturer.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—At a meeting of this Association, on the 8th inst., Mr. E. Preston Hyatt (Secretary to the School of Art) gave an address, entitled, "The Architect as a Teacher." It was the duty of the architect, he said, to stimulate work in the allied arts. Amongst the grounds for hope as to the future of architecture in England, he said, were the increasing earnestness of architects themselves—an earnestness which had induced many capable architects to sacrifice to teaching in public classes, often at a pecuniary loss, much time that would otherwise be devoted to private practice.

Birmingham was especially fortunate in this respect. The growing interest taken by people generally in art, the love of home, and even the possibility of the extended possession of houses which building societies afforded, the development of public spirit—all these were forces of which the architect should avail himself, and which he should adapt to the best ends. It was the duty of the architect to stimulate work in the allied arts; he could render to the community great service by facilitating the employment of worthy sculptors, mural decorators, wood-carvers, and others. In this way his influence would also penetrate beyond those craftsmen working immediately under his supervision. The attendance of young architects at the various classes of the Birmingham Municipal School of Art was fraught with advantage to all concerned. Domestic architecture, whose improvement Mr. Ruskin and Arthur Helps had enforced as a moral duty, and which was alike the best and the readiest starting-point, and national and municipal architecture, which should exemplify the highest life of the community, were considered in some detail. It would be worse than a paradox if a community which spent large sums upon art education should itself erect unworthy buildings. The possibility was considered of appointing, in connexion with the First Commissioners of Public Works and Buildings, an advisory council of leading architects, chosen on representative lines; and attention was called to the fact that at least since 1885 no member of the Birmingham City Council was in the municipal diary described as an architect. Birmingham did not stand alone in this matter, which was noticeable in view of the development of local duties, and of their interest and importance to architects. In conclusion the lecturer summarised the work of the Municipal School of Art. A hearty vote of thanks was passed to him on the motion of the President (Mr. William Henman), seconded by Mr. H. T. Buckland, and supported by Mr. W. H. Bidlake, M.A.

LIVERPOOL ARCHITECTURAL SOCIETY.—The fourth ordinary meeting of the forty-ninth session of this Society was held at the Law Library, Union-court, on the 11th inst., when a paper was read by Mr. C. E. Mumford on "Belgian Churches." Mr. George Bradbury, President of the Society, presided. Mr. Mumford, in his opening remarks, said Belgium was without doubt one of the countries of Europe where the fine arts have flourished and are still flourishing with the utmost vigour. The long series of great painters who succeeded each other for more than four centuries had not alone brought her the renown which she so justly enjoys; architects and sculptors had contributed their part. The devotion and intellectual culture of the Flemings had been shown in the vast number of churches of high architectural merit which are to be found in the country. Few of the older buildings now in existence date back beyond the beginning of the thirteenth century. It was not until the Gothic style was firmly rooted in the adjacent countries that it came to be adopted by the Flemings. All the vast wealth of ornament accumulated in these churches up to the middle of the sixteenth century was destroyed by the Calvinist iconoclasts, and there perished a wealth of art the loss of which was irreparable. About the commencement of the seventeenth century, the country again becoming prosperous, art and architecture received a new impetus, and many new churches were erected. The builders of Belgian churches, whilst striving successfully after the beautiful, always kept the practical utility of their work well in view. About 150 lantern slides were shown on the screen.

GLASGOW ARCHITECTURAL ASSOCIATION.—A meeting of this Association was held on the 5th inst., Mr. Wm. Tait Conner in the chair, when Mr. W. J. Blaine read a paper entitled, "Some Scotch Houses." The lecturer limited himself to the consideration of four of the finest and most characteristic examples of Scottish castellated architecture—Crathes, Craigievar, Midmar, and Castle Fraser, all situated within a short circular tour from Aberdeen. Mr. Blaine took into consideration only the original castles or keeps, which in date lap from the latter half of the sixteenth century into the first half of the seventeenth century, leaving out the later wings, and, after describing the natural surroundings, gave an account of their individual history; then entering into a critical analysis of the principles of design they illustrate. Comparing the one with the other, he pointed out their strong and weak points, making this clear by diagram sketches and photos, the former of which he referred to as also exemplifying a theory

of his, that the size of a building appears on a drawing in inverse ratio to its size in reality. In summing up, the lecturer placed these four buildings and their characteristics in the following order of merit:—Crathes, dignity with beauty of detail; Castle Fraser, beauty of detail with dignity; Midmar, dignity without beauty of detail; Craigievar, beauty of detail without dignity.

THE SURVEYORS' INSTITUTION.

MR. HOWARD MARTIN read a paper "On the Future Development of the Surveyors' Institution" at the temporary premises of the Institution, Savoy-street, Strand, on Monday. The chair was taken by the President, Mr. Daniel Watney. Mr. Martin, after referring to the history of the Institution since its formation in 1868, and the progress it had made, said its members were now spread over the whole country. With regard to another institution which he named, he said there was little done for its country members; but as to the country members of the Surveyors' Institution, they were charged somewhat lower fees, and had all the advantages of the Institution in London. While this was so, however, they laboured under the disadvantage in reference to the obtaining of information, their means being limited to their own circle of influence. He proposed, first, that provincial libraries should be established; and secondly, that meetings should be held taking the provincial centres in rotation. By these means the provincials would be kept posted up, and an increased interest in the Institution promoted. A vote of thanks to the lecturer was proposed and carried, and the discussion was adjourned.

Books.

A Wandering Scholar in the Levant. By DAVID G. HOGARTH. London; John Murray; 1896.

THIS is a very pleasant little book of impressions of travel, partly archæological but more especially concerned with the record of the general aspect of a country and of its inhabitants, and touched with the scholarly tone and literary style which the wording of the title seems to promise. There is not much in it that is of directly archæological interest, and the book is rather suggestive than didactic. The reader about to explore for antiquities may indeed obtain useful hints as well as amusement from the records of dealings with the native intellect when in search of such things as inscribed stones; how slow is the peasant to realise that a stone which he has been familiar with all his life is the thing the *gêner* wishes to see, or to convince himself that it is his interest to show it; how the price of the Bor stone fell, under judicious diplomacy, from 50*l.* to 20*l.*; and how a Government Secretary promised that if there were any difficulty about the conveyance of the stone, "he could arrange that we should be robbed of it outside the town, and for a slight consideration recover it at the port." The following picturesque passage describes the impression produced when the explorer in Anatolia "breaks into some hidden hollow of the hills and sees grey among the lentisks the stones of a dead town":—

"Such fairy-cities are the nameless pirate-towns that were built on the Cilician slopes in the first two centuries before the Christian era. Water, no longer guided by man through long ducts, has failed on the high lands, and the region remains as it was left two thousand years ago, a vast Pompeii, where no man has rebuilt or destroyed. In its capitol, Olba, citadel, walls, streets and roads are choked with brushwood. A triple arch leads into the forum; on the left the fragments of a Temple of Fortune stands in the brake, and in front rise the fluted columns of the Olbian Zeus, whose priests were kings. Passing a ruined portico, the explorer lights suddenly on a theatre lined with vegetation sprouting from every crevice in auditorium and scene. But nothing in the city is more wonderful than the road leading from it to the coast. Mile after mile it's embanked pavement runs over the naked rocks; mile after mile stones, fallen or standing, inscribed with the titles of Roman Emperors, record your progress; here you pass a group of tombs, there clatter through an ancient village, and at last wind down sweeping curves to the sea, past towers and tombs rising white out of the scrub; and in the towers on the villages, on the road or in the city is there a human thing except the wandering shepherds."

Theatre Panics and their Cure. London: B. T. Batsford. Edinburgh: A. Elliot. 1896.

"THEATRE PANICS and their Cure" is the title of a small pamphlet which has been issued together with some plans claiming to illustrate a safe theatre. We regret that the efforts, no doubt well meant, of the authors of the pamphlet and the drawings are about fifteen years too late in the date of their publication. Instead of aiming at clear and straightforward planning with roomy staircases, which is the essence of safety for an audience, they try innumerable make-shifts, among which the most noticeable are the galleries running round the theatre at each tier. Such make-shifts remind one of those first proposed during the period of panic legislation after the "Ring" Theatre and Nice Opera House calamities, and do not speak well either for the authors' reading or practical experience. The proposed galleries and the special emergency staircases leading from them take up far more space on the superficial area than well-planned and roomy staircases and passages would have required. It is absolutely wrong to lay stress on "emergency" exits, as it is a well-known fact that an audience will always make for the exits which served as entrances when they approached their seats. The very terms "emergency" exit and "emergency" staircase should be cancelled from the vocabulary of theatre architects, as far as the safety of the public is concerned. It should be their ambition on the other hand to obtain clear and straightforward approaches without any complications whatever, and the maximum of symmetry in the disposition of doors and stairs on either side of the house. The idea of the emergency galleries, we should add, has been already carried out in the "Flemish" Theatre at Brussels, erected in the year 1857. We regret that the labour which has evidently been employed in preparing the drawings should have been so misapplied.

Gothic Wood-carving: being a Series of Drawings from the original work chiefly of the Fourteenth and Fifteenth Centuries. With explanatory Notes. By FRANKLYN A. CRALLAN. London: B. T. Batsford. 1896.

Is there going to be a revival of the Gothic revival? Mr. Crallan's hook would suggest the idea, for his large lithographed drawings of Gothic woodwork finials, bench-ends, &c., well selected and very well executed, form exactly the kind of illustrations which used to be published forty or fifty years ago; they remind us of the days of "Brandon's Analysis" and other such standard hooks. Mr. Crallan, who has been instructor in wood carving at the Municipal Technical College at Derby, says that his intention in the book was to re-awaken an interest in a branch of art which had languished for many years. Whether he means Gothic art in general or Gothic wood-carving in particular is not very clear; if the former, he must have lived rather apart from the movement of the day to have been taken by surprise with the discovery that Gothic art had dropped very much out of practice for a good while past. For one professed object of the hook, the desire to furnish models or suggestions for carving classes which could be formed to beautify their local churches with carving in the same spirit as Medieval work, the hook is well adapted, the examples being carefully drawn to a large size. And although the passion for Gothic detail which belonged to the revival has died out, people will still want good drawings of it, and they will find here one class of work well illustrated.

Correspondence.

To the Editor of THE BUILDER.

COPPER ROOFS.

SIR,—In case you receive no replies more to the point, I may cite, in response to Mr. C. J. Ferguson's letter in the *Builder* of last week:—

1. The dome of St. Joseph's, Highgate Hill, the Church of the Passionists, which, when I saw it last, in August, was light green in colour. The church, opened November 22, 1889, is described in the *Builder* of November 30, 1889. The architect was Mr. Albert Vicars, then of Somerset-chambers, Strand.

2. The spire, covered in 1724, of Hampstead Parish Church, 1747.

3. Mr. Ewart's lecture on "Roof Coverings," read before the Architectural Association on November 6 last, and reported in the *Builder*, November 21 last. Mr. Ewart mentions, for its colour, Hampstead spire; and (in his reply after the discus-

sion on his paper) the roof of York Minster for its colour.

4. If my memory serves me—the spire of St. Mary's Parish Church, Battersea. D.M.

The Student's Column.

SPECIFICATIONS.—III.

BRICKLAYER.

THIS is one of the easiest trades for which to write a specification, but, at the same time care must be taken not to indulge too much in generalities, to which the work of this trade particularly lends itself. As before premised, begin with the materials, and follow up with the various kinds of work, thus:—

Bricks.—The bricks for walling to be approved, sound, hard, well burned, whole stocks and no bats are to be used except where legitimately required for bond. The bricks for facing to external walls to be Fareham first quality red facing bricks of a tint to be approved by the architect. (If varieties of bricks are to be used for various parts of the building, these must, of course, be here specified.)

Lime.—The lime to be highly burnt blue lias lime of approved quality. (If grey chalk, Dorking, Merstham, scintific or other lime is required, state so.)

Sand.—The sand to be clean, sharp river sand from above bridge, of medium coarseness and approved quality (or pit or sea sand if desired or allowed).

Cement.—The cement to be Portland cement of Messrs I. C. Johnson & Co.'s (or other selected firm) manufacture, to weigh not less than 112 lbs. (or upwards, if a slow-setting, heavy cement is wanted) per struck bushel, and ground sufficiently fine to pass 90 per cent. through a sieve of 2,500 meshes to the square inch, and to bear a tensile strain of not less than 300 lbs. (or up to 450 lbs. if very high quality) on the square inch of a briquette seven days old kept under water.

Mortar.—The mortar to be composed of 1 part of lime to 3 parts of sand, to be mixed in a pug mill and prepared in quantities sufficient only for one day's consumption. Cement mortar to be prepared as required in small quantities, and to be mixed in the proportion of 1 part of cement to 2 parts of sand.

Brick Walls.—Build all walls throughout of the various heights and thicknesses shown and figured on the drawings, with all the projections, recesses, openings, &c., shown, in their proper positions. The footings of all walls to be of the number of courses shown (or of the number of courses required by the London Building Act, 1894, or by the local by-laws), each course projecting 2½ ins. beyond the face of wall or footing immediately above same. To be built perfectly level, not to rake with the ground, but to be stepped up where the levels vary, as may be directed by the architect. The drawings show, and the contract includes, an uniform depth of brickwork (7 ft.) to bottom of footings from the ground floor level, but the contractor is to follow the instructions of the architect as to the precise level at which the brickwork is to commence after the foundations have been approved by the architect.

The brickwork is to be carried up in level courses in English bond with buttered joints, and each course well flushed up. (Buttered joints are better than grouting unless this latter is done in liquid cement, and even then may be reasonably preferred.) No portions of walls to exceed 3 ft. above the adjoining parts whilst being built, and to be raked back and not toothed up. All bricks laid in dry weather to be well soaked previous to being used. No four courses to rise more than 1 in. (or 1½ in.) in addition to the thickness of the bricks laid without mortar.

Brickwork in Cement.—All brickwork in chimney stacks above roof level, all brickwork erected as piers standing alone, and such parts of the walls as are shown attached on plans to be built in cement mortar. The half-brick walls to be built wholly in stretchers and in cement mortar.

Hollow Walls.—(If these are intended specify thus.) The hollow walls shown on plans to be built in two thicknesses, 9 in. internal, and 4½ in. external, with a 2½ in. cavity, bonded together with wrought-iron ties, dipped in tar and sanded, every (18 in. to 3 ft.) in height and 2 ft. 3 in. (18 in. or 3 ft.) apart. The hollow and ties to be kept free of mortar droppings by haybands to be lifted as work proceeds. The damp course to hollow walls to be laid at two levels, that over

inner thickness one course above that over remainder. The perpend of bottom course to be left open. Build in for ventilation of cavity (if this is desired and it keeps cavity drier) 9 in. by 3 in. terra-cotta air bricks, 3 ft. apart at bottom of cavity, and also immediately under eaves. All door and window openings in hollow walls to have immediately over arches an apron of 5 lbs. lead projecting ½ in. from face of wall extending through outer thickness, across space, turned up 2 in. against inner thickness, and extending 9 in. each way beyond frame. The perpend of course immediately over these aprons to be left open.

Facings and Pointing.—The facings to be carried out in English bond, the perpend carefully kept, and the joints pointed at completion with a neat struck weather joint in grey tinted mortar (or as may be desired). If diaper work is intended or ornamental bonding, describe it thus. The diaper work shown on south elevation to be executed in cross bond (or Flemish, &c.) with the pattern in black header bricks from Sussex. No staining or colouring is on any account to be applied to any brickwork, and the brickwork is not to be rubbed down before pointing, but washed only with a weak solution of green copperas. (State if work in cement is to be p. in cement, or if joints are to be raked out and pointed to match facings.)

The inner faces of walls where plastered to be left with rough joints, as key for plaster, and in other cases to be worked fair with flush joints and twice limewhitened (or dinged with wet brush and distempered to an approved tint).

Gauged work.—(Refer to the parts where this occurs.) The . . . to be executed in gauged work with Lawrence's orange-red rubbers (or Suffolks, &c.), the moulded work to be carefully cut and rubbed to the architect's full size details. The gauged work to be set in lime putty, with ½ in. joints, and each course of plain wall to carry with a course of the backing. (If there is raving the rubbers are sometimes set in shellac. If this is desired say so.)

Arches.—The external arches on front elevation to be executed in gauged work; the remainder to be fair axed arches. The arches to fireplace openings to have two half-brick rings in cement, and wrought-iron chimney bars, 1½ in. by ½ in., each 18 in. longer than openings, split and turned up and down at ends. The trimmer arches to be half-brick in cement rampant arches, to avoid the use of feather-edged springs.

Chimneys.—The kitchen flue to be 14 in. by 14 in., the remainder 14 in. by 9 in., all to be pargeoted with cow-dung mortar, properly cored, and finished with Cooper's, of Maidenhead, red terra-cotta chimney pots, No. 15 gauge, p.c. each, to be hedded in brickwork for 9 in., and flanchued up in cement.

Hoop-iron Bond.—Lay throughout all walls under sills of first-floor windows a continuous range of hoop-iron bond, No. 15 gauge, 1½ in. wide, tarred and sanded, and laid in cement three courses in height, and one row to every half-brick in thickness of wall.

Moulded Strings, &c.—(Describe these, stating whether stock patterns are to be used; if so, refer to catalogue, and give price, or if to be purpose made to special full size details.)

Plinths.—(Describe if of special brick, as salt-glazed, what the plinth course is to be, if plinth is to be battered, or any other special treatment.)

Damp-proof Course.—A damp-proof course of Val de Travers asphalt, ½ in. thick, is to be laid in all walls, and this work is to be executed by the company's workmen.

Air Bricks.—Build in where directed No. 60 red terra-cotta air gratings, 9 in. by 3 in., to ventilate floors and form proper splayed apertures for same, and render around in cement.

Copings.—(If brick copings are intended, describe them.) The coping to hack wall of office building to be of brick on edge and double tile creasing, all set and pointed in cement.

Window Sills (if brick).—The window sills on first floor to be executed in splayed brick on edge, set and pointed in cement, with tile course under projecting ½ in.

Pavings.—Pave the floor of scullery with 6-in. red Staffordshire tiles hedded and jointed in cement on 6-in. bed of Portland cement concrete. Pave the coal place with hard brick-on-edge paving set and jointed in mortar on a bed of sand 3 in. thick (or as desired). The kitchen yard to be laid with Jones's granolithic paving, 1½ in. thick, on a 4-in. bed of cement concrete, laid to current. The contractor is to lay the concrete bed after excavating the surface soil and filling in with

9-in. bed of dry brick rubbish, and the granolithic paving is to be laid by the patentee at the p.c. sum of 10s. per yard, which is to be paid to the patentee by the contractor within fourteen days after the production of the architect's certificate.

(Similarly describe any other pavings, asphalt, Staffordshire brick, or other material.)

Brick Steps.—(Describe these, if any.)

Boundary Walls.—Build garden fence walls on three sides of site, one brick thick, in Flemish garden wall bond fair on both sides, and finish with half round salt glazed brick coping, set and pointed in cement, with double tile crenasing. These walls to be 6 ft. high above ground, and 1 ft. 6 below, with two courses of footings and 12 in. bed of concrete. Piers 18 in. by 18 in. to be built, every 10 ft. apart. Damp course of two courses of slate in cement to break joint.

OBITUARY.

HERR ENGELBERT PEIFFER.—Of eminent German sculptors deceased during the winter, we would notice the death of Herr Engelbert Peiffer, of Hamburg, whose work was well known throughout Northern Germany. He was the architectural sculptor who commonly had commissions from the leading German architects, such as Messrs. Ende and Boeckmann, of Berlin. He also sometimes practised as an architect, and in this capacity was associated with the well-known Hanseatic Building Company, which flourished between 1870 and 1880. He was exceedingly popular and much reputed for his talent in arranging special decorations on festive occasions—such as the visit of the Emperor to Hamburg in 1867—when he carried out the decoration of the Alster Lake and the artificial island which was constructed upon it.

DR. ALBERT ILG.—We regret to record the death of the well-known archeologist and art historian—Dr. Albert Ilg—one of the departmental chiefs of the Science and Art Museum at Vienna. Herr Ilg died at the early age of forty-nine, and has held offices as custodian in several important museums. He was well-known in archeological circles throughout the Continent, and was the author of several important works.

MR. W. T. ROBSON.—The death is announced of Mr. William T. Robson, of Grainger-street and Crossley-terrace, Newcastle, architect and surveyor, who died at Newcastle on the 11th inst. The deceased gentleman, who had been in an ailing state of health for some time, whilst walking along Newgate-street on the 9th inst. was seized with a fit, and was carried to the Infirmary, where he died at the age of 32.

GENERAL BUILDING NEWS.

SCHOOLS, GATESHEAD.—Two school buildings are in course of erection in Gateshead. On the Higher Grade School site, in Shipcote-lane, near Prince Consort-road, the new offices of the Gateshead School Board are being built, by Messrs. T. & R. Lamb, contractors, Gateshead, according to plans by Mr. Edwin Bowman, architect, Newcastle, and under the supervision of Mr. W. Edington, west corner of the nave and a niche by the doorway is a statue of St. Kessog. The vestries and organ chamber, with heating chamber underneath, are on the north side of the chancel. The chancel is the same width as the nave, and the roof is, externally, the same height in both, the riding of red tiles being continuous from one end of the building to the other, except over the chancel arch, where it is intersected by a fleche. The fleche is of wood, covered, like the rest of the building, with green slates from Aberfoyle. It rises to a height of 70 ft. Externally and internally the walls are of warm red local stone, the dressings being in white stone from Auchinlea Quarries, near Motherwell. The roofs are of dressed timber, open to the ridge, 35 ft. above the floor of the nave. The nave is divided into four bays, and is lighted by groups of double lancets along the sides, and by triple tracered lancets in the west gable. The chancel is divided into two bays. The east window is placed high in the gable so to give space for a reredos over the altar. The altar and reredos are to be of stone, with marble columns, and the panels filled in with sacred subjects in mosaic. The altar is raised above the floor level of the nave by eight steps. On the south side of the sanctuary are placed the stone sedilia, piscina, and credence. The nave will accommodate nearly 200 persons. The architects are Messrs. Ross & Macbeth, of Inverness. The contractors are—Mason: James Martin, Anderson-Aucherterarder; carpenter: Peter Arter, Auchterarder; slater: H. Gibson, Auchterarder; plumber: James Macleish, Perth; painter and glazier: C. Alexander, Perth.

NEW CHURCH OF ST. MARY MAGDALENE, ALSAGER, CHESHIRE.—This church is of the Decorated style and consists of a nave and chancel 26 ft. wide, north and south aisles opening into nave by arcades of five bays each, and organ chamber on the north side of the chancel, with choir and clergies vestries opening out of the same. The church will be entered at the west end by north and south porches, both of which open into the tower, which is 16 ft.

boys and girls 688, and infants 350; total, 1,038. The architect is Mr. G. A. Fox, of Dewsbury.

SCHOOL, THORNLIEMANK, N.B.—Thornliemank Public School Buildings were declared open on the 5th inst. The plan of the reconstructed school is of the central hall type, with class-rooms grouped round, and the building being one story high. The main entrance for boys and girls forms the public road; the infants enter at the west side, while the boys have also an exit to the east side. The basement is entirely set apart for boilers, heating apparatus, &c., while the ventilation is designed on the plenum system. Artificial light will be supplied by gas pendants fitted with incandescent lamps. The total cost is estimated at 10,000. Mr. W. G. Rowan, Glasgow, is architect, Mr. A. B. Watson, measurer, and Messrs. Cameron & Dalgligh, Thornliemank, builders.

POST OFFICE, HARROGATE.—The new post-office at Harrogate has just been opened. The architect is Mr. H. Tanner, of the Office of Works, and the style of the building is Perpendicular, freely treated. The post-office has been built of stone, with dressing of Pateley Bridge stone. The building was commenced on October 15, 1894, and has been erected at a cost of upwards of 9,000. The new offices stand on a corner site at the junction of Chapel-street and Cambridge-road. The contractors were Messrs. William Lives & Son, of Shipley.

PREMISES, SCOTTISH WHOLESALE CO-OPERATIVE SOCIETY, GLASGOW.—The new premises of the Scottish Co-operative Wholesale Society in Morrison-street, Glasgow, which have been built at a cost of about 90,000, were opened recently. Situated on the south side of the Clyde, overlooking Kingston Dock, the new buildings are five stories in height, and cover about an acre of ground. The principal front to Morrison-street is 212 ft. long. The main pediment at the base of a tower is filled with emblematic sculpture. A round tower at the back of the pediment, 70 ft. high, is divided into bays by Ionic columns, and surmounted by a figure representing Light and Liberty, holding in her extended arm an electric light. The main entrance is by an ornamental wrought-iron gate in the centre division of Morrison-street front, and through a tower 150 ft. high into a vestibule, laid with mosaic and lined and panelled with Sicilian marble and Parian cement, and divided into bays by quarter pilasters and Ionic columns. Beyond this is a large entrance hall and staircase, and right and left from it corridors leading to the various sub-committee and buyers' rooms, thirty in number. The board-room is also on the ground floor; on the first floor are the cashier and auditor departments, while the rest of the building is designed for warehouse purposes. The premises are illuminated by electric light. The work, with the exception of the sculpture, marble and mosaic, iron and glazing work, was done by artisans employed directly by the Society. The architects were Messrs. Bruce & Hay, Glasgow.

ST. KESSOG'S CHURCH, AUCHTERADER, PERTH.—This church, the memorial stone of which has just been laid, is situated in a park of 2½ acres on the north side of the High-street of Auchterader. The church consists of a nave, 48 ft. by 24 ft., and a chancel, 26 ft. by 24 ft., separated by a stone chancel arch, with carved capitals. The porch is at the south-west corner of the nave and is a niche by the doorway is a statue of St. Kessog. The vestries and organ chamber, with heating chamber underneath, are on the north side of the chancel. The chancel is the same width as the nave, and the roof is, externally, the same height in both, the riding of red tiles being continuous from one end of the building to the other, except over the chancel arch, where it is intersected by a fleche. The fleche is of wood, covered, like the rest of the building, with green slates from Aberfoyle. It rises to a height of 70 ft. Externally and internally the walls are of warm red local stone, the dressings being in white stone from Auchinlea Quarries, near Motherwell. The roofs are of dressed timber, open to the ridge, 35 ft. above the floor of the nave. The nave is divided into four bays, and is lighted by groups of double lancets along the sides, and by triple tracered lancets in the west gable. The chancel is divided into two bays. The east window is placed high in the gable so to give space for a reredos over the altar. The altar and reredos are to be of stone, with marble columns, and the panels filled in with sacred subjects in mosaic. The altar is raised above the floor level of the nave by eight steps. On the south side of the sanctuary are placed the stone sedilia, piscina, and credence. The nave will accommodate nearly 200 persons. The architects are Messrs. Ross & Macbeth, of Inverness. The contractors are—Mason: James Martin, Anderson-Aucherterarder; carpenter: Peter Arter, Auchterarder; slater: H. Gibson, Auchterarder; plumber: James Macleish, Perth; painter and glazier: C. Alexander, Perth.

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square, and forms the baptistry. The tower will be surmounted by a spire. The total length of the church is 124 ft., and the width across the nave and aisles, 56 ft. The portion now carried out consists of the chancel, organ chamber, and vestries, the nave, with the south aisle and a portion of the north aisle, the south porch, and the lower portion of the tower to the level of the roof of the nave. The church is seated at present for 450, but will eventually accommodate 700 people. The cost of the present portion will exceed 8,000, an additional sum of 1,500, being required to complete the tower and spire. The church is built of Alton stone throughout, the roofs, seats, and dados being of pitch pine, and the chancel seats, altar rail and altar table of wainscot oak. The roofs of the nave and chancel are covered with red Staffordshire tiles, and of the aisles and porches with lead, the ceilings throughout being boarded. The heating is effected by hot-water pipes on the low-pressure system. The present contract has been executed by Mr. John Fielding, of Alton, and Messrs. Austin & Paley, of Lancaster, are the architects.

SCHOOLS, DONCASTER.—The new elementary schools connected with St. James's Church, at Doncaster, were opened recently by Mr. Ivatt, Great Northern Railway Chief Engineer and Locomotive Superintendent. On the site is a school providing accommodation for 350 boys. The girls' school has a clock tower and clock. The school buildings and fittings cost 4,500. Messrs. Brundell, Simmons, & Brundell were the architects, and the builders were Messrs. Arnold & Sons, of Doncaster.

SCHOOL, ABERLOUR, N.B.—On the 5th inst. the new public school erected by the School Board of Aberlour was opened. The new school is situated opposite the Fleming Hall. Entering by the main door, which is at the west, the lobby, to the right and left of which there are teachers' retiring rooms, is reached, and it leads into the central hall, measuring 40 ft. by 27 ft. by 24 ft. high. From the hall the various classrooms are entered. Besides these, there are cloak and retiring rooms. Outside shelter shades have been provided for boys and girls. The cost of the buildings is about 3,500, and they are built from plans supplied by Mr. Watt, Aberdeen.

SCHOOL, BLAISDON, GLOUCESTERSHIRE.—A new National school has been erected at Blaisdon. The schoolroom is 35 ft. by 18 ft. by 15 ft. high, the accommodation being for about ninety children. The work was entrusted to Messrs. King & Son, Gloucester, from designs of Mr. F. W. Waller.

SCHOOL EXTENSION, FARNDON, NOTTINGHAMSHIRE.—The foundation-stone of a new infants' classroom, with cloakroom attached, was laid on the 7th inst. at Farndon, near Newark. The building contract is in the hands of Mr. Fox, of Farndon, and the architects are Messrs. Sheppard & Harrison, of Newark.

THEATRE, LEEDS.—It is proposed to erect at Leeds, on the south side of the river, a new theatre, at the junction of Jack-lane and Meadow-road. The new theatre, which is to be called the "Victoria," has been designed by Mr. William Smelt, architect, Newcastle, assisted by Mr. F. W. Rhodes, architect, Upper Wortley. It is proposed that the front of the building should be of red Rushton bricks, relieved by stone and iron cast dressings. The roof is a curve, which is broken up into sections by pilasters with ornamental bases and caps. There will be four lock-up shops each 14 ft. 6 in. in height. Seating accommodation will be provided in the theatre for over 3,200 persons. The pit, which will be 60 ft. by 76 ft., will seat 1,300, and in the stalls there will be accommodation for 130. In the circle there will be seats for 480, and the gallery will seat the same number of persons as the pit. There will also be six stage boxes. From the pit three exits will be constructed, on a level with and leading directly into the street. The gallery will have two exits. The circle will be approached by a marble staircase, at the top of which there will be a large crush room. Behind the circle a refreshment saloon will be placed, 28 ft. by 18 ft., and 15 ft. in height. Ladies' and gentlemen's cloak rooms will also be provided. In connexion with the pit there will be another refreshment saloon, 28 ft. by 19 ft., and 15 ft. in height. The stage portion of the building will be 62 ft. by 36 ft., and 48 ft. to the grid. The proscenium front will be 30 ft. wide and 31 ft. high. The auditorium will be seated at the rear by a fireproof curtain, and it is intended that the building should be fireproof. The estimated cost is about 15,000.

PROPOSED THEATRE, SMETHWICK.—It is proposed to erect a theatre in Rolfe-street, Smethwick, at a cost of 8,000. The building will cover a site of 1,500 square yards, and afford sitting accommodation for 2,300 persons. The principal entrances will be in Rolfe-street, the galleries being approached from a side-road. There will be four staircases from the gallery, including an outside iron escape staircase for use in case of panic. The stage will be 63 ft. by 44 ft. The structure is to be made as nearly fireproof as possible, and will be lighted by electricity. An ornamental iron grandstand entrance will be at the west end of the whole length of the building. Messrs. Owen & Ward, of Birmingham, are the architects, and Messrs. J. Harley & Son, of Smethwick, the contractors.

NEW PREMISES, LANCASHIRE INSURANCE COMPANY, GLASGOW.—On the 7th inst., the memorial stone was laid of the range of buildings erected by the Lancashire Insurance Company, Glasgow. The structure has a frontage of 60 ft. 9 in. to West George-street, and of 108 ft. 9 in. to Renfield-street. It is five stories in height, with a basement and attic floor, and on the Renfield-street frontage there is an entrance. The Company's offices will occupy the ground floor in West George-street, with a central portion for the office, surmounted by the arms of the company. The other portions of the buildings will be occupied as shops and business chambers, and will be provided with a passenger hydraulic lift for the whole of the upper flats, entering from West George-street. The stone used is red freestone from Locharbriggs Quarry, near Dumfries. The architect is Mr. J. Thomson, of Glasgow.

POLICE-STATION, GARDENTOWN, BANFF.—The new police-station at Gardentown is now almost completed. The contractors for the work were—Messrs. M. R. Morrison, Macduff; carpenter, Mr. John Gordon, Macduff; plasterer, Mr. Gibson, Banff; slater, Mr. Liddel, Macduff; plumber, Mr. A. Strachan, Banff; and painter, Mr. Forbes Watt, Banff. The architect was Mr. M. William, Portsway.

TECHNICAL SCHOOLS AND PUBLIC LIBRARY, LONGTON.—The foundation-stone of these schools was laid on the 17th inst. "with Masonic honours," before a large number of spectators assembled in a tent specially erected. The Prince of Wales, as Grand Master, laid the stone with the usual formalities, the Borough Surveyor representing the architect, who is in fact not yet selected, no design having yet been selected from the competition drawings sent in, so that the ceremonial seems to have been a little premature.

PROPOSED PUBLIC HALL, TEIGNMOUTH.—A meeting was held at Teignmouth on the 9th inst. to consider the question of the erection of a public hall. Mr. J. Weston, architect, Teignmouth, presented plans, and it was resolved that a site be secured and a hall erected provided the necessary capital was forthcoming, and that alternative plans be produced at the next meeting.

TOWER, WEST RIDING COUNTY OFFICES.—Some months ago Messrs. Gibson & Russell, London, the architects for the County Council Offices at Wakefield, suggested that the tower should be heightened, but the General Purposes Committee at that time were not satisfied that the heightening was necessary. The architects, however, again brought forward the subject, and furnished perspective drawings showing the appearance of the tower as it will actually present itself from various points of view. By the instructions of the Chairman of the County Council and the Chairman of the Committee, the designs and perspective sketches showing the tower as originally designed, and as proposed to be heightened in accordance with the Royal Institute of British Architects with the object of eliciting their opinion. The Institute expressed the view that the County Council should take the advice of their architects in the matter. The Committee, after very careful consideration, have satisfied themselves that the appearance of the tower will be very disappointing, owing to the fore-shortening, unless it is heightened in accordance with the architects' proposal, and they recommend the County Council to grant 65*l.*, 1*s.* 4*d.* for carrying out the work.—*Leeds Mercury.*

EXTENSION OF ECCLES TOWN HALL.—At the last monthly meeting of the Eccles Town Council, Councillor Oldfield moved, and Councillor Mort seconded, the adoption of the minutes of the Town Hall Committee, which included a resolution approving of revised plans prepared by Mr. Bagot, architect, for the proposed extension of the Town Hall at an estimated cost of 4,500*l.* The original estimate, prepared by the Borough Surveyor, was 3,500*l.*, but this amount did not include all the work contained in the plans of the architect. Councillor F. Smith suggested that other plans should be obtained before powers to borrow the money were applied for. Alderman Parr agreed that it would be well to have competitive plans for the work of extension. The proceedings of the Committee were adopted.

SANITARY AND ENGINEERING NEWS.

BIDEFORD OLD BRIDGE.—During recent years Bideford and district have developed rapidly, until the bridge which has provided passage over the Torridge for centuries is totally inadequate for present requirements. For a long time the Bridge Trustees have recognised this fact, and at last called in Mr. C. E. Ware, M. Inst. C. E., of Exeter, to survey the ancient structure and formulate a scheme, or schemes, for widening and strengthening it. He has now sent in plans of four schemes, all of which provide for a widening of the bridge to 35 ft. (inclusive of pathways). Each scheme provides for the rounding off of the bridge at the western side—a much-needed improvement—and the lowest estimated cost of the alteration is 9,854*l.*, while the highest is 17,964*l.* From a sentimental point of view, it is to be regretted that the "four and twenty arches" immortalised by Kingsley are proposed to be reduced, but doubtless the exigencies of the case demand it. On one of the plans the number of

arches appears to be eleven, and on another twelve.—*Western Morning News.*

REFUSE DESTRUCTION, HANDSWORTH, BIRMINGHAM.—A Local Government Board inquiry was held at the Council House, Handsworth, on the 6th inst., concerning the application of the District Council for permission to borrow 8,500*l.* for the purpose of erecting a refuse-destroyer for the district. Mr. F. H. Tulloch, M. Inst. C. E., was the inspector appointed to head the inquiry. The Clerk to the Council (Mr. H. Ward) explained that it was desired to build an eight-cell destructor, with a chimney-stack 200 ft. high, with boilers and the necessary buildings, including a couple of cottages in Queen's Head-lane, Handsworth. Mr. E. Kenworthy, Surveyor to the Council, explained the details of the scheme. He added that an eight-cell destructor would be sufficient to meet the needs of the district for the next eight or ten years at least.

WATER SUPPLY, LERWICK, SHETLAND.—At the monthly meeting of the Burgh Commissioners of Lerwick recently, plans of a proposed new water scheme, which has been prepared by Messrs. C. & A. Leslie & Reid, Edinburgh, were submitted. The new scheme provides for the erection of three new filters and two large settling ponds, also the laying down of an additional six-inch main and other necessary works. The cost of the whole works was estimated at nearly 4,000*l.* It was resolved to approve of the plans with some modifications.

PROPOSED STREET IMPROVEMENTS, WARRINGTON.—On the 8th inst., at the Town Hall, Warrington, Colonel W. Langton Coke, M. Inst. C. E., conducted an inquiry on behalf of the Local Government Board in connexion with the application of the Warrington Corporation to borrow 43,721*l.* for the purpose of street improvements. There were present the Mayor (Alderman Fairclough), Mr. J. L. Whittle (Town Clerk), Mr. Longden (Borough Surveyor), and other officials and members of the Corporation.

ELECTRIC LIGHTING NEWS.

ELECTRIC LIGHTING OF STIRLING.—The report of Professor Kennedy, of London, the expert consulted by the Stirling Police Commissioners as to the introduction of the electric light into the burgh, has just been received. The report shows generally that the aggregate cost of lighting the compulsory area—Port-street, King-street, and Murray-place—would be about 15,000*l.*, but Professor Kennedy recommends that plant should also be put down for lighting the residential part of the town, which would bring the total cost to from 20,000*l.* to 22,000*l.*

STAINED GLASS AND DECORATION.

WINDOWS, STONY STRATFORD PARISH CHURCH.—A series of six three-light windows has recently been filled with stained glass in this church, the subjects of which form a complete scheme. The first and last were offerings of Mr. E. Swinfen Harris, architect, in memory of his father and mother, the former one having three types of "Duty"—(1) "Our Lord and St. Joseph in the Carpenter's Shop at Nazareth," (2) "Joseph Distributing Corn to his Brethren," (3) "St. Joseph of Arimathea Begging Our Lord's Body for the latter's burial"—(1) "Our Lord and Nathanael," (2) "Jacob's Dream," (3) "Jacob Blessing the Sons of Joseph." The whole series were designed by Mr. N. H. J. Westlake, and are the work of Messrs. Lavers & Westlake. They are a good example of two essential points needful to the success of painted glass, all being the work of one hand and one "colour scheme," and all following a prearranged Bible story.

WINDOWS, ST. MARGARET'S CHURCH, BURTON-ON-TRENT.—The clearstory windows of St. Margaret's Church have been filled on the south and west sides with stained glass. The old glass taken out of the north and south transept windows of St. Paul's Church has been adapted and improved by new borders and fillings-in by Messrs. Burlison & Grylls, of London. There are now fifteen of the windows filled with stained glass.

FOREIGN.

FRANCE.—The medal granted annually by the Société Centrale des Architectes to the architectural pupil who has gained the greatest number of "recompenses" at the Ecole des Beaux-Arts, has been awarded this year to M. Gustave Umbdenstock and M. John Van Peit.—The election for the remodelling of the committee of the *Société des Artistes Français* for the years 1897, 1898, 1899, has just taken place at the Palais de l'Industrie. The results in the Architectural Department are as follows:—M. M. Laviot, Garnier, Daumet, Laloux, A. Normand, Pascal, Raulin, Ginain, Coquart, and Redon.—Last week, for one day only, the public were admitted into the Boussod and Valladon Gallery (late Maison Goupil) to view a large water-colour painting by M. Edouard Detaille, which is to be offered to the Russian Sovereign. It was ordered by the Franco-Russian Syndicate. The picture represents the Imperial procession passing the troops which are collected in the plain of Châlons-sur-Marne. The moment chosen

is when the Tsar is passing the flag of the Chasseurs-à-pied, and saluting it, at his right is the carriage containing the Empress, with M. Félix Faure at her side, at the end of the picture are the African and Arabian troops. The details are done with the utmost precision and with an ingenuous fidelity, which redeems it from the ordinary modern historical painting, but it is entirely wanting in anything like poetry or sentiment.—The Administration des Voyages are now preparing a new regulation. The projections in front of the doors will in future be regulated by the width of the road in which the house is situated.—The Femmes Artistes have just opened their fifth exhibition in the Georges Petit Gallery, where several pictures of real merit are displayed in the mass of mediocre works. We may mention the landscapes of Mme. Brouardel, the flowers of Mmes. Muraton, Foyot, and Louise Desbordes, and the miniatures of Mme. Isbert.—In the Durand Ruel Gallery is an exhibition of Frances-Comptois artists.

—The sculptor Injalbert has been commissioned to execute the monument which is to be erected at Sceaux in memory of the poet, Paul Arène, who has recently died.—The Society of Civil Engineers has been authorised by the Government to erect at the junction of the Boulevard Péreire and Rue Alphonse de Neuville and Verniquet, the commemorative monument to the engineer Eugène Flachet, who made the Ceinture railway. This monument is composed of a bust of Flachet, the work of Alfred Boucher, placed on a pedestal by the architect, Gaston Tielat, and ornamented with bas-reliefs.

—M. Chaplain, Member of the Institute, has just finished the model of the new gold coins which are to be circulated at the end of 1897.

—M. Platel has been elected President of the new Société des Architectes du Hâvre.—M. Geay has been elected Honorary President of the Société des Architectes du Limousin, the acting President of which is M. Dubet, architect at Perigueux.—A competition has been opened at Châlons-sur-Saône for the making of a public garden in this town.

The prize has been awarded to MM. Latour, architect at Châlons-sur-Saône, and Redont, architect at Reims.—The death of M. Eugène Maron is announced. He left a "Histoire de l'Art à Travers les Ages," at which he had been working twenty years, and fragments of which were published in the magazine *L'Art*.—The death is also announced, in Indo-China, of an architect of talent, M. Antoine Garnier, inspector of *batiments civils* at Pnom-Penh (Cambodia). Born at Lyons in 1859, M. Garnier studied in the Pascal studio. He went to Indo-China in 1895, where he shared in the building of many buildings lately erected in the Protectorate—hospitals, custom houses, and houses for French residents in the province.

GERMANY.—We have frequently given some data as to the enormous change by tenants of their residences that takes place at Berlin. It is interesting to observe that at October quarter-day last over 100,000 tenants changed their residences.—We understand from the *Deutsche Bauzeitung* of December 30, 1896, that there are sixteen candidates for the annual Schinkel Studentship, which is a larger number than is usually the case.—The idea of giving Berlin an Artists' Home or Club seems to be finding considerable favour, and we understand that a competition was opened some time back for designs to remodel an old building, which we believe to have been bought by the Berlin "Society of Artists."

—The Hamburg municipal authorities have arranged a course of public lectures for this winter on subjects relating to building and public works, more especially in connexion with those of that city. This is one of the first instances in which a German municipality has undertaken to arrange lectures for the public of this kind.—Of the many competitions which are being held for designs of bridges, there is one for a bridge over the Elbe at Harburg, where premiums to the amount of 600*l.* have been offered. The competition will be decided during February, and among the assessors is the City Architect of Hamburg.—We understand that the Prussian Government has been giving some attention to the question of scavenging, and has made a grant of 250*l.* to one of the societies interested in this subject, which is to be given as a premium for the best proposed method of cleansing a small town.—Perhaps one of the most important private theatrical enterprises which has yet been carried out in Germany has lately been executed at Munich, where a new "German" theatre and casino has just been erected as a speculation. The theatre contains accommodation for 2,000 persons, whilst the casino includes a large restaurant, club rooms, assembly rooms, billiard rooms, &c.

Herr Alexander Blum acted both as architect and contractor for the work, but was assisted by a number of prominent specialists, including Herr Lautenschlaeger, of Munich, for the stage fittings, Herr Wagner and Herr Kramer for the decorations. There appears to be the possibility of combining the theatre, the assembly rooms and the club rooms for special festive occasions, when accommodation could be found for altogether 6,000 visitors. There are a number of tenements and shops in connexion with the block.—Of other theatres lately opened in Germany, Bromberg has been given a municipal playhouse costing 22,000*l.*, with accommodation for an audience of 800 persons. Herr

Heinrich Seeling, of Berlin, was the architect; he has practically become the theatre specialist of Germany, his principal theatres being the Municipal theatres at Halle, Essen, Rostock, and a private theatre at Berlin. Besides the Bismarck monument at Berlin, memorials to Bismarck are to be erected at Dresden and at Magdebourg. As is customary in Germany, competitions were opened for the design in both cases.—The present year, it appears, will again be associated with numerous industrial exhibitions on the Continent, and of these, perhaps one of the most important will be the forthcoming exhibition at Leipzig, which will be opened early in the summer. The situation of the exhibition has been well chosen on a wide and undulating site near the Johanna Park, and the general plan was the subject of a competition.

NORWAY AND SWEDEN.—At Stockholm there is to be an important competition for the design for a central railway station, at which premiums of approximately 700*l.*, 450*l.*, and 225*l.* are offered. The competition is an international one, and hence, architects of all countries are free to enter, but particulars as to the details have not yet reached us.—We understand that the Government Office of Works at Christiania has opened an international competition for the design of a new railway station at Christiania, and has offered premiums of 10,000, 4,000, 2,000, and 1,000 kroner. Particulars can be obtained by applying to the Ministry, where the necessary site plans are provided on depositing 500 kroner. The sending-in day is March 31, 1897. The requirements of the programme are such as to necessitate combined collaboration of an architect with a railway engineer, and they are by no means such as can be solved by an architect without special knowledge of railway matters. There will be a jury of assessors, comprising three laymen and four specialists; among the latter is Baurath Schwering of Berlin. We scarcely regard the jury sufficiently representative, either as regards the nature of the subject or its international importance.

RUSSIA.—A competition has been opened for a large hospital at Stawropol, in the Caucasus, for which the sending-in day is in April next. Of all the competitions, we hear from St. Petersburg that the Trotting Association at Moscow has opened an international competition for a grand stand for three thousand spectators, which is to be a substantial structure, and for which the cost is limited to 350,000 roubles—about 55,000*l.* This is an international competition; the premiums are of considerable value, and the designs will be assessed by a jury of fifteen, of whom six are laymen and the other nine architects. Particulars can be obtained from the Architectural Society at Moscow. We have had occasion to refer to the Theatre Competition which is being held at Kieff, and which may be considered an international one. Seeing the value of the premiums offered, we are much surprised to hear that there are only sixteen designs before the jury, and of these we understand that there are seven from St. Petersburg, and of the nine strangers three are from Germany, two from France, one from Sweden, and one from Italy. We are indebted for this information to Professor Schroeter.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. H. C. Eyres, London Agent of the Coalbrookdale Company, Limited, has resigned his position there and assumed the position of manager of the Architectural Department in London of the Falkirk Iron Company.—Mr. W. Galt Millar, architect and surveyor, Reading, has taken into partnership Mr. W. James Nasmith, who will carry on business with him under the style of Millar and Nasmith, at Reading and at 43, Cornmarket-street, Oxford. Mr. Nasmith devoting his time exclusively to the interests of the Oxford branch.

TIMBER TRADE DURING THE PAST YEAR.—According to Messrs. Foy, Morgan, & Co.'s annual wood report for 1896, the past year has been exceptionally favourable for the timber trade, prices in almost all departments having slowly hardened from the commencement until the close of the season. The grounds for the satisfactory nature of last year's business and the increased cost of next season's supplies are practically the same, being quite general and not merely local. Among them, the most prominent have been, firstly, the unusually open weather last winter and spring, which permitted building operations to proceed uninterrupted, stimulating consumption leading to a considerable depletion of customary stocks throughout the country; secondly, the unexpectedly cheap freights ruling in the spring and summer, which allowed the gap in stocks here to be filled at an almost imperceptible increase in cost, thereby affording the merchants the opportunity, while the demand continued unabated, of an early turnover at a profit somewhat more liberal than usual; and, finally, the sharp and totally unforeseen rise in autumn freights, which effectually prevented the impulse to import at a time when such additions to stocks were certain to become dangerous. As it is, the import during 1896 has expanded to an extent which in ordinary seasons must have led to a general collapse in prices, a result which has only been averted

by the favourable conditions, already named, under which the trade has been carried on. In regard to imports from various countries, the Board of Trade returns put the increase in the total import into the United Kingdom of sawn goods from Russia at 15 per cent. more than in the preceding year, but the surplus into London has been proportionately greater than this, being at least an additional 20 per cent. This surplus, moreover, has been drawn mainly, if not entirely, from the White Sea, Petersburg having contributed even less than usual to the London stocks. From Sweden there has been a further decline in the import of deals, and a corresponding increase in battens, accompanied also by a remarkable expansion in the flooring business. From Norway the import of planned goods has been of almost the same proportions as in the preceding year. Prices have improved continuously throughout the season, and a good market awaits those with unsold stock available for shipment during the winter and early spring. From Finland the import has not greatly varied from that in 1895. The market improvement was the speediest, and proportionately also the greatest, in the classes of goods in which this country is chiefly concerned, battens, and to some extent flooring. From Canada the import of pine into London has again been considerable, and this, following on the excessive import in the preceding year, leaves us with a present stock considerably in excess of the probable requirements of the market, although the low standard of prices prevailing is perhaps the best guarantee for the continuance of the recent excessive importation. In spruce the import has been much larger than usual, but still not excessive. During the three previous years the import had fallen on an average to 7 or 8 per cent. below the annual consumption, leaving the stock in hand at the commencement of the present season one of the smallest on record. Even now, notwithstanding the fact that last year's import was actually greater than that of 1895 by about 40 per cent., the stock which remains is, owing to the large quantities which have passed into consumption, only slightly in excess of the average, although appearing unfavourably when compared with the exceptionally small stock of last year. Oak has been dull of sale all the year. The stock is now ample, having regard to the fulfilment of the demand. In elm the stock is not large, but there is little inquiry. Birch experienced a sudden revival in consequence of the advance last winter in the price of mahogany, as a cheap substitute for which it seemed to be suited. The import of both timber and deals, &c., has been larger than last year. The mahogany trade during the year now closing has been exceedingly satisfactory. During the first three months of the year prices slowly but surely advanced, after which they settled to a level which has been maintained with but slight variation ever since. In consequence of the somewhat limited supplies, a quantity of wood of poor quality and condition was sent in, which has resulted in the value of minimum wood slightly declining, but such imports have not been on a very large scale, and the market has not seriously suffered thereby. There has again been an increase in the importations of cedar to Europe, the figures being about 30 per cent. more than last year, but the character of the wood imported differs from that of 1895. The quantity from Cuba has dropped away to almost trifling proportions, while the shipments from Mexico and the West Coast of America have increased to a very considerable extent. A very important feature has been the enormous quantity of Cedar imported from Paraguay. There has been an excellent demand for greenheart timber throughout the year, and as supplies have come forward on a moderate scale prices have improved, and the market is now very firm. The outlook for 1897 is favourable, as it appears probable that the demand will quite keep pace with the importations. Of sequoia (Californian redwood), there having been no fresh arrivals for nearly two years, a cargo which came in during the autumn found the market almost bare of stock, and is consequently selling at good prices. The high price of mahogany has also helped materially to keep up value. In American black walnut logs of large size and of good quality and manufacture continue to fetch high prices. In American whitewood there is less demand for logs, and prices are low. Prices for both quartered and plain-sawn American oak have been fairly well maintained. In Australasian hardwoods kauri pine in planks has been in steady request throughout the year. For hardwoods for paving the demand in the London district during the year has been rather disappointing, but the consumption in the provinces has been more encouraging. For the first time for several years the supply of jarrah has been ample, and the stock is quite large enough to cover the probable requirements in this market for several months.

BY-LAWS AND BUILDINGS, BLACKPOOL.—At a meeting of the Blackpool Town Council on the 5th inst., Mr. Grime proposed that a committee be appointed to take evidence and otherwise inquire into the administration of the building by-laws of the borough. Mr. Grime, in supporting his motion, said it was difficult to imagine that such an unsatisfactory state of affairs existed in the borough. Here they had the Medical Officer complaining that he and his department had no authority to insist

upon the first elements of public health. Dwelling-houses, it was said, were frequently erected in violation of the bye-laws passed by the Corporation, and inhabited in spite of the protest of the Medical Officer regarding the insanitary condition of the building. The regulation that houses should not be occupied without a certificate was a delusion. They had the surveyor openly repudiating his responsibility for the carrying out of the by-law, and along with the Chairman of the Committee advocating the creation of a new authority apart from the Council to carry out the by-laws. Architects and builders were openly saying that they could not get equity and justice unless they had friends at court, whilst other builders openly flouted the by-laws when the plans had not been passed. He appealed to the Council to endeavour to wipe out one of the cankers of the public life of the town. Alderman Buckley seconded the motion. Mr. Dickinson, who defended the committee, said that no favour was shown. Mr. Holden mentioned instances of breaches of the by-laws. Mr. Brodie laid the blame on the magistrates, who never convicted, and said that in many cases magistrates were brought down specially to dismiss cases. The motion was carried by 11 votes to 3.

PULPIT FOR ST. MARY'S, ASHFORD.—A new pulpit is to be placed in St. Mary's Church, Ashford. The design is by Mr. J. L. Pearson, R.A.

BUILDING OFFICIALS AT BERLIN.—Amongst the most important changes contemplated in the official circles at Berlin, as far as the Commission of Works' office is concerned, we observe that Herr Hinkeldey, who so ably presided at the Berlin Architectural Congress of 1895, is to fill the office of "Oberbaudirektor." This is one of the highest appointments which a Prussian building official can obtain, and relates particularly to the architectural branch of the office. In the event of the resignation of Herr "Bauidirektor" Heber, who is specially connected with the survey sections of the Department, Herr Kummer has been appointed to this office. Both the new officials are very popular among Continental architects and engineers, and their appointments—which are dated from October 1, 1896—have, consequently, been very well received.

CENTRAL SCHOOL OF ARTS AND CRAFTS, REGENT-STREET.—This week work has recommenced at the new Central School of Arts and Crafts, which was opened in October last at 316, Regent-street, opposite the Polytechnic. The school has been established by the Technical Education Board of the London County Council, and is under the direction of the two art advisers of the Board, Mr. George Frampton, A.R.A., and Mr. W. K. Lethaby. The object of the school is to provide for artisans who are engaged in trades where artistic handicraft is required, a training both in the principles of artistic design and in the application of design to their specific industries. The teaching is throughout specially directed to the requirements of the trades in which the students are engaged, and the school is only open to those who are actually working at a trade. At present the school provides teaching mainly for those who are engaged in the silver trades, and in those branches of the building trade where artistic training is specially needed; but steps are being taken to provide for other trades, such as the gilding and the bookbinding trades, and it is not impossible that out of the many who have existed at the Regent-street school, there may eventually grow a complete system of artistic and technical instruction which will ensure for the artisans of the Metropolis that sound and practical artistic training which they require to enable them to hold their own in the industrial struggle with foreign countries.

ROYAL VISIT TO TILE WORKS, STOKE-ON-TRENT.—During the recent Royal visit to Trentham Hall, the Princess of Wales visited the works of Messrs. W. T. Copeland & Sons, manufacturers of ceramic wares, Stoke-on-Trent. The Princess afterwards proceeded to the patent tile works of Messrs. Minton, Hollins, & Co., where they were received by Mr. J. B. Ashwell (Town Clerk of Stoke-on-Trent), who is the representative of Col. Hollins, and by Mr. Darlington, the manager. The Princess and party were first shown the method of tile-making by the dry dust process, after which the manufacture of tiles from plastic clay engaged attention. The show-room was subsequently inspected. An arrangement of tiles, similar to those supplied to form a dado at Appleton House for Princess Maud, was seen.

ARTIFICIAL ILLUMINATION.—Lecturing on this subject on Sunday afternoon last at St. George's Hall, Langham, Professor T. B. Lewes showed that, until the advent of the electric light, flame had no rival as a source of artificial illumination, and if we attempted to trace the genesis of our illuminants we found ourselves taken back to the days of the old Norsemen who, using branches of pinewood to cook the spoil of their hunters, noticed that as the fat melted and dropped upon the burning embers they blazed anew, and emitted a more light, flame had the wood burned alone; and the idea naturally arose of steeping the wood in heated fat before using it as a torch. They tried dipping thin pine rods into their fat pots, so building up a rough form of candle. They soon, however, found that the wood burnt far too slowly to keep pace with the fat, and at length

found that a core of the pith of rushes gave the best result, and thus was created the "rush-light," which played the part of illuminant and time-keeper to our Saxon ancestors, and which might even now be met with in some of the old-world villages where the incandescence of modern improvements had not as yet reached. Flame was one of the chief manifestations of combustion, which was the generation of heat and light during intensely active chemical combination, usually that of the oxygen of the air with the combustible substance. Flame was burning gas, and hence the combustible must be a gas, or be capable of vaporisation. The terms "combustible" and "supporter of combustion" were purely relative, as a jet of air would burn as readily in an atmosphere of coal gas as a coal-gas jet would in air. Many theories had been advanced as to the cause of luminosity in flame, but the first and most generally accepted was the one enunciated by Sir Humphrey Davy, that when a gas containing carbonaceous material was burnt, the luminosity was due to the separation of minute carbon particles heated to incandescence by the combustion going on around them. A flame was generally considered to consist of three parts, the inner dark zone where the gases were subjected to a preliminary baking, the luminous zone in which the particles, after being separated were raised to incandescence and yielded the light, and a faint non-luminous zone, or mantle, or flame where complete combustion was taking place. The luminosity of hydrocarbon flames was largely due to the gas acetylene, which contained twelve parts by weight of carbon to one of hydrogen. As explained by the late Sir Edmund Davy in 1835, but it was not till the last few years that a simple mode of manufacture had brought it within the range of commercial possibility. A Mr. F. L. Wilson devised a process for manufacturing aluminium by the electric furnace, and endeavouring to obtain the metal calcium in the same way, using lime in place of alumina, he obtained an extremely hard semi-crystalline body. Regarding this as a process, he threw it into the neighbouring stream, when an instant evolution of large quantities of gas attracted attention. The gas proved to be acetylene, and the solid obtained carbide of calcium. This gas, when consumed in burners of the proper kind, emitted a light fifteen to twenty times greater than that of ordinary coal-gas, and the ease of its production and its marvellous luminosity rendered this discovery one of the most interesting chapters in the history of artificial illumination.

BETHNAL GREEN MUSEUM.—We have received a copy of the catalogue of a collection of Oriental Porcelain lent to Bethnal Green Museum by Sir A. Wollaston Franks, by whom, as we gather, the descriptive catalogue is written. The catalogue, studied with the collection, forms a most instructive analysis of the subject. It includes a special chapter on the marks on Continental Porcelain. We have also received the catalogue, by Mr. Hungerford Pollen, of the loan collection of English Furniture and figured Silks at the same museum. Both are published by Messrs. Eyre & Spottiswoode.

PETERBOROUGH CATHEDRAL.—The following letter has been addressed by architects in Leicester to the Dean and Chapter of Peterborough:—"We, the undersigned, architects and surveyors of Leicester (being the largest town in the diocese), having full confidence in the judgment of your architect, Mr. J. L. Pearson, R.A., and knowing from what he has done in the past that any work he does to the West Front of Peterborough Cathedral will be of the most reverent and conservative character, beg to subscribe of 7/6 towards the fund you are raising for the restoration of this unique portion of the Cathedral of our diocese." The signatures of thirty-eight architects and surveyors of Leicester are appended.

ANTIQUARIAN DISCOVERIES IN CARLISLE.—An interesting discovery has just been made in the course of excavating for the foundations of some new buildings at the top of the east side of Botchegate. The find consists of an urn of plain pottery, nearly 3 in. in diameter on the base, and swelling out to a maximum diameter of 7 in. at a height of 3½ in., after which it contracts. It now stands about 5 in. in height, but the upper portion, with the neck, is broken off and lost. Inside the urn was found the irregular bottom, 3 in. in diameter, of another vessel of red clay, which had apparently been used as a lid. The urn was about half full of burnt and broken bones, from their size the bones of a wild from four to six years old. With them was found a small grotesque figure, carved in bone, about 2 in. long; the figure of a man with a large Roman nose, in an extraordinary position, not unlike that of our present Highland gigmen. The urn was not protected by any stone lid, or otherwise and the remains must be those of a cremated child of poor parents, who has placed in the funeral pile one of the child's juvenile toys, or the bone figure has also gone through the fire. The place where the find occurred is within the limits of the great Roman Cemetery at Carlisle, which extended, probably sparsely on either side of the London road from the Court Houses to Harrybridge. By the kindness of Mr. H. Davidson, the urn, with its contents, has been handed to Chancellor Ferguson, and will shortly be on exhibition in Tullie House.—*Carlisle Express.*

CAPITAL AND LABOUR.

WAGES IN THE BUILDING TRADE AT DARTINGTON.—On the 9th inst. a meeting of operative carpenters and joiners was held at the Ruby Hotel, Dartington, to consider the question of wages. A resolution was passed that, in consequence of the much better state of trade in the town, and activity in the building department, the employers be given notice for an increase of 1d. per hour from January 19, such notice to expire on Easter Monday.

PAINTERS' WAGES, SUNDERLAND.—The members of the Master Painters' Association in Sunderland have received a demand from the men for an advance of wages. The present rate paid is 8d. per hour, and the demand is for a penny advance before March 1. Some 400 men will be affected.

LEGAL.

A BUILDER'S CLAIM FOR WORK.

ACTION IN THE QUEEN'S BENCH DIVISION.—The case of Cole v. Boutall came before Mr. Justice Lawrence, in the Queen's Bench Division, on further consideration, on the 11th inst., the case having previously been before His Lordship at Winchester in June last, when it was arranged that the record should be withdrawn on terms to be agreed on, and with liberty to apply.

Mr. Giles, who appeared as counsel for the plaintiff, stated that as the parties had been unable to agree on the terms, it was necessary that the case should be heard by His Lordship. From the statement of the learned counsel, it appeared that the plaintiff, a builder, claimed from the defendant £171 12s., the balance of a sum he alleged to be due to him under the following circumstances.—The defendant had some property in the neighbourhood of Alton in Hampshire, and was interested in some lithographic works there, the manager of the works, a Mr. Crampton, required a house to live in, and the defendant was tempted, by seeing some houses which were being built in the neighbourhood, to employ Messrs. Clarke & Short, architects, of Bournemouth, to build the house for him. The architects seemed to have heard of the matter from Mr. Crampton, and they made an offer to build a bungalow-house on the Beach-place Estate for 415/. That offer was accepted by the defendant, and the architects proceeded to find a contractor to carry out the work, and ultimately employed Cole, the plaintiff, a local builder, who undertook to build the house for 415/., the difference being retained by the architects for their fees, &c. The question in dispute was whether there was a binding contract between the plaintiff and the defendant, Mr. Giles contending that the defendant having employed the architects to construct the house, they had authority to employ a contractor to carry out the work, and therefore authority to bind the defendant.

At the close of the plaintiff's case, Mr. Bullen submitted that judgment should be entered for the defendant, inasmuch as the plaintiff had failed to make out any case. The learned counsel said that he was ready to go through the documents in the case to show what his case was.

His Lordship replied that he had gone through all the documents that morning, and therefore it was not necessary to go through them again. He failed to see any contract between the plaintiff and the defendant. There was no evidence to show that the plaintiff and the defendant ever got together in any way, or that the plaintiff was recognised by the defendant in any way. On the contrary, it showed that if anything went wrong the plaintiff looked to Messrs. Clarke & Short as the only persons responsible to him.

After hearing further arguments, his Lordship gave judgment for the defendant on the point of law raised, with costs.

ACTION BETWEEN BANKS WITH REGARD TO ANCIENT LIGHTS.

The case of the London and Midland Bank v. the National Provincial Bank came before Mr. Justice North in the Chancery Division on the 11th inst., on a motion by the plaintiffs for an interim injunction to restrain the defendants from an alleged infringement of the plaintiffs' ancient lights. It was stated that the defendants were building a new bank opposite that of plaintiffs in Park-row, Leeds, which it was alleged interfered with the plaintiffs' ancient lights.

Ultimately it was arranged that the motion should stand over for three weeks, it being stated that there was a probability of the respective architects arranging the matter.

A DISTRICT COUNCIL AND BUILDING PLANS.

IMPORTANT CASE IN THE DIVISIONAL COURT.

The case of the Wetherby District Council v. Hewling came before a Divisional Court of Queen's Bench, composed of Mr. Justice Wright and Mr. Justice Bruce, on the 12th inst.

Mr. Scott-Fox appeared as counsel for the appellants (the local authority), and Mr. Compton for the respondent.

Mr. Scott-Fox explained that this was a case stated by the Justices of the West Riding of Yorkshire, and had relation to the building of some houses at Boston Spa. The respondent was a gentleman who had laid out a building estate on the side of a road which undoubtedly was an ancient highway leading to the River Wharfe. The road was about 30 ft. wide. The respondent had laid out about a dozen houses in the corner going down the road towards the bridge. When he originally submitted his plans the District Council called his attention to the fact that he was going on to an ancient highway, and they would disapprove of his plans unless he agreed that the road should be 36 ft. wide. The effect of that would be that he would have to throw 3 ft. into the road opposite his new houses. The plans were given back to the respondent for the purpose of making the alteration which he had consented to carry out. He altered his plans, which showed on the face of them a 36-ft. road, and in this condition they were sanctioned. After that he had again to make some alteration in the houses, and he submitted substituted plans showing a road 36 ft. wide. When he came to finish the houses in 1895, the respondent was advised he was under no obligation to make the road as required, although he had had his plans passed on the understanding that he would do so. He did not take down the wall that divided his premises from the road, and he was summoned for not having carried out his plans and constructing the new street as required by them, and, although the Bench offered to stay a case, he did not accept it, and paid the fine. The defendant, however, did not pull down the wall, and another summons was taken out. On this occasion the Bench was differently constituted, and the magistrates then came to the conclusion that, in spite of the plans and his undertaking to make the road 36 ft. wide, yet, the road being an old highway, it was not subject to the by-law. The question for the Court to decide now was whether or not this was a new street which came within the by-laws.

Mr. Justice Wright: Is not that a question of fact alone?

Mr. Scott-Fox replied that the magistrates did not seem to have treated it as such. They had expressed no opinion, but they did not see their way to say that the respondent should be called upon to take down a wall which had stood for 100 years.

Mr. Compton said that the magistrates had expressly found as facts that the respondent did not by the erection of the houses lay out, or intend to lay out, a new street, and they also found that the road was not a new street.

Eventually their Lordships sent the matter back to the Justices with the three following intimations from them: (1) That only so much of the information should be retained as alleges the laying out of the new street less than 36 ft. wide; the rest should be struck out. (2) The magistrates are bound by the former conviction, the parties being the same, if, after hearing counsel for the respondent, they think that the former conviction necessarily or actually involved a decision that this was the laying-out of a new street. If so, they were to convict now. (3) If the former decision does not bind them, the question for them is, whether, under all the circumstances of the case, including all that was done in relation to the plans, they think, as a matter of fact, that the respondent, when he began to build, meant to begin and did begin to execute a building plan which would, when finished, constitute a road or a street. There was sufficient evidence to justify a finding either way on this point. Mr. Justice Wright added that no fresh evidence was to be called unless the Justices wished it.

POINT UNDER THE METROPOLITAN BUILDING ACT, 1894.

The case of List v. Sharp came before Lord Justice Chitty in the Chancery Division on the 12th inst., for judgment on a motion by the plaintiff to continue an interim injunction until the trial, restraining the defendant from interfering with a wall. The case was argued before his Lordship on December 16 and 17 last. The facts were shortly these:—

By an agreement dated December 12, 1894, Sir Charles Oppenheimer agreed to demise certain property in St. James's-place held by him under the Commissioners of Woods and Forests, to the plaintiff for a long term, at a rent of 550/ after Michaelmas, 1895, and the plaintiff agreed within a specified time to erect buildings on the land at an expense of not less than 100,000/. The production of a certificate, signed by the Commissioners' architect and surveyor, was made a condition precedent to the granting of the lease. It was further provided by the agreement that the plaintiff should forthwith, upon the signing of the agreement, be entitled to the possession of the land, and reserved to the surveyor and all officers and workmen of the surveyor, and of Sir C. Oppenheimer, acting on the authority of the surveyor, a right to enter upon the land at all times during the erection of the buildings for the purpose of examining buildings, and otherwise as therein mentioned. There was also a stipulation that nothing in the agreement should be construed "into a demise at law" of the premises so as to vest any estate to the plaintiff, but that he should only have a right to enter upon the premises for the purpose

COMPETITION, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITION.

Table with 4 columns: Nature of Work, By whom Advertised, Premiums, and Designs to be delivered. Includes entry for New Town Hall.

CONTRACTS.

Table with 4 columns: Nature of Work or Materials, By whom Required, Forms of Tender, &c. Supplied by, and Tenders to be delivered. Lists various construction contracts.

CONTRACTS—Continued.

Table with 4 columns: Nature of Work or Materials, By whom Required, Forms of Tender, &c. Supplied by, and Tenders to be delivered. Continues list of construction contracts.

Those marked with an asterisk (*) are advertised in this Number. Competition, p. iv. Contracts, pp. iv. vi. & viii. Public Appointments, pp. xviii. & xxi.

PUBLIC APPOINTMENTS.

Table with 4 columns: Nature of Appointment, By whom Advertised, Salary, and Applications to be in. Lists various public appointments.

of performing the agreement. The plaintiff accordingly entered upon the land, and pursuant to the agreement proceeded to erect the buildings. The defendant, who was the adjoining owner, wishing to execute certain works upon a wall, about which there was some contro-

versy as to whether it was a party wall or a party fence wall, gave in February, 1896, the necessary notices, under the London Building Act, 1894, to Sir Charles Oppenheimer, but omitted to give any to the plaintiff. At the time, the plaintiff had nearly completed the buildings, but had not obtained the lease. In August, 1896, the lease was granted to the plaintiff, and an *ex parte* injunction had been obtained by the plaintiff, restraining the defendant, as building owner under the Act, from interfering with the wall, which injunction it was now sought to continue till the trial.

His Lordship, in the course of an elaborate judgment, granted an injunction, restraining the defendant in the terms of the notice of motion, but without prejudice to the rights, if any, of the defendant, under the Metropolitan Buildings Acts, the hearing of the motion to be treated as the trial if the parties should so agree.

Mr. Hyne, Q.C., and Mr. R. C. Glen appeared as counsel for the plaintiff; and Mr. Leveit, Q.C., and Mr. C. Jones for the defendant.

MEETINGS.

- FRIDAY, JANUARY 15. Architectural Association.—Mr. E. Prieleau Warren on "Decorative Plaster Work," with models. 7.30 p.m. Institution of Civil Engineers.—Students' Meeting. Mr. Walter Beer on "Monier Girders and Arches." 8 p.m. SATURDAY, JANUARY 16. British Institute of Certified Carpenters.—Meeting at Carpenters' Hall. 6 p.m. SUNDAY, JANUARY 17. Sunday Lecture Society.—Professor Norman Collie, F.R.S., on "The Mountains of Great Britain." 4 p.m. MONDAY, JANUARY 18. Royal Institute of British Architects.—Sixth General Meeting (Ordinary). Address to Students by the President; and some critical observations on the students' work, after which the presentation of prizes will be made by the President. Prior to the distribution of prizes, Mr. Alfred Waterhouse, R.A., the new Chairman of the Board of Examiners, will present, on behalf of past and present members of the Board, a testimonial to Mr. Arthur Cayley, in recognition of his services as Chairman of the Board. 8 p.m.

- Victoria Institute.—Professor Hull, F.R.S., on "The Assuan Embankment." 4.30 p.m. Leeds and Yorkshire Architectural Society.—Mr. Max Clarke, on "The Experiments conducted by the R.I.B.A. as to the Strength of Brickwork." 7.30 p.m. TUESDAY, JANUARY 19. Institution of Civil Engineers.—(1) Further discussion on Professor W. Ripper's paper on "Superheated-Steam Engine Trials." (2) Time permitting, the following papers to be read:—(a) "The Experiments conducted by the Colonel J. Penryck;" (b) "The Periyar Tunnel," by Mr. P. Roscoe Allen. 8 p.m. WEDNESDAY, JANUARY 20. Liverpool Engineering Society.—A Paper by Mr. T. Parker. 8 p.m. THURSDAY, JANUARY 21. Society of Antiquaries.—8.30 p.m. London Institution.—Mr. H. J. Powell on "The Art and Craft of Glass-making," illustrated. 6 p.m. Royal Institution.—Professor H. A. Miers, M.A., F.R.S., on "Some Secrets of Crystals." 1 p.m. Institution of Civil Engineers.—Students' Visit to the Engine Works of Messrs. James Simpson & Co. 2 p.m. (Assemble at the works, Grosvenor-road, Fimlico, S.W.) Devon and Exeter Architectural Society.—Mr. Edmund Sedding on "Local Gothic Architecture," at the School of Art, Princess-square, Plymouth. 7.30 p.m. FRIDAY, JANUARY 22. Royal Institution.—Professor Dewar, M.A., F.R.S., on "Properties of Liquid Oxygen." 9 p.m. Institution of Junior Engineers (Westminster Palace Hotel).—Professor A. Barr, D.Sc., on "Comparisons of Similar Structures, Large and Small." 8 p.m. SATURDAY, JANUARY 23. Institution of Junior Engineers.—The Twelfth Annual Dinner, Westminster Palace Hotel. The President, Mr. A. R. Binnie, in the chair. 6.30 p.m.

RECENT PATENTS:

- ABSTRACTS OF SPECIFICATIONS. 23,350.—VENTILATION OF SEWER ENTRANCE COVERS AND OTHER DRAINAGE COVERS: W. H. Moran.—With the object of rendering manhole covers, lamp-hole covers, side-entrance covers, &c., ventilating or non-ventilating at will, the inventor so arranges a dirt-box below cover that it can be easily raised or lowered by means of arms, centre plate, bolts and nuts, &c. When ventilation is desired, the dirt box is permitted to rest on bracket arms, leaving a free passage for the accumulated gases to escape. 23,973.—BRICK AND TILE-MAKING MACHINERY: J. S. Anderson.—In a double-shaped pug-mill, the inventor uses twin screws or propellers, to revolve right and left. These are fixed at the end of each shaft. A hop coupling is also fixed on each shaft, so that one or both shafts can be taken out if desired. 24,099.—LADDERS: A. G. Perkins.—The ladder is formed in two parts, one sliding in grooves or hollows

- formed in the other part; a screw bolt passes through apertures in one of the sliding parts and engages in a screwed aperture in the other part, thus securing the two parts together, so that the length of the combined ladder may be regulated as required. It can also be adapted for use as a step-ladder. 19,000.—WOOD BLOCK FLOORING: J. W. Muscellwhite.—The invention consists of wooden blocks, in length three times their width, with a tongue worked on one side, and a groove on remaining three sides. It is claimed that such blocks can be laid much thinner than any in use. 2,497.—CURTAIN-RODS AND SIMILAR TOOLS: A. von Knauski.—In order to provide means for quickly and easily removing the chips from holes bored (especially long ones), inventor adopts, in combination with the boring bit proper, a tube, having the said boring bit fixed to it, and adapted to receive the chips produced by the said bit, and a threaded spindle arranged within such tube, a ratchet wheel, and other details. 2,493.—SPRING-SAWING MACHINERY: G. Anderson.—The invention relates to stone-sawing machinery of the type where stone is secured on a bogie while being acted on by reciprocating saws, actuated by a steam-engine, &c. The saw frame is suspended by means of pendulums from slides, whose position, and, therefore, that of the saw, is determined by four wire ropes, controlled by a central barbell. The saws are fed down to the work by this barbell and ropes. Such barbell may be moved slowly by the feed motion, or, may, by various means, be adjusted to actuate the saw frame quickly. 2,484.—KILNS FOR LIME, CEMENT, &c.: H. Simmonds and another.—The invention relates to improvements in kilns described in patent 7,433 (1895). Inventors construct kiln with one or more producers on the outside thereof. Between delivery passage of producer and inlet passage, they place a combustion chamber built of fire-brick. Complete combustion of the gas takes place therein and the products, in a highly heated state, are delivered to the other end of the kiln. By this construction, inventors claim that they raise the products to a greater temperature than when combustion takes place in the interior of the kilns, and thereby obtain a greater heat in the interior. 2,487.—KEYS, ENGING BLOCKS, PLATFORM COUPLERS, &c.: A. F. Tjebkust.—Inventor cuts or moulds an extension or cap in the inner face of a kerb, &c., with a forwardly sunken top surface, into which, and from which, angle, chocks, channels, or gutter-like grooves can be formed, to lead any water percolating through joint seams, from deflection of the path, flags, or other causes, to the front or in other direction desired. 2,489.—ADJUSTABLE STRIPS FOR WINDOW SASHES, &c.: F. J. Gibbons.—This invention relates to adjustable strips for sashes, &c., whereby the amount of opening can be regulated. The invention consists of a cylindrical bolt, provided with an interior screw thread, secured to top sash at about 6 in. from the bottom rail. In bottom sash is secured a plate, furnished with two, three, or more holes, wherein said bolt may engage. Bolt is unlocked by key. 2,475.—CHIMNEY COWL: J. McLaren.—In order to prevent down draught, the inventor arranges a number of round louvers, made of sheet iron, &c., one above the other, and placed in sashes apart, and set at an angle, which gives the opening for smoke. Inside top of fire a baffles cone is held in position by three guide rods to direct the

down-blow through the top louver opening, leaving the other four openings to give free flow for the smoke.

2674.—ARTIFICIAL STONE: F. W. Maxwell and Another.—The inventors take a quantity of any suitable stone—other than marble—in the form of chips or powder, and oxide of magnesium, or its chemical equivalent, and mix them thoroughly in a dry state and in a dry place, in the proportion of, say, three parts stone and one part of the oxide of magnesium, &c. Mixed materials are then moistened with a solution of magnesium chloride, or its chemical equivalent, beaten up or mixed into a mass, and moulded as desired.

2675.—VENTILATING CHIMNEY TERMINALS.—J. Walker.—The inventor places at summit of face a system of spiral louvers, or circular vanes. Preferably, he also provides beneath these three downwardly and outwardly projecting tubes, in order to increase up draught.

17,023.—PLASTER SLABS FOR BUILDING: J. Mack and Another.—The inventors, in order to form their "Mackolith," lay on the bottom of the mould a board to which are attached ledges of India-rubber. Into the spaces between these are laid thin plates of earthenware, &c., for "facing plates." Mould is now filled with liquid mortar, and wooden laths are pressed into this so that they will be situated behind the joints of the face plates as soon as the mortar is set plate is taken out and dried in the air. These plaster slabs can be made with a facing on both sides. Process is applicable not only to flat slabs, but also to convex and concave surfaces.

18,238.—JOINTS FOR DRAIN-PIPES, &c.: T. W. Yardley.—The socket portion of pipe is made with a loose piece, which is arranged to be on top-side when pipes are laid. Flange is so formed that it fits tight when pipe is set, and, one after the other, by lowering them vertically, and without moving them endwise into the sockets.

22,626.—VENTILATING: H. Shuck.—Inventor constructs a bell or concave surface, which is tubed at its upper end, rising from ceiling and passing through roof. Lower end of this is provided with a grid. The upper end of this vertical shaft is furnished with four-way fan, which is so arranged that it can be placed in any position, their ends being of a shape to afford protection from stormy weather. Thus, from whatever quarter the wind is blowing, an efficient suction is provided.

23,714.—TILES, &c.: H. W. H. In order to prevent the warping of slabbing tiles, mosaic panels for grates, &c., inventor provides at the back of the cement, &c., a series of plates of metal, whereby the tiles, or panels, are prepared of rectangular shape, which provide a countering influence in the process of the shrinking of the cement, holding the mosaic tiles, &c.

23,715.—SAWING STONE AND MARBLES: G. A. B. Viney.—In order to cause the saw-frame to descend proportionately to the cut, inventor combines with a suspended saw-frame for sawing stone, &c., a feed-regulating device formed by a hydrostatic balance, consisting of a counter-weight immersed in water, suspended by a rope winding on a drum, from which unwinds the suspension ropes of the saw-frame as the sawing proceeds.

NEW APPLICATIONS FOR LETTERS PATENT.

December 27.—29,235, C. Hartnell-Sinclair, Self-acting lock-fastener for the Automatic Locking of Windows, &c.—29,264, H. Cross, Link Trap.—29,347, F. Guttridge, Self-making Machine for Floor, Plastering, &c., without Joints or Chinks.—29,687, C. afford-Noble and others, Door Hinges or Pivots.—29,698, F. Hughes, Sashes of Windows, Doors, &c.

December 28.—29,765, D. Cameron and others, Drains.—29,823, W. Lambert, Fire-grates or Stoves.—29,864, A. Zboril and A. Schenk, Plates, Slabs, &c., for covers, &c., and Method of Manufacturing same.—29,865, A. Zboril and A. Schenk, Covering for Floors, &c.—December 29.—29,870, J. Tucker, Electric Lighting Fixtures.—29,900, J. Stewart, Domestic Grates.—29,910, J. Dickett and W. P. Fares, Flushing Appliances.

December 30.—29,944, G. Gregory, Ball Joint Ventilator.—29,959, J. Eckersley, Coping for Walls &c.—30,012, H. Sutcliffe, Lavatory or Cabinet Stand Wash Sins.—December 31.—30,702, G. Robertson and others, Bricks.—30,709, J. Wood, Firegrates.—30,755, Sinzig, Fastening of Floors and Ceilings in or to Walls.

JANUARY 1.—75, G. De Tuzelmann, Electric Light Fitting.—77, J. G. Gun, Cowl or Chimney-top for Preventing down-draught from descending chimneys.—82, R. Wood and S. Richards, Draught-Proof Excluder as applied to doors, windows, door and window frames and casings, &c.—80, D. Ruban, Drain Pipes.—76, W. Osmer, Block for Spindle Wood-working Machines.—58, T. Partridge and E. Abbott, Device for Lifting Well-leading to Sewers, &c., and for disinfecting same.—59, J. Kirkbride, Device for Preventing Window Sashes from Rattling.—60, J. Kirkbride, Sashes, &c.—61, J. Kirkbride, Casement Windows, and Hinges for Windows.—62, H. Gypson, Skylight Frames, &c.—75, J. N. Morris, Chimney-tops.—83, C. Cockson, Doors, Windows, Sliding Shutters, &c.—84, A. Woolley, Fastenings, Doors, Hinged Panels, &c.—93, W. Coats, Chimney-tops.

JANUARY 2.—97, G. Bray, Arrangements for Gas Sinks.—137, C. Hubbard, Cooking Stoves.—117, V. Nuti, Device for Preventing the Picking of Lovers.

PROVISIONAL SPECIFICATIONS ACCEPTED.

3,947, W. Thompson, Imitation Wood Carvings.—3,948, W. Borrer, jun., Tool for Wood Working.—1,079, C. Henschel, Coverings for Roof and Walls.—1,079, E. Hodgkinson, Cover Tiles for Roofing Purposes.—1,079, E. Jackson, Lead Glazing.—73,379, J. Allen, Flushing of Drains, Sewers, &c.—73,479, G. Madley, Siphon Flushing Apparatus.—77,648, A. Taylor, Artificial Stone for Building, Paving, &c.—77,810, F. Smith, Fastenings for Windows, &c.—28,069, A. Boulton, Stoves or Fireplaces.—28,314, C. Shaw, Novel or improved construction or formation of sheet metal capping valley pieces and flashings for use with roofs which are covered with corrugated sheet metal.—28,429, A. Sabine & T. Sabine, Earthenware Sinks, &c.

Modely, Siphon Flushing Apparatus.—77,648, A. Taylor, Artificial Stone for Building, Paving, &c.—77,810, F. Smith, Fastenings for Windows, &c.—28,069, A. Boulton, Stoves or Fireplaces.—28,314, C. Shaw, Novel or improved construction or formation of sheet metal capping valley pieces and flashings for use with roofs which are covered with corrugated sheet metal.—28,429, A. Sabine & T. Sabine, Earthenware Sinks, &c.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to application for two months. 7,389, T. Simmonds, Combined Fastener and Opener for Skylight, &c.—1,712, T. Elliott, Urinals.—2,870, S. Abram, Continuous Down Draught Brick Chimney.—4,273, Hougham, Cupboard, and other Door Fasteners.—17,273, W. McLaren, Window Blind Apparatus.—163, J. Mearns, Drain Trap.—283, J. Jones, Preventing Pipes Bursting through Frost.—2,223, F. Turner, Cement or Artificial Stone.—20,665, A. Jungblut & E. Crouch, Window and Door Fastener.—24,242, A. Clery, Artificial Stone.—26,145, R. Bell & W. Hall, Water and like Taps.

PRICES CURRENT OF MATERIALS.

Table with columns for Timber (Greenheart, Teak, etc.), Metals (Iron-Pig, Bar, Sheet, etc.), and Oils (Lined, Cottonseed, etc.). Prices listed in various units like per ton, per cwt, per barrel.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us not later than 10 a.m. on Thursdays. N.B.—We cannot publish tenders unless authenticated by the name and address of the tenderer, and we cannot publish anonymous tenders unless the amount of the tender is given, nor any list in which the lowest tender is under £100, unless in some exceptional cases and for special reasons.]

- BEDFORD.—For sewers and road-making works, St. Cuthbert's Glebe Building Estate, for Messrs. Henson & Martin. Mr. Richard G. Harrison, 15, St. Paul's Church, Bedford.—£1,451 5s.
BURTON-ON-TRENT.—For erecting a Minister's house, Shotwell-street, Burton-on-Trent. Mr. Chas. F. Underhill, architect, Burton-on-Trent.—£266 0 0.
BLACKROCK (Co. Dublin).—For the erection of artesian drillings for the Town Commissioners. Messrs. Millar & Symes, architects, 186, Great Brunswick-street, Dublin. R. F. Lidwell, 22, St. Andrew's-street, Dublin.—£4,680.
BRIDPORT.—Accepted for the restoration of the parish church, for the Rector and Churchwardens and others. Mr. C. E. Posting, F.S.A., architect, Marlborough.—£745.
BURTON-ON-TRENT.—For erecting a Minister's house, Shotwell-street, Burton-on-Trent. Mr. Chas. F. Underhill, architect, Burton-on-Trent.—£266 0 0.

DOWNE.—For counters and bar fittings at the Queen's Head Inn, Downe, Kent, for Nalder & Colyer's Brewery Company, Limited. Mr. Robert M. Chard, architect, Union Bank-chambers, Cleveland.—£270 10 0.
DURHAM.—For additions, &c., to workhouse, for the Union Guardians. Mr. H. T. Gordon, architect, Market-place, Durham.—£1,489 0 0.
EAST BARNET.—For new roads and sewers at East Barnet, for the Great Northern London Cemetery Company. Messrs. E. E. Grenier & Co., surveyors, 26, Chancery-lane, W.C.
NEWELL & ROBINSON.—£5,125 0 0.
GEO. BELL.—£3,869 0 0.
WILLIAM GRIFITHS.—£4,324 14 4.
WILLIAM NEAVE & CO.—£3,707 0 0.
SON.—£3,224 0 0.
JAMES NASH.—£3,760 0 0.
Rowland Bros. [Surveyor's estimate, £3,826 5s. 8d.]

GATESHEAD.—For sewerage, &c., Back Westbourne avenue. W. Cunningham, £393 5 8. G. E. Simpson, New. W. Robinson, £38 10 0. G. Maughan, £26 15 0. J. Wardlaw, £23 12 3. J. Robson, £21 7 6.

HARGREAVE.—Accepted for levelling, paving, &c., streets on Valley Park Estate, for the Corporation. Mr. Samuel Stead, Borough Surveyor, Municipal Offices, Hargreave.—William Annakin, 53, Frankland-road, Harrogate, £3,900 6 2.

HILKEY.—For the execution of street works (sewer contracts), for the Ilkley Urban District Council. Mr. W. A. Pailiser, Surveyor, Ilkley Drive.

Table with columns for Roadway, Asphalting, Footways. Matthew Hall, £337 17 2. W. Barrad, £34 10 0. John Murdoch, £32 3 6. R. W. Ibbotson, £29 7 2. The Asphaltic Concrete Co., Birmingham, £170 0 0.

John Murdoch, £45 0 0. Matthew Hall, £62 2 2. R. W. Ibbotson, Horsforth, near Leeds, £7 10 0. W. Barrad, Bradford, £40 6 0.

Matthew Hall, £34 10 0. R. W. Ibbotson, £26 8 3. John Murdoch, £21 0 0. W. Barrad, Bradford, £25 6 0.

Matthew Hall, £56 10 0. R. W. Ibbotson, £48 8 8. John Murdoch, £40 10 0. W. Barrad, Bradford, £43 11 1.

Matthew Hall, £36 2 0. R. W. Ibbotson, £27 9 4. John Murdoch, £29 13 11. R. W. Ibbotson, £22 9 4. W. Barrad, Bradford, £27 9 4. The Asphaltic Concrete Co., Birmingham, £35 4 4.

LEEDS.—For the erection of a tramway depot, &c., for the Corporation. Builders' Work. Schofield & Sons, Leeds.—£3,204. Ironwork. Clayton, Sons, & Co., Ltd., Hunslet.—6,692.

LEYTON.—For private street works for the Leyton District Council. Mr. W. Dawson, engineer and surveyor, Town Hall, Leyton.—£4,884 4 2. W. Griffiths, £4,707 11 9. T. Adams, £4,812 7 8. J. Jackson, Grove. G. J. Anderson, £4,451 10 8. House, Leyton.—£422 0 0. [Surveyor's Estimate, £4,680.]

LONDON.—For converting nurses' cubicles into a ward, and for forming an approach to the new Nurses' Home, at the Infirmary, Calcutt-street, Chelsea, for the Chelsea Guardians. Messrs. Lansell & Harrison, architects, 21, Compton-terrace, Highbury, N.—£1,995. C. Goodson & Sons, £1,975 13 6. Brown & Co., £1,995. W. Lawrence, £657. The General Builders, Ltd., £350. F. R. H. P. Higgin, £753. R. E. Williams, Battersea, £273. W. H. Lorden & Son, £491. See* £1,250. *Accepted.

LONDON.—For alterations to the Railway Hotel, Shepherd's Bush, W., for Messrs. Holway & Moore. Mr. J. Henry Richardson, architect, 57, Shepherd's Bush Green, W. Quantities by Mr. T. Woodhouse Rogers, 10, Clifford's-lane, E.C. E. Lawrence & Sons, £5,163 13 6. Wimpey & Co., £4,715. J. Atley, £4,741. G. Todd, £4,747. Messrs. Gosh & Davies, Queen's, £4,793. J. Dendon, £4,729. Kilby & Gayford, £4,676. Courney & Fairbairn, £4,657. Grey & Cusman, £4,751. R. Eddie, £4,459. *Accepted.

LONDON.—For alterations to the Railway Hotel, Stratford, W. Henry J. Hollingsworth, architect, 20, Old Cavendish-street, W. 2. J. H. Baines, £4,550. T. Walsh & Son, £4,282. A. E. Symes, £2,381. Edwards & Medway, £1,956. *Accepted.

LONDON.—For alterations to the "Mermaid" public-house, 56, Nite-street, Hackney, for Mr. James Broke. C. Neesham, architect, 11, Powerscroft-road, Clapton, N.E.—Wm. Critchley, £600. E. Lancaster, £384. Sheffield Bros., £343. *Accepted.

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HALESOWEN (near Birmingham).—For the construction of collecting sewers at Lye, Wolfescote, Cradley, and three other parishes, for the Urban District Council. W. W. Fiddian, engineer, Town Hall, Southbridge.

Table with columns for Halesowen, Hasbury, Hawn, Cradley, Lye, and Wolfescote. Rows list contractors and their respective amounts in £ s. d.

*Accepted.

†Withdrawn.

SCARBOROUGH.—Accepted for the erection of a cottage, Wearhouse Estate, Jackson's Lane, for the Town Council.

Table for Scarborough with columns for £ s. d. and contractor names like Joseph Petch, Beck and Stone, etc.

SURBITON.—For the execution of sewerage works, etc., Minnie Dale, James street, and Elwell's place, for the Urban District Council.

Table for Surbiton with columns for £ s. d. and contractor names like W. Mather, C.E., Lee & Son, etc.

LONDON.—For the erection of two shops, Nos. 308 and 310, Mare-street, Hackney, E., for Mr. G. Evans.

Table for London with columns for £ s. d. and contractor names like Rice & Sons, J. Smith & Sons, etc.

WHEATSTONE (Leics).—For the construction of sewers, &c., for the Blaby Rural District Council.

Table for Wheatstone with columns for £ s. d. and contractor names like Jax Johnson, J. Smith & Co., etc.

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors. We cannot undertake to return rejected communications.

PUBLISHER'S NOTICES.

Registered Telegraphic Address, 'THE BUILDER,' LONDON. THE INDEX and TITLE PAGE for VOLUME LXXI. (July to Dec. 1896) is given as a supplement with the number published 2nd inst.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE AND GENERAL ADVERTISEMENTS. Six lines (about fifty words) or under, 4s. 6d.

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READING CASES.

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A TEST OF OVER FORTY YEARS has proved that SZERELMEY STONE LIQUID Absolutely waterproofs and preserves Bricks, Stone, Cement, Stucco, Plaster, &c.

Asphalte.—The Seyssel and Metallic Lava Asphaltic Company (Mr. H. Glenn), Office, 42, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tum-rooms, and terraces.

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The Builder.

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Competition Design for Technical Institute, West Ham.—By Mr. E. T. Hall, F.R.I.B.A.	Extra Large—Page Photo-Litho.
Mar Lodge, Deeside, Aberdeenshire.—Mr. A. Marshall Mackenzie, A.R.S.A., F.R.I.B.A., Architect	Double-Page Photo-Litho.
Church Room, St. Mary's, Ewell.—Mr. A. T. Bolton, A.R.I.B.A., Architect	Single-Page Photo-Litho.
French Convent, Bow-road.—Mr. J. H. Eastwood, A.R.I.B.A., Architect	Single-Page Photo-Litho.
Boys' Board School, Merton, Surrey.—Mr. H. P. Burke-Downing, F.R.I.B.A., Architect	Single-Page Photo-Litho.

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Peterborough Cathedral: Actual State of the Front.



DETAILED examination of the west front of Peterborough Cathedral from the scaffolding, which we have had the opportunity of making since our last issue, more than

confirms the opinion we had previously formed as to the impracticable and even absurd nature of the method of dealing with it for which the Society of Antiquaries have unwisely made themselves responsible. The mere perusal of the extraordinary document which they have taken under their protection, coupled with what may be said to have been common knowledge as to the state of the upper portion of the front, must have induced a feeling of healthy scepticism; but in this case seeing is unbelieving. No one with any knowledge of construction who looked at the upper part of the front from the top of the vaulting behind the gables could for a moment regard the proposals of the "specification" as anything short of lunacy, unless we are to conclude that those who drew it up had themselves never seen the walls from that point of view, and were specifying without a knowledge of the task they were undertaking. We expressed a doubt last week whether Mr. Thompson, the contractor, would ever have cared to risk the lives of his men in carrying out such work in such a manner. We were more than correct. We now learn as a fact that Mr. Thompson, who has had quite exceptional experience in work of this kind, had definitely stated that, should the Dean and Chapter give way and allow Mr. Webb and his friends to try their experiment, he would have thrown up his contract, as he would not have felt justified in undertaking such a risk. That portion of the public which has been taken in by the clamour raised against the Dean and Chapter in certain daily journals, in which they have been accused of wantonly destroying Peterborough Cathedral, may possibly realise a little better now what it is that the cathedral authorities have been invited to do. They have been invited in the first place to dismiss their architect, the man of admittedly the first experience

in England in dealing with large mediæval structures, and to put the work instead into the hands of those of whose experience they know nothing, and at the same time to lose from the work their contractor, who stands first in experience in such work, because he regards the proposed method as one which is unsafe not only to the building but to the lives of his workmen. And it is for resisting the demand that they should do this that they have had wholesale abuse heaped upon them in public prints. If they had yielded to the clamour against them they would have been absolutely false to the trust reposed in them.

The absurdity of the "specification" can only be fully realised by seeing the actual section of the walling over the great arches. For a distance of 4 ft. or 5 ft. above the crown of the vaulting of the porch the wall is carried up nearly 7 ft. in thickness, the inner portion of it—that is, all but the actual facing of the gables—being built of very small rubble-stones, the mortar between which is now reduced to a powder which can be scraped out in dust with the fingers. Some parts are more "crumbly" than others, but all the backing is more or less in this state. Above this level the upper part of the gables rises in worked stone, about 2½ ft. thick. The whole of the weight of this upper portion of the gables rests upon the three outer rings of the great arches, and where the ashlar fronts the rubble backing the stones have mostly very little tail into the wall; there are no through stones to tie it in, or anything of that kind; some of the facing stones are loose, or nearly so, and have only a very narrow bedding. Standing on the thicker portion of the wall, behind the upper part of the gables, nearly the whole length of it can be seen taking the form of an outward curve; the gables and piers fall over in regard to the vertical line, and the whole structure shows a considerable curve in regard to the horizontal line, between the points near the two ends where vertical, or nearly vertical, cracks on the inner surface of the wall mark the points at which the centre part of the structure has dragged away from the end portions. The mere appearance of this immense mass of work, at this height in the air, bulging outwards in this manner, as seen from the point of view we have been taking, is alarming enough. Below this thinner portion of the gables, the thick rubble wall has broken away from the vaulting, leaving large furrows between, one of which has evidently at one time been

actually gaping open, and has been roughly filled up with rubble masonry, as if concealing the gap would do something towards making people more comfortable in their minds. The action of the front on the vaulting has been a double one, it has apparently parted from the vaulting after dragging the vaulting part way with it; for in the centre portion of the porch there is a considerable separation on the side of the vault nearest the church, so that the central portion of the vault is structurally broken off both from the back and front.

To all this we have to add that in the northern arch, where the work of reparation is now being done, the arch stones of the outer orders have themselves dropped in several places, and the curve of the arch is broken. And upon this dropped portion of the arch, and upon it alone, comes the whole weight of the gable.

What the authors of the "specification" proposed to do was to make a series of tunnels, successively, at different points, through a mass of rubble walling nearly 6 ft. thick (not counting the ashlar facing) in order to put in solid work piecemeal, and thus to tie into a wall which is hanging over, an ashlar facing which is also hanging over, which is in parts very shallow on the bed, and carries a great weight over it all of which rests on the outer edge of an arch that is leaning outward and several of the joints of which have dropped, the arch being in fact crippled just at the point where the greatest weight of the gable comes upon it, and partly in consequence of the incidence of that weight, co-operating with the movement of the foundations and piers. The "specification" is ridiculous and one has only to look at the building from this point of view to see that it is so. The work is risky enough as it is.

We have already observed that the architectural opposition to Mr. Pearson and the Dean comes almost entirely from one special section among architects, including some very clever men who hold some rather eccentric views in regard to architecture, and who are strongly opposed to the Institute of Architects, of which Mr. Pearson is a member. We are inclined to think that some of the extra-professional opposition is the gratification of an anti-ecclesiastical feeling. One of the most active in it has been Mr. Frederic Harrison, who is the leader of the Comtists in London, and who has set up the cry that the cathedrals ought to be in the hands of a national secular authority, as national

possessions. It may be observed also that the two daily papers which have been most conspicuous in the opposition—the editor of one of which, indeed, seems to have entirely lost his head on the subject—are essentially Radical and anti-Church papers. This is not a Church paper but an architectural paper, and we have nothing to say in regard to this ebullition of *odium anti-theologicum* in itself; we merely note the fact that all this clamour from people who have no particular reason for caring about architecture is probably not raised on purely architectural or artistic grounds, however these may be made the pretence; it has its origin in a desire to get up a cry against church officials. The question whether the cathedrals, as among our most precious architectural possessions, ought to be regarded as a national charge, is one quite open to consideration; we have already said that we think their reparation ought to be a charge on public money, or its cost at least be subsidised from public funds. But it is very doubtful whether they would receive by any means reverential treatment from any public Committee or Trust as they do receive from their ecclesiastical custodians. The example of the “Commission des Monuments Historiques” in France is not reassuring in this respect. As a member of the Peterborough Chapter observed, “Who in all England can care so much for our cathedral as we do? We love every stone of it; we would not willingly displace a single one.” And that we believe is the predominant feeling among Capitulard bodies; and in fact it is only natural that it should be so.

There can be no doubt that the main agent in bringing about the present insecure state of the front was the failure of the foundations of the piers. The section of them suffices to tell the tale. There were three stages of stepped footings; nine courses of limestone in the first step, four in the second, seven of rather deeper courses in the third. Below these came, in the front of the pier, a pretty thick layer of gravel, on which the lower footings rested, while the gravel rested on a thin layer of clay below which was the rock. The gravel gave way to the pressure and tended to bring the piers over. But another influence which no doubt helped in bringing over the superstructure, and which has not been quite sufficiently emphasised, lay in the fact of the weight of the gables being carried on the outer rings of the arches. Had the design been arranged so that the gables should have rested more on the centre rings of the arches, they would not have assisted the turning over as they evidently have.

The bases of the piers afford a curious subject for study. A late Gothic base mould, a long raking set-off with a moulding under, covers the original Transitional base-course, and immediately beneath this, no one knows exactly when, a not very thick template of hard stone has been inserted, carried a considerable way back under the pier, and obliterating the moulding of the late Gothic base-course. This was evidently done with an idea of strengthening the base and arresting the overturning action.

There is more to be worked out in regard to this great front arcade yet, or might be if the materials for the study were not to some extent obliterated. There appears to be some reason to think that the present design was not the original one except in regard to the centre arch, which it will be

remembered is narrower than the side ones. Mr. Irvine, the clerk of works, who knows nearly every stone of the building, suggests that originally the front was of three equal arches, and that the side ones were rebuilt wider at a rather later date. Of the reasons for this one is said to be the existence of a footing-trench at right angles to the front and further inward than the present end wall of the porch; but the evidence of this is at all events not at present visible. What is visible, however, if looked for, is the fact that down the middle line of the northern pier, at the back or flat face, is a distinct break in the line on plan, the northernmost half of the back face of the pier bending slightly inwards towards the church, making a very obtuse angle with the southern half. Also, there are recognisable slight differences in the workmanship, the “touch,” as one may say, between the mouldings and ornaments of the centre and the side arches, as if those of the side arches had been consciously imitated from the centre one but under different handling. This is most noticeable in the dog-tooth enrichment, which, when examined closely, will be seen to be distinctly different in the two arches; that in the side arches being rather smaller, or more frequent in repetition in the same space, and less boldly executed. The theory has this in its favour also, that it explains what we have always thought the curious anomaly of designing the central arch narrower than the other two. The idea was that of a colossal porch of three arches; why not make them equal in span? The possibility, perhaps we may say probability, seems to be that they were so originally, and that the side arches were rebuilt shortly afterwards in order to extend the front and give greater breadth and dignity to it.

There is also some reason to think that the north gable is not, after all, such untouched thirteenth-century work as has been generally assumed, and that it was probably more or less repaired in the seventeenth century. In Gunton’s “History of the Church of Peterborough” (1686) the following passage occurs: “Benjamin Laney, bishop, 1660-62. His Presidency was not long, nor his hand short in expressing its benevolence towards the repairing of the Cathedral Church.” In the supplement to the book by Dean Patrick we read—“Bishop Laney his benevolence mentioned by Mr. G. was this; he gave an hundred pound towards the repairing one of the great arches of the church porch which was fallen down in the late times.” Some extracts from the Cathedral accounts give a general confirmation of this, though there is nothing to show exactly in what the work consisted—

“1661. March 15, Pd Thos. Mansfield 6 days mending the roof over the porch which the wind blew downe, 8/- His son the like, 8/-

1662. March. Old Saunders six days slating roof over the church porch y^e great wind blew down on Feb. 18, 8/- His son 6 days, 8/- 2 boys 6 days, 6/-

1662. Augt. 15. That John Lovell he agreed with by the Dean and Receiver at the price of 70l. to perfect the work of the porch and to sign such articles and bonds with the Dean and Chapter as the Dean with the Treasurer and some of the Prebends shall think fit.

1663. To John Lovin* for the arch of the porch 80l.; carpenter 21l. 4s. 2d.”

* This is no doubt John Lovell again, only the name written differently from carelessness.

These last two payments of 70l. and 80l. evidently refer to some considerable amount of work, which appears to be all connected with the same part of the building.

At the present moment the upper portion of the north gable has been taken down, including the rose window, and the stones are laid out in order on the next floor below of the scaffolding, where there is a complete floor the whole width of the porch and projecting two or three feet out from it, thus forming a tolerably spacious loft on which the old work can be laid out in sections as it is taken down. The following dimensions of the north arch and gable may be of interest:—

From the springing of the north arch to the underside of the great string is 23 ft. 6½ in. in centre.

From same line to top surface of socket stone of cross on gable 52 ft. 10 in.

Clear width of arch at present ... 25 ft. 10½ in.

Height of clear opening at present 16 ft. 6½ in.

The gable seems to be an equilateral triangle, but is in execution about 1 ft. 3 in. higher.

The circular window inside its outer order has a vertical height of 10 ft. 3½ in., but the breadth is only 10 ft. 1 in.

It is possible that this latter discrepancy may be intentional, in order to prevent the circle looking squat when seen from below; it seems too great a discrepancy to be accidental in a single feature in which it would have been so easy to take the same measurement both ways across. This may do as a piece of evidence for Professor Goodyear, for proving the existence of optical corrections in mediæval work.

The work on the gables, when seen at close quarters on the scaffold, produces the usual impression which mediæval work of this date produces when one can get to look at it closely, of immense vigour and boldness of execution and relief, both in the moulded and decorative portions, the latter more especially. Of course some portion of this effect of boldness arises from the weather-worn state of the features, which retain their high relief but have lost whatever finish in detail they might have had, and present a rock-like character which no doubt adds to the effect.

As far as has been ascertained at present it seems probable that the masonry of the piers is in fairly good condition and of good character internally, as it certainly is externally. Some small trial holes have been cut, partially banked up with clay at the mouth, and filled with water to the level of the clay weir. The water has remained held up in these very satisfactorily, which of course would not have been the case had the interior been of a rubble character. It is intended to take iron ties from the piers through to the main building, drilling the piers some little way below the springing, close to the central triple shafts. If the piers are generally in the sound interior state which the trial holes already made seem to promise, there is no doubt that with the underpinning and the iron ties they will be quite safe in spite of their being out of the perpendicular. But the state of the other two gables, though not so bad as the north one, is still very precarious in appearance, having regard to the curve on plan to which they have settled outward, and we are inclined to think that the work now being done on the north gable can hardly be the end of the necessary repairing. There is the curious question, too, on which we have not heard anything

yet—is the north gable to be reset plumb, or to follow the line which the other gables have taken? It is certainly a question to be asked. Our own opinion still is that if we could call up the ghosts of the original builders and show them the front in its present state, they would say, "*mea culpa*, we have indeed made a bad piece of building of it; will you rebuild it straight and everlasting for us, and for the honour of our name to posterity?" It must not be supposed, however, that there is the slightest intent of this kind on the part of the Dean and Chapter, nor indeed would it be easy to say how the funds could be obtained for such a work; we only mention it as what in our opinion would be a "counsel of perfection" in the case.

Internally the restoration of the crossing has been an entire success, and we have the satisfaction of knowing that the rebuilt crossing piers and the tower over them may be expected to stand as long as stone will last. Nor internally is the effect of renewal very marked or obvious. Externally indeed the tower does show as an evident restoration, and we can understand that some fear should be felt lest the rebuilt gable should assume as great an appearance of newness as the tower does. But we are satisfied that this is not the intention, and that every exterior stone which is not absolutely decayed will be replaced. Of course it cannot look as if absolutely untouched, but it may look with very little renewing.

In the rebuilding of the crossing piers one odd little memorandum has been left. At the springing it was found that the original Norman caps to the main shafts had been turned round into the wall, and a transitional cap moulding worked on what was before the back of the stone; a proceeding telling of a remarkable desire to economise stone. In rebuilding the piers the cap on the north-west pier has been turned round again, in order to form a record of the use that had been made of it. This is interesting, but we rather doubt whether it was the right thing to do; it is spoiling the unity of design for the sake of a little historic point, which might after all have been recorded otherwise; and design is really something, even in ancient architecture as well as in modern. In the choir the inlaid marble floor is beautiful in material and workmanship, but the design does not seem in keeping with the building; it is too Italian in character; nor can we much admire the baldachino, also a very rich piece of work, but more noticeable for its richness than for its beauty. To an erection of the kind there can be no objection whatever; but we do not feel that this particular design is a great success.

NOTES.

Memorial to Archbishop Benson.
The proposal to complete Truro Cathedral as a memorial to the late Archbishop of Canterbury has again been brought forward, and, as reported in the *Western Mercury*, a very influential Committee has now been formed to consider how this object can best be carried out.* It is proposed that a monument

* The Committee includes the Duke of Cornwall (the Prince of Wales), the Dukes of York, Connaught, and Cambridge, the Archbishops of Canterbury and York, the Duke of Westminster, the Bishops of London, Truro, Durham, besides others. The Hon. Secretaries are Archdeacon Cornish, Canon A. B. Donaldson, and Mr. E. Carlyon.

to the late Primate in Canterbury Cathedral should be the first object, and that the efforts of the Committee should then be directed to the completion of Truro Cathedral. It is of course fitting that a special monument should be erected in Canterbury Cathedral, but it will be wise to restrict this to a rather simple and inexpensive one if it is seriously desired to carry out the Truro Cathedral scheme. It appears that the present two bays of the nave can be completed and four bays added for 16,500*l.* This however will not complete the nave, which will still require two more bays and the narthex and at least the lower portion of the western towers. This will bring up the sum to about 45,000*l.* The whole building can be entirely completed, it is said, for 75,000*l.*; this appears to be based on an estimate from the architect, but we cannot understand how such a sum could suffice for its adequate completion according to the original design. However, what we would urge at present is that the erection of merely a further portion of the nave, though it would be one step further towards the completion of the cathedral, would be no recognisable "memorial." If the nave is to be the memorial, nothing short of its entire completion is worth attempting in that sense. If it appears impossible at present to raise enough money for that, it would be better to let the memorial be the completion of the central tower. On the other hand, if the funds needed for the entire completion of the nave can be raised now, that would no doubt be the best thing to do, as that would be the completion of the cathedral as an interior at all events. But three-quarters of the nave is neither one thing nor another, and cannot be regarded as a memorial.

The Crusade against Advertisements.
The "Society for Checking the Abuses of Public Advertising" held a meeting of members and their friends on Thursday last week in the hall of the Society of Arts; a meeting which was public in so far that reporters were present. The chair was taken by Sir Lepel Griffin. The main objects of the meeting were to come to a general agreement, in an informal manner, in regard to the following propositions:—

(1) A memorial or deputation to the First Lord of the Treasury or the Home Secretary to draw attention to the grave harm done by advertising disfigurement, and the certainty that the practice must spread indefinitely unless subjected to reasonable control; to urge the Government (a) to grant facilities for Mr. Boulnois' Bill, or (b) to introduce a measure of their own, or (c) to grant a Parliamentary Committee or a Commission to inquire into the subject as one of national importance.

(2) A memorial or deputation to the Chancellor of the Exchequer to ask him to consider the propriety of imposing a duty on exposed advertisements.

(3) The establishment of some concert between Members of Parliament who are favourable to our cause for the purpose of introducing (by way of amendments or instructions) provisions in restraint of advertising disfigurement into Railway Bills and similar measures.

The proposals were not formally put as resolutions, but a show of hands was taken as to the general agreement of the meeting in regard to the three proposals, resulting in an affirmative as to the first and last, and a very doubtful support to the second, which was practically dropped. In the course of the discussion, reference being made to the common criticism that it was hard on the farmers to attempt to deprive them of the rent for field advertisements, one speaker

stated from his knowledge that the rent paid by the owners of these advertising boards which are displayed along the lines of railway was really so small that it was absurd to reckon it as of any importance in a farmer's revenue, or support it on philanthropic grounds. If so, the only possible excuse for suffering the continuance of this disfigurement of whole lines of country is taken away.

The Law and London Water Supply.
The case of the Thames Conservancy against the South-west and Vauxhall Water Company, shows the curious state of the law in regard to the London water supply. By various agreements with the Thames Conservancy, this Company is entitled to take from the river in the course of any twenty-four hours 2,500,000 gallons of water, and no more. It appears, however, that more than this quantity has been taken, and the question thus arose, Was this legal? The answer depended on the construction of various statutes and the agreements in question, but the result was that the judge decided that the Company could only take the specified quantity. In deciding the point, the judge only had to consider the legal rights of the parties, not the necessity for taking more water, or the capacity of the Thames to yield it. But, to the ordinary mortal, it is curious to note that, apparently, parts of London might be quite insufficiently supplied, and yet the Water Company is powerless at present to increase the supply. The case appears to illustrate the necessity for settling the water question on broad and sensible lines.

The Civil Engineers' Home in Paris.
The French "Société des Ingénieurs Civils" have just inaugurated their new house, at 19, Rue Blanche, Paris. The building was designed by M. F. Delmas, engineer and architect. The floor of the large meeting room, which will seat 500 persons, is arranged so that it can either be a sloping floor with rising ranks of seats for ordinary meetings, or a flat floor for fêtes and receptions.

Thames Floods.
THOUGH it is satisfactory that during the recent persistent wet weather the Thames Conservancy have been able, by the proper use of their weirs, to prevent injury to health and houses by the overflowing of the Thames, yet it is wholly discreditable to this body that they have not taken proper measures to safeguard property and persons before this winter. It is obvious that with moderate care the floods which have proved so disastrous in the Thames Valley, and have so frequently depreciated house property in that district, might have been prevented. It shows that the Thames Conservancy is not a sufficiently representative body, since, if they had been, they would not have waited until the arrangements of Windsor Castle were threatened, and the whole district inconvenienced, before trying in a systematic manner to cope with these evils. However, it is better to take measures later than never, and we hope that the means employed during the present winter to prevent floods will have a permanent effect on the health of the Thames Valley.

The Picketing Case.
THE case of picketing in the glass trade which came before Mr. Baron Pollock and a jury last week, though it finally ended by the

defendants allowing a verdict to be given against them, is of importance. Not that it decides any new legal point, but it emphasises the fact that workmen are not to resort to any violence at the time of a strike, nor is it legal to endeavour to get workmen to break their contracts. The case turned entirely on questions of fact, and from the beginning it was obvious that the defendants were in the wrong. It is to the advantage of the artisans in every trade to have exemplified what they may and what they may not do during a strike. It is equally necessary that while the law should protect workmen in peaceful combination, it should safeguard with care the liberties of workmen who prefer not to be bound by the rules of trades-unions.

SIR HENRY MANCE, the new President of the Institution of Electrical Engineers, is the

inventor of the system of sun-signalling by the heliograph, which has been adopted for army signalling by many European nations. He is, however, best known in connexion with submarine telegraphy, and this he took for the subject of his presidential address last week. The address was most interesting, and he kept his audience fascinated to the end. The length of the submarine cables in existence is 162,000 nautical miles, and a fleet of forty-one telegraph ships is necessary to keep them in repair. It seems that the cables, which get incrustated at intervals with shellfish, are regarded by many marine monsters, such as sawfish, as their larder, and sooner or later their formidable teeth penetrate the core, and a fault develops. Whales have been known to get entangled in a cable, and Sir Henry once saw the dead body of an enormous whale come to the surface with the fractured cable. His few practical remarks about the affairs of the Institution deserve serious consideration. If the Society is to prosper, it ought to lay itself out to attract all who are interested in the development of electrical science, not only those interested in a special branch. After an existence, too, of twenty-five years, it is time that it had a home of its own.

The late William Morris. THE *Edinburgh Review* includes, in a number of unusually varied interest, an article on "William Morris, Poet and Craftsman," a title which very well expresses Morris's position and genius. The latter portion of the article deals with Morris as craftsman and designer, with his influence on household taste, and his views on architecture and on painting and the make-up of books. The review is more decidedly laudatory in regard to this side of Morris's work than in regard to his poetry; holding that there is room for a good deal of difference of opinion on the poetry, but for very little in regard to Morris's influence on decorative art, except in one or two minor details. The following quotation will give an idea of the tone of the article on this head:—

"The change which has taken place in the average public taste in this country in regard to the design of carpets, furniture, &c., and the general fitting up and decoration of dwelling-houses, is something extraordinary, and can only be appreciated by those who can remember the general appearance of an ordinary 'well-furnished' drawing-room some forty years ago—the staring white marble chimney-piece with the gilt timepiece of debased Louis Quinze aspect, the sprawling sofa-legs in

double curves, the big knobs of flowers on the carpet and hearthrug, and the terrible colours and realistic foliage of the wall-papers. About the present furnishing taste there is no doubt often a certain amount of affectation; it is adopted as a mere fashion by some persons who would follow any fashion that was set them; but the fact remains that whereas some thirty or forty years ago the general taste in England in such matters was perhaps worse than that of any other country, it is now on the whole better than that of any other country, except the United States; and even the Americans learned from us lately in the first instance, though they have perhaps in some respects improved upon our lessons. Even in the ordinary work exposed for sale in furniture shops the effect of the change is manifest; tradesmen, it is true, care nothing about artistic style, but they have been compelled to do their best to follow the change in the public demand. And this improvement in household taste is the direct work of Morris more than of any one else."

Building in the Transvaal.

THE *Deutsche Bauzeitung* has been publishing an article on the advisability of German architects and the German building trade giving some attention to the development of the South African Republics, and practically advising young men to try their fortunes in these countries. This advice may perhaps be equally applicable to Englishmen, though this will not be the view of the *Deutsche Bauzeitung*, and it is to be regretted that an architectural journal which has frequently shown a gratifying interest in things English, should allow the publication in its columns of sentences written with so much political feeling as is the case in the article in question (signed by Mr. O. Kalt-Reuleaux). We should add that, according to this article, it also appears that the Transvaal Government and the Orange Free States require railway engineers, but are making a point of taking only men who have had a German military training, and have, preferably, been officers of the Royal Engineers in Germany. We believe that what is said about the scope for German architects and engineers also holds good for the skilled artisan.

The École de Droit, Paris.

THE new buildings of the École de Droit at Paris are now entirely completed. They form an "island" isolated by the Place du Panthéon, Rue Cujas, Rue St. Jacques, and Rue Soufflet. The furnishing and arrangement of the lecture theatres is now in progress. With this building, and certain supplementary offices, the whole of the establishment of the Faculté de Droit is now provided for. The architect is M. Lheureux.

The County of Norfolk.

THE *Quarterly Review* contains an interesting article on that exceedingly interesting county of Norfolk; an article to a great extent historical, but not omitting the artistic and architectural aspect of the county, and the charm of its scenery, which is sometimes thought little of because the country is so flat; but "though mountains are wanting, there is hardly any other phase of English landscape that may not be found in this land of Cromer and Constable. . . . Nor must we forget the old-world aspect of the country towns, such as Lynn, Yarmouth, and parts of Norwich itself, with their narrow streets but little changed since the fifteenth century, with their many gables and high-pitched red-tiled roofs, and here and there an old coaching inn with its

sign of wrought-iron work, and its courtyard and wooden gallery standing as it stood when seventy coaches a day passed along the high road." The writer of the article is obviously a lover of Norfolk, otherwise he would surely not have quitted the "sweet and civil county" without a rough word for the wretched way in which its roads are kept, and their extraordinary and bewildering divagations from the direct line of travel from place to place.

Mr. Thorne Waite's Drawings.

THE collection of water-colour drawings by Mr. Thorne Waite, at the Fine Art Society's Gallery, presents a certain amount of artistic tautology, it one may use the expression; the material is rather limited, and a haystack and a "distance" recur rather often as the elements of the scene. The "Cornfield on the Brighton Downs" (11) is very beautiful in the aerial treatment of the distance, which is contrasted and kept back by the brown belt of trees and shadowed land near the foreground; but in "Haymaking on the Downs Findon" (16), a composition of the same character, and as good, the same brown belt appears; in short, either drawing would impress one more if seen apart from the other. In "Shoreham and Brighton" (19) larger and somewhat more elaborate composition, we find the same incident again though this also is in the main a very fine landscape. What is perhaps the finest thing in the room, "Autumn: Steyning" (53) shows again something of the same device in composition, though here the dark band formed by the line of trees is taken more through the centre of the picture and further from the foreground, and the whole composition of this scene is most effective as well as the breadth and unity of style displayed in it, the truth of autumnal effect and the light aerial manner in which the rainbow is touched in. Among others which are of special interest is the long low sketch under the title, "Cornfield: Horsham Valley" (22), a powerful effect of stormy sky, treated in a grand manner though on a small scale, and giving the idea of a study for a large picture. "Aldborough" (43), smaller sketch, has the same kind of power. "Haymaking, Bradgate" (54) and "Evening" (58) are two others which have a special individuality about them; the latter for the manner in which the distance seems to fade away under the faint evening light. Among the larger drawings two views on the outskirts of Banff (28 and 38) are specially noticeable for the fresh open-air effect and the freedom of their execution.

A Graceful Room to Art Students.

A LADY, who desires to remain anonymous, has offered to the École des Beaux-Arts to place a villa belonging to her, at Neuilly, at the disposal of any three art students whom the Ecole may annually select as being at the same time among the most meritorious and among those most in need of assistance. The villa is near the Pont du Courbevois and is we believe a former residence of no less a person than Pascal. As Thackeray makes one of his characters say in English French, "a good action gains to be repeated, and the present one might be a hint to some persons in England who have small houses on their hands which they cannot make use of, and who might be able and willing to benefit struggling artists in this way.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

PRESENTATION TO MR. ARTHUR CATES AND PRESIDENT'S ADDRESS TO STUDENTS.

The sixth ordinary general meeting of this Institute took place on Monday at No. 9, Conduit-street, Professor George Aitchison, A.R.A., President, presiding.

The Late David Brandon and his Bequest to the Institute.

The minutes of the last meeting having been taken as read,

Mr. F. Warren said that, as an old pupil of the late David Brandon, and one of the executors named in his will, he had much pleasure in announcing to them that he had left a bequest of 1,000*l.* to the Institute, in which he took so much interest in his life, and where he was so highly esteemed. The bequest, which was free of duty, was worded as follows:—"I give to the Royal Institute of British Architects 1,000*l.* to be added to the funded property of the Institute, and the income arising therefrom to be applied at the discretion of the Council for the time being towards the advancement of architecture." Mr. Brandon had already given earnest of the great regard he had for the Institute by his munificence in the matter of the Institute Library Catalogue, presented to members in 1889, the cost of compiling, printing, and publishing this work being entirely defrayed by him. The deceased was elected an Associate in 1839, and a Fellow in 1840, and at the time of his death he was Senior Fellow.

On the motion of the Chairman a vote of thanks was tendered to the survivors of Mr. Brandon for his bequest to the Institute. They almost all knew Mr. Brandon, said the Chairman, and they were aware that he was a most amiable and polite gentleman, one of whose objects was to further the useful work of the Institute. He (the President) had known Mr. Brandon for many years, and amongst the deceased gentleman's other good works was his payment for the printing of the whole of the catalogue of the Library.

Presentation to Mr. Arthur Cates.

Mr. Waterhouse then rose and said that that part of the work of the Institute which had to do with the examinations was a serious and anxious undertaking, and although it was only of late years that it had assumed anything like its present dimensions, some idea of its importance might be gathered from the fact that 780 candidates had already passed the examinations, while upwards of 1,000 more were at present engaged in preparing for the second or the third of the three progressive steps into which the examinations were divided. Or, to put it in another way, comparing the old Voluntary examination with what followed, forty-three gentlemen passed the Voluntary examination between the years 1863-81; while since 1882, when the examination qualifying for Associateship became obligatory, 737 had passed, which total did not include the 1,086 before alluded to, who were now preparing for the Intermediate or Final examination. These gentlemen were, of course, not exclusively from London: they were from all parts of the country and some from distant corners of the Empire. So that this work of the Institute, however great an ordeal to those who submitted to it, seemed to possess an attraction after all, and when it was considered that, independent of the intrinsic advantages appertaining to the examinations themselves, it was only through these obligatory examinations that membership of the Institute could be attained by the youthful practitioner, they would cease to wonder at the enthusiasm with which the initiative of the Institute in the matter had been responded to. On whose shoulders did the task fall of initiating and carrying out this, the greatest work of the Institute as he did not hesitate to call it? On many shoulders, no doubt; but on no shoulders did it fall so heavily, and perhaps none were so well able to sustain it, as those of Mr. Arthur Cates. Mr. Cates had shown a great interest in the subject as early as 1855, and in 1877 he became identified with the Examining Board. When the examinations became obligatory in 1882, Mr. Cates was appointed Chairman of the Board, and he elaborated the scheme for the progressive examinations in 1889. His position as chairman he retained until last year, when for prudential reasons, his health seemed to demand his retirement. It was doubtful if, without Mr. Cates's influence, the work he had referred to could have been carried on with the success which had hitherto

attended it. Mr. Cates's tact and courtesy had always been perfect, and his ready sympathy, accorded to colleagues and students alike, had been most conspicuous. Unsuccessful candidates had returned to thank the Chairman of the Board for relegating them to their studies for a period, and they were stimulated to greater exertions, and were enabled to pass later examinations with credit to themselves. Mr. Cates last year had most generously offered a prize in books to the value of ten guineas, to be given at each final examination, now twice in the year, to the candidate who sent in the best testimonies of study, himself passing the examination. He (the speaker) had endeavoured to show the gratitude the Institute ought to feel, from the oldest member down to the latest accession to its ranks by way of the examination-room, towards Mr. Cates for his services on its behalf. He was now most happy to be the medium of the past and present working members of the Board of handing to him a testimonial, which was intended as a slight but sincere expression of their personal regard for him, and of admiration for the way in which he had presided over their deliberations for the last thirteen years.

Mr. Waterhouse then presented Mr. Cates with a large silver bowl, upon which the following inscription had been engraved:—

"To Arthur Cates, Esq., for fourteen years chairman of the Board of Examiners (Architecture) of the Royal Institute of British Architects, from his colleagues, as a mark of their esteem in recognition of his untiring zeal in organising and successfully working the examinations, November, 1896."

Mr. Waterhouse, continuing, said that his colleagues desired him to express their unceasing regret that they were to see Mr. Cates' presence in the chair no longer, though they hoped it would be long years before he ceased to take an interest in their proceedings, even to giving them his varied counsel and advice. The offering was from past and present working members of the Board alone, but no doubt many other members of the Institute would have liked to have joined in the presentation had they been invited, for if a great work, well carried out, deserved recognition for its success, then so did the work which Mr. Cates had carried out in establishing the Institute Examinations. The bowl was just an ebullition from the hearts of those who had borne with Mr. Cates the burden and heat of the day, and there never was a testimonial so spontaneous and so generous. Mr. Cates had seen his good ship of Obligatory Examinations (which he christened himself) built on lines for which he himself was in large part responsible, fairly launched and fully equipped. She had gone forth on many conquests, and had returned freighted with the quickened intelligence of their younger brethren. That ship had met with no misadventure so far. It would be remembered that at first those who disapproved of the venture were scandalised at the thought of testing candidates in their powers of design, and had they (the Institute) done anything to force systematically a particular school of architecture upon the exclusive attention of the candidates there might have been some reason for that anxiety; but such was not the case. Their desire was to educate their candidates into some knowledge of what made for good design, apart from all questions of style—some insistent for the architectural fulfilling of requirements; for the fitness of things; for the adaptability of means to ends, and an absence of eccentricity and conceit. Their desire was that candidates should keep in view the great end of architecture, viz., that of promoting the amenities of human life, and they did not fear to award a good proportion of marks to those designs which displayed thought and judgment and that sense of rhythm and repose which were acknowledged to be characteristics of good architecture. In conclusion, he congratulated Mr. Cates most heartily upon the cordial relations which subsisted between him and the Board of Examiners, and also upon the success of his efforts. He trusted that many years would be given Mr. Cates to watch the growth and development of his work—a benefit to those who came under its influence, to the Institute, and to architecture at large.

Mr. Arthur Cates said that he thanked them all for the very kind way in which they had received the remarks made by Mr. Waterhouse, and he thanked that gentleman and those who had been with him in the matter, for the testimonial which had been presented to him. Whatever might have been his own individual efforts, they would have been of little account had he not from the first received the kind and sympathetic aid from

many friends who encouraged him to proceed, and with whose assistance the Obligatory examinations were established. The support that he received from the Board was of the most encouraging character, and year by year that Board adopted the policy of gradually stiffening the examinations—gradually raising the standard, until a standard was obtained which enabled and justified the introduction of the Progressive examinations. He hoped that as time went on that standard would be not only maintained but increased, so that the great results which had followed the establishment of the Obligatory, and had already followed the introduction of the Progressive, would be continued. There were exhibited that evening some testimonies of study by Mr. Anderson, the son of their recent President (and a worthy son of a worthy father), in the Intermediate examination, which ten years ago would have been considered remarkable, but now, though the drawings were so admirable, others followed closely behind. He did not know if the student, who benefited from the examinations, quite appreciated the amount of labour and the amount of pains which the Board of Examiners had devoted to the matter. He was surprised at the sacrifice of time which the members of the Board had given to the conduct of the examinations, and in the excellent advice which they had given to the candidates. In them the success of the examinations was due, and to them the students and those who had passed were deeply indebted for the time that they had given without remuneration. They had had some reward, though, for they had seen the result of that sacrifice in the excellent work which the students had produced, and in the great advance in knowledge shown by the candidates, and the general improvement of architectural education. In addition to the members of the Board who had rendered such valuable services there was one, alas! no longer with them, who had given them so much valuable aid, viz., their dear friend, W. H. White. To him they were indebted for work and assistance in regard to the examinations which could have been given by no one who was not thoroughly acquainted with the details of the examinations. They were also under great obligation to Mr. H. G. Taylor, who, by his care and attention and calm appreciation of difficulties, had done great service in working out details in regard to the examinations. More than fifty years ago he (the speaker) became a pupil in the office of Sydney Smirke. In those days the term of pupillage was five years; it had been seven. It was reduced to five, and it was now three. At that time parents paid a premium of 300 or 500 guineas for "the run of the office" for their sons, who, if they chose, could work, and, if they did, would save their masters the expense of a paid clerk. They had no systematic education, and though there were lectures at various institutions, there was no systematic arrangement. In 1855 the Architectural Association memorialised the Institute on the subject of architectural education, which led to a great deal of discussion, and the Voluntary examination was not established until 1861. Now, however, the words of the memorialists of 1855 were realised, and they now gave students guidance in their studies—on or before entering an office, during their pupillage, and during the critical period between the expiry of their articles and commencing practice—not before obtainable. Not only in England, but in other countries, there had been a great advance made in the education of the architect, and he would refer to what had been done in the United States, where Professors Babcock, Ware, and others had established systems of education and University courses, which must produce a very great effect upon the future of American architecture. In a pamphlet which he had circulated in 1887 he gave full particulars of these courses, and in the evidence which he had given before the Royal Commission on the Charter of the Gresham University in 1893, he entered into detail on the subject, as did Messrs. Slater, Emerson, and McVicar Anderson, who had endeavoured to get architecture treated as a separate subject in the University course. The result of that evidence, he was glad to say, was that the Institute had been recommended, in the report of the Commissioners, for the privilege of nominating a member of the Senate of the new University—a very important concession—and placing architecture for the first time in the position which it should occupy in every University course. The question of design was a matter of vital importance, which had been much misunderstood and had led to a considerable amount of opposition to the examinations when they were first started.

There was, indeed, a very great danger in all educational schemes—a great peril of Academic influence, which had indeed affected some countries, and which, he hoped, would never occur in England. England had of late years attained a position amongst the architectural societies and bodies of Europe. In all the communications that he had had with architects in America or France, Germany or Italy, there had been one expression of admiration and of praise for the individuality, the independence, the originality of English architecture, and those who studied the architectural journals of other countries and compared the works illustrated in them with the work produced in this country, would fully appreciate how much, how far, England stood before all other countries in that freedom, in that ability of design—not in great public buildings always—but in the general domestic work of the country. To imperil that by introducing any academic system would be most unfortunate; and it was that academic influence—that one style or mannerism—which must be carefully avoided. Hitherto it had been: he hoped that it would be—and that nothing would be done to imperil the independence and facility of design of English architects, but rather that what was now being done would aid in improving that, and would give to those who desired it an opportunity of mastering a knowledge of the grammar and syntax of architecture before they attempted to compose great works in it. He had never been an advocate of competitive examinations; the examinations were simply tests of the standard that each candidate had reached; a standard of merit to be worked up to, and only to be obtained by close study; a guidance for education and a standard by which the knowledge of the student might be ascertained. Still further, they made no pretence that the examinations would make an architect. The examinations provided the minimum; they were not conclusive, and there was no finality in them. The most successful student, by passing the examinations, still remained only a student; he had simply acquired the power of learning, the power of study, and he must use that knowledge simply as the basis for further study in order to place himself in a position as a worthy member of the profession and of the Institute. The great good that the examinations had done was the widespread influence that they had had in raising the standard of education throughout the country.

President's Address to Students.

The following address to students was then read by the President:—

"It has been the custom for the President to say a few words to the students on these occasions. You have had from Mr. MacVicar Anderson, when he was President, some admirable remarks on planning, besides those on professional brotherhood, and most excellent advice from my learned predecessor Mr. Penrose, who found out for us all and the world the optical refinements of Greek architecture. He was trained in the reverent study of the antique from the actual remains of Greek and Roman structures, and is not less learned in those of the middle Italian Renaissance, which he has also measured, and we have heard from him that Palladio alone of the Renaissance architects had learned the secret of the grand Roman style.

However much I may be inferior to my predecessors in weight and eloquence, I think I may say that I cannot yield to them in my ardent desire for the improvement of our English architecture, nor for giving all the advice and all the knowledge that can be imparted in a short speech to the students, in whom we see the future architects of our country.

No teaching will give genius or parts to learners, but I think I may say, without fear of contradiction, that untiring diligence is an absolutely necessary qualification, and this has been so evident to those who possess genius, that Buffon defined it "as the art of taking trouble," which we all know it is not; but diligence is so absolutely necessary for the development of genius, that it is excusable to confuse the necessary servant with the master.

I would call your attention to the works of Lord Leighton now being exhibited at the Royal Academy, and also to the large collection of his studies at the Gallery of Fine Art in Bond-street. The studies there are but a portion of the innumerable ones he made, and you will see by these that the exquisite perfection he attained in his finished pictures and statuary resulted from the most careful and accurate study of nature; that there is not a form, an extremity, or a piece

of drapery that was not perfectly studied before it was painted or modelled.

Necessary as indefatigable diligence is, the longest life is only too short for the attainment of even a competent knowledge in the master art we profess, which embraces so many various arts, and requires a knowledge so wide and so various, and qualities of mind that are rarely found in one person. It is a great saving of time to have a map, a compass, and a knowledge of the streams and currents, of the reefs and sandbanks, before we embark; not only to prevent shipwreck, but also to avoid great deviation from our course, so that there may be no waste of labour, however strong and indefatigable we may be. Some of the wisecracks of the last century, during a dearth, employed labourers to dig holes in the ground and fill them up again, and although this kept the labourers' muscles in training and prevented the loss of habits of diligence, the crop that should have resulted and rewarded the labourers for their exertions was non-existent; nothing is more disheartening than useless labour. Many of my own early years were wasted in inking in drawings, and I could not help wishing at the time that I had been a shoemaker, for stitching shoes could not be more irksome, and would have prevented some people from getting their feet wet or worn. The creation of something useful would have mentally compensated me for the irksome labour, while no one was benefited by my inking in drawings.

The wisest saying of the Delphic oracle was, 'Know thyself,' and it can be as usefully applied to themselves by those who study architecture as by others in the various exigencies of human life. It is obvious that if one knows oneself one can best choose the part of architecture most fitted to one's aptitudes, and one can map out those parts that are essential to be learnt; by this means not only is much useless labour saved, but that worst of all shipwrecks is averted, the having embraced a profession that is not congenial, and for which one finds one's capacities are not fitted, and this, too, when it seems too late to throw up the profession. I recollect hearing of a pupil of Laing's—the Laing who built the Custom House—who found architecture so uncongenial that he embraced the law, and became a Vice-Chancellor; as Alfieri the barrister became a celebrated architect. It is within the knowledge of most men that many of those who have become distinguished have changed their profession; but these men have mostly had a natural aptitude for the subject they eventually embraced and excelled in.

To those unfortunates who have embraced architecture but have no aptitude for it—nor, as far as they know, for anything else—I can only recommend the behaviour of Scotchmen under the circumstances. I think I may say that Scotchmen are the only people of the United Kingdom who have a good education, and by this I mean a moral education; each man who finds himself in this position says to himself, 'This is my only chance in life; I have no natural aptitude for it, but I must try by application and striving in season and out of season to make up for my lack of aptitude; and you rarely find that they fail in whatever walk of life they have embraced, for they mostly gain a good position.

Youth is naturally enthusiastic and ambitious, and would fain know everything connected with its occupation. Most students have probably read Bacon's programme of mastering all human knowledge; but we are not all Bacons, and had Bacon lived now, when the memory wanted for one small branch of science is greater than that given to most men, he would never have set out on so impossible a quest.

A student, for example, has to see what a column or stanchion will safely bear; and so he wants to know the laws of flexure, and find himself referred to Poisson; he gets Poisson's book, but finds that to understand it he must master the differential calculus; he gets a treatise on that, but finds it would take him his whole life, if he could learn it then; yet as the multiplication table is to arithmetic, so is the differential calculus to the higher branches of mathematics; he therefore comes to the old conclusion 'that everybody cannot do everything.'

It is, perhaps, a laudable ambition to take one of the great architectural geniuses as a pattern, but you should have common sense enough to calmly and dispassionately review your own powers and capacities before entering on a serious attempt at imitating his achievements. There is only one genius in several millions of people who is blessed with the capacities of the great architects, who has the making of a Brunellesco, an Alberti, a Peruzzi, a Bramante, a Lionardo,

or a Wren, and I only wish more of those who find themselves incompetent would abandon the profession. The average capacity of mankind is not great, and yet each one wishes to be the bright particular star of the world. Each unit of mankind cannot endure the idea that his capacity is not equal to that of the greatest genius; but he will admit that he is deficient in industry, and in that judgment which guides a man to concentrate himself on the principal aim of his life. This shows us one of the weaknesses of humanity, to be ashamed of admitting that which is a pure accident, over which we have no control; and to admit, without wishing, our neglect of those things that are in our power. It is the fashion to encourage the belief that all men are born with equal capacities, as it is to suppose that every epoch is equal in mental and moral power, and that the difference depends on teaching, as if cutting and polishing a flint stone would turn it into a diamond. I recollect Roeluck talking this sort of nonsense at Sheffield, and after pointing out what John Stuart Mill could do at thirteen years of age, who had then mastered Greek, Latin, and mathematics, he said:—'But if John Mill could do what he described, why may not John Brown do as much, or nearly as much?'

The subjects that seem to me of the utmost importance are—firstly, the recognition by students and their teachers that architecture is a structural art, and that until this is realised and acted on no great improvement is likely to take place. All the materials we use have weight, and in their ultimate position have size too, and in the positions they are placed have, as well as downright pressure, cross and diagonal strains. All these strains occur in almost every building, and must balance one another, or else the building becomes deformed or ruined, or tumbles down. The theory of the strains that produce equilibrium is called statics. The architect with the keenest observation, the strongest memory, and the greatest experience is a mere child, compared with one who is a master of statics and the strength of materials; secondly, we all admit that without proportion buildings and their parts are unsightly, and we endeavour to train the eye to good proportions by studying classical buildings; their proportions, however, mainly give the statical results gained by experience at the time the buildings were erected; if these studies are pursued too long they are apt to make us fall in love with a state of knowledge inferior to that which we now possess.

That friend of our youth, Mr. Ruskin, partially enlightened us on this subject by pointing out the infinite variety of proportions in nature, most of which we find agreeable to the eye, and we now know that what may be called the fundamental proportions depend on the weight to be carried, the strength of the material, and its height and size. Statics allow us to go further, for, knowing the strains to be borne, and where they come, and the strength and peculiarities of the material, we may mould it into various forms, either by cutting away useless parts, or by adding to the bulk in certain directions. By statics we know where there is a change of function, and where various strains are concentrated, and these parts call for some expression, and the only way of expressing them architecturally is by moulding.

The proper arrangement of each chamber for the duties it has to perform, the collocation of the different chambers, and the access to them by means of halls or passages without unnecessary waste of room, is commonly denoted by the word 'planning,' and in reality it includes much more, as, for instance, their proper lighting, aeration, ventilation, and warming; in fact, the enabling us to make the different portions fulfil their ends is the foundation of all good architecture. But man wants more than this; he wants not only certain parts to be more striking than others, but to make the whole have such an external appearance that it tells us the use of the building and evokes the emotions proper to its use. All we have to deal with outside are walls and roofs, but we may want porticoes and porches, towers, lanterns, spires, and domes for certain uses and under certain circumstances.

Inside we have much the same elements, but we have as well, floors, ceilings, and staircases, and although we always want floors to be flat, there are circumstances where steps are required to give elevation and dignity to certain parts, and there are also certain shapes which add beauty or dignity to the rooms, and if the ceiling is vaulted or domed we may want it made striking or beautiful.

One particular point is usually missed in speaking of architecture—the skill in combining the

junctions between forms of diverse or opposed shapes, and of marking the different changes of function where they occur, or of marking the concentration of strains. These, as I mentioned before, are accomplished by moulding, and these mouldings are to give us varieties of light and shade, and to have a sort of logical sequence in their forms. The Greeks were the first and the greatest masters of mouldings, which were, of course, shaped to be played on by brilliant sunshine and in a clear air. The Roman mouldings were only badly-designed Greek ones with infinitely less variation. The second masters of moulding were the Gothic architects, who designed them for the misty climates and feeble sunshine of the countries they lived in. They were as logical as the Greeks, though destitute of their refined artistic sensibilities; and since then the study of profiling has been abandoned.

I say nothing of sculpture, in which I included naturalistic as well as vegetable and animal forms, for this is another art; but it must be exercised with due regard to the architecture, and must neither be incongruous nor destroy the scale of the part, the chamber, nor the building. You cannot expect sculpture from architects, as it takes the life study of an artist, and architecture alone may be said to embrace the life studies of many men—men of science, men of ingenuity, and men of art. When, however, the architect is so transcendent a genius that he can master his own art and that of another artist, he excites our wonder and our admiration; but to be a bad architect and an execrable sculptor too is not a combination to be admired, and still less to be proud of. It merely entitles the possessor to Martial's compliment, who called the amateur who did so many things nicely a great meddler.

There are one or two more points that I must mention, but perhaps the influence of the age is the most important; in this one direction is what we call the taste of the nation, and it inevitably defines the individual taste of the artist. The old proverb says, "The mind of man is greedy of novelty," and novelty in his life has, no doubt, a certain charm, but it should only be that difference from what has gone before which must inevitably follow from those thousands of things, circumstances, and temperaments that distinguish one age from another. It shows us, too, how ridiculous antiquarianism is when it takes the place of architecture. We are not Greeks, Romans, nor Byzantines; our age is not Romanesque, nor Gothic, nor Renaissance, and if the architecture of the day is to charm the age it must discover and embody the desires of the age. The paraphrasing of deceased styles only charms us in so far as our civilisation approaches that of the date of the building paraphrased, and the building wants novelty too. We naturally do not admire Gothic paraphrases, as the desires of those times are so far removed from our own inclinations. The Gothic architect's passion for geometry is very far from being ours.

The nation, too, has lost all desire for art which is the embodiment of ideas, by which alone the bulk of the people can be taught; now a little scientific jargon, embodied in a newspaper paragraph, or an Act of Parliament, is expected to fulfil the function of art, but any person of observation can see it does not. Art, which should proclaim to the most uneducated the various estimable advantages obtained by being free, by having a voice in the election of its representatives, by belonging to a great nation with colonies, by free teaching, by free surgery and doctoring, by free lunatic asylums, by the free housing, clothing, and feeding of aged paupers, by free libraries, by public parks, gardens, and baths, by free museums and free picture galleries, knows nothing of it, because it is not brought to their eyes by art; in fact, so far is this from being the case that all these benefits, if not unknown, are unnoticed, because art is suppressed in all the buildings which minister to the people's wants. Such buildings should be of the most impressive appearance, and adorned with sculpture, expressive of their use. Splendid tombs and monuments in public places should perpetuate the memory of the great warriors and statesmen, the great inventors and industrial leaders, the great poets, the great writers, musical composers, painters, sculptors, and architects, whose works will make the nation live in the memory of the world when its greatness and glory have departed.

Architects can but slightly modify the desires of an age, as there are so many thousand things, conditions, and influences that combine to mould public taste. All they can do is to have the attainable knowledge and skill required for their art, and if invention in architecture is extinct we

must try to recreate it. I hope it is not extinct, but if it be we still have the mountains, rocks, and peaks, the caverns and grottoes, the woods, the trees, and the plains, the rivers and seas, the clouds and the heavens, to stimulate us to embody the lessons we can learn from these natural effects; not to speak of the lessons we can learn from the past architectures of the world. I cannot help thinking that if the horn architect should arise and be single-eyed in his devotion to this grand art we might hope to see it again flourishing, as in the grand epochs of the past. Antiquarianism is not content with gnawing out the vitals of architecture, but is destroying our faith in its being still alive.

Another of the points that wants attending to is the study of the means employed by the great architects of the world to evoke the emotions proper to the use of buildings, and particularly to those dedicated to the adoration of the Almighty. Students are naturally apt to seize upon features that they admire and use them in the most incongruous way, as if the adornment of a temple or a palace were appropriate to a labourer's cottage, a coal store, or to a tailor's shop, whose owner makes the human form divine ludicrous and ignoble. Elegant simplicity of appearance should be the architect's aim for most of his buildings, as his aim should be to produce horror and repulsion in a prison.

Our great object now is to be sure that we have done our best to learn all that we ought to learn. How delightful would it be if we were as sure of our progress as were the Gothic architects, and instead of being as careful of every scrap left by a semi-barbarous age, as if it had come from Heaven, and were sacred, we could use with a light heart a good stone, as they did, for our own work, and build in their worked part which we have surpassed. I may say this was not confined to Gothic days; the Greeks used the sculpture they had surpassed for filling in holes and trenches, and Mr. Purdon Clarke showed me a Saracenic wood block that had once formed a door-head in a destroyed mosque, the back of which had been used for the work of the day, while the carved part, worked in a former age, had been built in.

If the Institute wants to start this work of fundamental improvement, it will see that its examinations are not confined to students alone, but are to be passed by every one who joins it, and that everything that is not architectural is excluded from the examinations, and that those things alone are included that every architect ought to know to be worthy of the name. No one can say that the arts of surgery and medicine have not enormously advanced since the surgeons and doctors had to pass a strict examination in the subjects of these arts. No sane person can suppose that if architects were required to show that their knowledge rested on a solid foundation of science and aesthetics that architecture would not rapidly progress."

Designs and Drawings Submitted for Prizes and Studentships, 1897.

Mr. W. M. Fawcett then briefly reviewed the designs and drawings submitted for prizes and studentships. The chief prize, he said, for which competition was asked was undoubtedly the Soane Medallion, and the *cool* which accompanied it. Soane was chiefly interested in Classic work, and he (the speaker) believed that the Council had nearly always been particular to give subjects which could well be worked out on Classic lines. The "Market Hall," given this time, had met with but little Classic response; but as no rule was laid down on the subject, and students were left to their own feelings, it was not surprising that the numerous examples of quaint old Medieval and later work had brought ideas to the mind, and dispelled the visions of really early Classic work. Mr. Fawcett then referred in detail to some of the designs submitted for this and other prizes, in the course of which he said that though he had let his criticisms, perhaps, fall a little into fault finding, he could not pass to other work without supplementing these detailed remarks with the more general statement of his pleasure at seeing such a vast amount of really good work submitted for the prizes. There was a great deal of good design, well thought out and well expressed. Speaking of the measured drawing competition, he said that the competition had produced three sets of drawings. Two of these competitors had taken St. Mary-le-Strand, and the third Melrose Abbey. The two first had chosen a subject that appealed to nearly every one as one of the most beautiful of the churches in London, and both students would have gained a good deal by their work, though they had not

gained the prize. The Melrose Abbey was a fine piece of work, and the larger scale drawing of the south transept was done with a strength of line and vigour of execution that showed the energy of the draughtsman. The larger scale foliage was also given with remarkable vigour. If he might make a deprecatory remark on such a set of drawings, it was with regard to a not uncommon fault in the smaller scale drawings of young draughtsmen. In setting out tracery, &c., the fact had not been calculated that the thickness of the outline counted to the tracery while all was clear, but it counted to the shaded part when the spaces were darkened, so that the tracery was made to appear thinner and weaker than it was. This, however, was a minor fault which did not lead to any great misapprehension, and he mentioned it as one on which young men were often tripped up on setting out work of this kind.

The President then distributed the prizes and studentships to the successful candidates (for list, see our last issue, p. 57).

It was also announced that the next meeting would be held on the 1st of February, when a paper would be read, under the management of the Art Standing Committee, by Mr. Alfred Gilbert, R.A., on "The Sculptor's Architecture of the Renaissance."

The meeting then terminated.

THE ARCHITECTURAL ASSOCIATION:
DECORATIVE PLASTER WORK.

An ordinary fortnightly meeting of this Association was held on Friday last in the Meeting Room of the Royal Institute of British Architects, No. 9, Conduit-street, Mr. Bressford Pite, the President, occupying the chair.

The minutes of the last meeting having been read and confirmed, the following gentlemen were elected members, viz., Messrs. E. F. M. Fims, S. H. Evans, W. V. Morgan, and A. W. Waddington.

Mr. Bonister F. Fletcher, senior honorary secretary, announced the presentation to the Library, by the proprietors of the *Builder*, of "The *Builder* Album of Royal Academy Architecture for 1896." He proposed a hearty vote of thanks to the proprietors, which was agreed to.

The Chairman said that Mr. Seth Smith, in furtherance of the suggestion he made in the paper which he recently read before the Association, had forwarded to the committee some suggestions of the conditions for a competition for a prize of ten guineas which he proposed to offer. The committee would consider those conditions, and announce their decision at a subsequent meeting. He (the Chairman) had also to state that Mr. Fellows Prynn, who was one of their vice-presidents last session, had been nominated by the committee to fill the vacancy caused by the resignation, as vice-President, of Mr. John Begg. The committee would nominate at the next meeting, in accordance with by-law 35, a gentleman to fill the vacancy on the committee caused by Mr. Prynn's re-assumption of the duties of vice-President, and they proposed to nominate the gentleman who was next on the election list last session, but who was not elected.

Mr. E. Prioleau Warren then read the following paper on "Decorative Plasterwork":—

Among the subsidiary arts with which the architect has to deal there are few of more general application or importance than that of the plasterer. So much of our construction nowadays is of necessity concealed, and plaster is so handy a means of concealment, and indeed, when rightly used, so excellent a one, that its use in the interiors of buildings is inevitable.

It is a material so sympathetic and lending itself so easily to decorative treatment and the repetition of ornamental design, that a vast amount of decorative plaster work—good, bad, and indifferent, and I fear the last two adjectives are fully entitled to qualify two-thirds of the work—is being daily done. There is none of us who can well escape its use even if he wishes to do so. It therefore behoves all of us who have to do with building and decorating to consider and to learn what can and should, or what cannot and should not, be done with plaster work; and it is much more with a desire to direct the attention of the younger members of my audience to some of its uses and abuses, than with any hope or intention of giving technical instruction, that I venture to appear before you.

One of the first considerations that borders the subject of plaster work is that of its fatal facility—which constitutes a great decorative danger

Its comparative cheapness, its possibilities of rapid workmanship, and the endless and easy opportunities of reproduction that it affords—in a word, its immunity from the natural and powerful restraints that cost and structural necessities impose in most other building materials—seem to me in the case of plaster work to render self-imposed restraint and careful discrimination more than ever necessary to the designer.

We are all of us, unhappily, familiar with the incontinent cornices of amazing horticultural suggestion, with their basketwork and lattices, their vines and passion flowers insecurely supported by internal wires, which bedecked the chief chambers of our fathers. We all know, and none of us, I hope, love, the weirdly confectioned "centre flower" with dependent "gassier" that formed the cherished ceiling ornament of the British householder in the fifties, the sixties, and even the seventies, and dropped, in intermittent fragments, into his tea-cup or his soup-tureen. So fearfully and wonderfully made, so all-pervading were these adornments, that they hegot a natural nausea in time, a nausea that—as often happens in such cases—communicated itself in mental connexion to the innocent material that they vulgarised, causing sober folk to forego an ornament of any kind in plaster work, to find a safe and wholesome refuge in absolute negation, absolute plainness. This was, of course, only a partial revulsion, and was accompanied or followed by "revivals," as they are called, of many types in plaster work, as in all architectural design. The beautiful ceilings and friezes of the seventeenth century, which made our country famous for its plaster work, were studied to good purpose by the very few, to evil by the very many, and "Elizabethan" and "Jacobean" travesties became nearly as rife and rampant as the exuberances of the centre flower period. "Revivals" of Italian, French, Saracenic, indeed, of all and every hygone manner, have been practised, and there are many eminent plaster shops where you can buy a "reach-me-down" design in imitation, superficially correct, of any style you please, at so much—the term is apt—"per superficial foot." These things have had a great vogue with the uneducated. They please because they offer a romantic suggestion of a possibly romantic original, or of the manorial or seigniorial appurtenances of romantic fiction; a suggestion only, for even as copies they are poor, with their dead, level floated grounds, their railway-like rigidity of "run" mouldings, their sharp arrises, and mechanical "repeats." What a contrast they offer to the originals they travesty. Any one who examines, with eyes of discernment, a good seventeenth century English ceiling, will see that, beautiful as the plan of design and forms of ornament may be in themselves, they only count for a portion of the total sum of beauty. The hand of time, and recurrent coats of whitewash, have often done much in contribution of effect; but the intrinsic, ineffable, underlying charm of handiwork, of human pleasure and interest, of "handling" is there.

The plain surfaces are not hard and level, they are full of slight undulations, the ribs or "strap work" have no mechanical rigidity, they are by no means accurate at their intersections, they are softly and pleasantly moulded, and usually modulate somewhat with the uneven surface of the ceiling.

The ornamental foliations—bosses, roses, and the like—when they rep at, do not do so with regimental exactitude; awkward corners caused by irregular wall lines, chimney breasts, &c., are lightly and nonchalantly dealt with; there is no strained attempt at fit, begotten of the drawing-board; the design is curtailed, expanded, chopped off, or twisted to meet the emergency in a manner that would look queer on a smart office drawing, but is delightful in reality.

Experts differ very much as to the methods of preparing the plaster used for these old ceilings, and as to the way in which they were put up. It is, of course, well known that some were rendered in lathing, some on rough withies, and some on reeds or rushes. It is obvious that casting was employed in many instances for the ornamental foliations and bosses, and it is stated that a sort of stamp or pressing-mould was employed for repeating ornaments of small size, such as the roses in the beautiful ceiling at Chastleton, one or two of which I was able to examine closely, as they had fallen down. They certainly seemed to me to have been squeezed into a mould. There are many indications that a good deal of the rib-work was formed by pressing into the plaster ceiling, while still damp, lengths of rib in a similar damp condition. One finds awkward joins and curious failures to fit to

a centre, in the case of radiating ribs, which warrant that idea.

If you examine a fallen bit of plaster from one of these old ceilings you will generally find it very thick and coarse—often very earthy and sometimes full of little bits of gravel, &c., the kind of stuff the conscientious architect would have to condemn. But its very coarseness helped the effect of the plain surfaces by giving them texture, a quality we so often miss nowadays. How the elaborate and complicated ceilings were designed and set out we do not know with certainty, but there was probably a rough plan, which was all that a well skilled workman needed—he had his tools, his models, and his traditions. That he had models of ornaments for ceilings and friezes we know, as we find exact repetition not only in different rooms of the same house, but in different houses. And you will often find ornamental designs, obviously intended for a ceiling, formed into a frieze or used to decorate the spandrels left between the horizontal frieze and the end of a vaulted ceiling, as in the library at Merton College Oxford. It is probable, however, that much if not most of the decorative design was modelled *in situ* on the ceiling itself partly with tools, partly with fingers.

When fingers were used upon the actual plaster it is obvious, as any plasterer will tell you, that the line used cannot have been as sharp as that we use now—it must have been old or deadened, or no man's fingers would have stood it.

There are many lessons to be learned from the abundant examples, to be found in almost every county of England, of beautiful old plaster work, while Scotland, Wales, and Ireland have their characteristic examples, and one of them is the extreme importance of plain surfaces of texture. I am glad to know that within the last few years that lesson has been taken to heart by one or two artists who have turned their attention to plaster work.

There were some striking instances of the fact in the work of Mr. Ernest Gimson at the last Arts and Crafts Exhibition; work full of charm and feeling, and quiet originality, and delightful in uneven surfaces, roughish texture, and broad unlaboured modelling—work as different in spirit from the average mechanical plaster work of to-day as was that of the Elizabethan or Jacobean plasterer. I believe that the first essential of success in plaster work of frieze or ceiling is the treatment of the ground. It will be difficult but necessary, if we are to succeed, to wrest from the modern workman his ideal of perfect even-floated and set levels, innocent of the faintest undulation as fresh thin snow over a sheet of ice—and looking just as cold and hard. It is amazing with what skill a good and conscientious plasterer, armed with his float and straight-edge, will arrive at that result. It is neat, it is smart, it is difficult to do, and he is proud of the achievement, and I don't blame him; he does well what is expected of him, and satisfies his conscience, we will hope. When his ceiling is to be sub-divided by ribs or decorated with ornament of any kind, he still appears to be ruled by the instinct for sharpness, hardness and rigidity. He starts with a billiard table surface, the ribs are "run" with a zinc mould *in situ*, or are cast in a "run" reverse mould and put up subsequently, the ornaments are cast from sharp feelers, models, and the work reaches a wonderful perfection of mechanical accuracy which, to the mind of an artist, is its glaring imperfection. The arrises are sharp as razors, the beads are round and smooth as glass tubes, a core pondence religiously exact is maintained on both sides of a centre line. The cornices are run as accurately, as mathematically as the rest, and the drawings and details are faithfully observed. The result is naturally as unsympathetic as the method.

I speak of the average. I am well aware that, fortunately, there are exceptions—I am happy in believing that they are many, and the number seems likely to increase rapidly as architects increasingly devote more time and thought to what is one of the most interesting and important crafts amongst the many that they rule. What we need, it seems to me, to fit us for a more competent control of plaster work—as of so many crafts, is to draw less and model more. Fortunately, within the last few years a good many sculptors of talent have turned their attention to decorative plaster work, and beautiful ceilings, friezes, and panels in low relief, stand to the credit of several men whose names are well known to you. There is an increasing demand for decorative work in plaster. People, even of moderate means, are no longer generally content with the blank white lids of the boxes they live in. This discontent is exemplified in many ways, one of them is that suburban joy, the patterned ceiling paper; other indications are

the patent substitutes for modelled ceilings whose illustrated catalogues, with their alluring titles, are lavished on the letter box and waste-paper basket of every architect. A desire for decorative friezes is also prevalent, and is exemplified by precisely similar instances. I think this discontent is responsible for many queer results and unlovely makeshifts, it is not in itself ignoble. It is our business to divert it into wholesome channels. The instinct to enrich the ceiling or the roof is, I think, a natural and an obvious one—the roof is surely as worthy of adornment as the walls. In a church or a great hall it is, or should be, the crown and glory of the whole scheme. In domestic work, in the home of the average comfortable Briton, the cheap substitute for modelled plasterwork obtains a readier acceptance on account of the fact that we dwell—most of us—like hermit crabs, in other people's shells. The leasehold condition of our occupancy has begotten a leasehold type of decoration. The householder wants something that will "last my time, don't you know"—or, at any rate, suffice for seven, fourteen, or twenty-one years. So he not unnaturally shrinks from permanency, which implies cost, and he thinks that real thing costly; but, as a matter of fact, it is by no means necessarily so. With care and thought, and a little ingenuity, it is possible to get good decorative results in plaster at small cost. There are many ways, for instance, of redeeming the absolute bareness of a plain plaster ceiling, without much expenditure. You can have a well moulded cornice and divide your ceiling into plain panels by means of shallow ribs. At very little extra cost if your design "repeats," you can put some simple little ornament into the panels. You can dispense with ribs, and have ornamental cornice pieces and a centre; or you can have the general plain, and have an ornamental border near the cornice, and modelled in low, broad relief. Where your conditions make it possible, and, I should say, in a longish room or corridor, you can drop the cornice a little way down the walls and form your ceiling to a shallow curve. This may be delightful in itself, even if quite unrelieved, or can be very effectively decorated with light ribs at intervals and simple flattish ornaments. There is really no end to the simple and effective possibilities of very slightly decorated ceilings. I have seen an old ceiling in a low room at Oxford which has four corner ornaments and a centre, very simply modelled in a highly conventionalised grape vine design—and it wants nothing more—but the plain surface is such as would horrify the skilled plasterer of to-day.

The ceiling under an ordinary collar-rafter roof frequently gives a pleasant opportunity for plaster decoration. You can accept the splayed side between ceiling and cornice, and treat it as a sort of sloping frieze, ornamenting the flat under the collars more simply and sparsely, or you can fix out and form a curved or vaulted ceiling, as I have suggested before; and a vault is one of the most delightful fields for decoration.

When cost is not a closely restrictive consideration, the range of possibilities is wide for ceiling, frieze, decorative panels on chimney breasts, or such like positions, or for the treatment of the walls themselves. It is sometimes desirable—in a hall or a ball-room, for instance—to treat the walls with a permanent architectural decoration that precludes further adornment by means of pictures, wall papers or hangings, and this, if you use low relief and have a good protective base or dado, can well be done with plaster work, by means of pilasters, decorated panelling, reliefs, &c.

If pilasters are used, it is generally advisable to enclose the plaster relief in a wooden frame, for preservation's sake. Whatever the field of your decoration, it is necessary, of course, to use restraint to avoid over-crowding and fussiness; to aim at a broad decorative result, to remember that you will cheapen your devices by over-repetition, and spoil your ornament by over-elaboration. The eye wants some unadorned spaces to rest upon. It seems to me in most cases wise to have rather plainly treated walls and a simple frieze, for instance, where your ceiling is elaborate, and a simple ceiling where you want an elaborate frieze. It is hardly necessary to say that your plaster work should be "plastery" in effect, round and soft, and should not imitate the treatment of any other material.

The ceiling, frieze, panels, or whatsoever forms the plaster work may take, should fall into the architectural scheme of the interior they contribute to, they must be in coherent relation to

rest. The scale must be preserved. And there are many considerations to be taken into account in designing a frieze or ceiling. The proportion of the room, of course, first. It is obvious that the same design would be inappropriate—in one instance, if applied to two rooms, one of which is 10 ft. high and the other 20 ft., and that a long, low room needs different ceiling treatment to a high square one. Then the lighting must be taken into account. Where the tops of the windows reach nearly to the ceiling, and especially where a longish room has such windows pretty evenly distributed along one side only, very delicate relief will tell at a considerable height. In the same room if the windows are low, or so small as to give inadequate light, the relief will require to be bolder in order to tell. A room lit from two opposite sides, giving a strong cross light, is the most difficult to treat successfully. The cross light defeats the shadows and spoils the effect of relief; in such a room greater emphasis, greater sharpness of modelling is advisable. All these remarks are intended to apply to daylight effects, but artificial lighting should be considered, too. In great reception rooms, chiefly used at nights, and in all rooms intended to be brilliantly lit—say, by electric light—it is well to keep the relief rather softer and more delicate than in rooms of more ordinary character by illumination.

As a general rule, in an averagely lighted room, to 13 ft. or 14 ft. in height, the relief of ceiling-buildings or ornaments does not require very cast projection if the ceiling is left white or early white, as relief looks exaggerated. Ribs, think, are best rather broad and shallow in form, and with a tendency to round members rather than sharp-arrised ones. Their size, of course, must depend upon the scale of the room, the heights at which they occur, and the effect aimed at. Constructional beams dividing the length of a ceiling frequently help the design greatly, and are capable of very effective treatment in themselves. In many splendid old ceiling the ornament was confined strictly to the beams and the cornice with which they intersected.

When there are no beams, I am personally inclined to prefer detachment between the decorative design of the ceiling and the cornice. I leave a margin left along the cornice. This helps you if you wish to leave the ceiling whitish and to colour the cornice; and, generally speaking, the cornice must be regarded as the crown of the wall and not as the beginning of the ceiling.

However, that is, after all, a matter of design circumstance; it is risky to generalise too early. But it is safe to say that too much attention cannot be bestowed, first, on the ground surface—whether of ceiling, frieze, or panel—second, on the modelling of any ornament, whether simple rib or foliated or arabesque design. If you cannot be sure of getting good modelling, have none at all: find safety in plainness. If you wish to avoid sharpness and hardness, have ribs and cornices modelled, not sharp. Keep them simple and broad, not heavy and wiry. Generally speaking, I believe that for ceilings a more or less symmetrical basis for the leading lines gives the happiest effect; the arrangement should, at any rate, be ordered, if not formal. But whatever the basis and whatever the treatment, the design should essentially be a ceiling design, the ornamentation of a flat surface—to be seen from below and in a room where it is intended to be seen from all points, it should "read," as it is called, in all directions equally well, though it may have main longitudinal or lateral tendency. It is, perhaps, hardly necessary to counsel the avoidance of any obviously unsuitable type of design for a ceiling, such as swags and festoons—imitable, perhaps, on a vertical surface like a frieze, where the sense of vertical dependence is appropriate, but inappropriate and awkward in a ceiling. A frequently effective treatment for a frieze is to have some form of ornament repeated at wide intervals, the interspaces being either quite plain or filled with a plain moulded line.

I have so far dealt with the consideration of plaster work for the interiors of private houses. Great mansions and great civic buildings differ in degree rather than in kind from these, and, as regards their internal plaster work, the principles applicable to smaller buildings apply to them. Where deep-beamed and coffered ceilings are used, greater structural support is needed for them, and bolder modelling and moulding, of course, to preserve their relation in scale to their architecture. They often, however, present the

decorative problem of the treatment of domes, of which in a civil building, I have not yet seen a strikingly original treatment in plaster work. I have seen, you have all doubtless seen, dozens of domes treated with diminishing coffered panels, whose frame-work ascends on converging radial lines. Wren left us many fine instances of these. The dome of St. Stephen's, Walbrook, is, I think, the most beautiful instance I know. In this dome there are four tiers of diminishing coffer panels, the second above the cornice, and the final one having panels corresponding in width to two of the first and third. And, indeed, Wren's churches, and those of his pupils and immediate successors, provide an abundant field for study of a certain type of design in plaster work, mannered and formal very often, but full of vigorous character and excellent workmanship.

A great deal of the plaster work, which is by no means confined to the ceilings, of our city churches is, of course, subject to the criticism of being in direct and purposeful imitation of classical Italian models in stone or marble. The coffered soffits of the arches of St. Bride's, Fleet-street, of St. Katherine Cree, show this strongly, and it is observable that in St. Paul's Cathedral the stone and plaster details are precisely of the same character. In St. Stephen's, Walbrook, there is much fine plaster work beside the dome; there are light and narrow arch soffits with running patterns of roses, &c., and the transverse arches of the vaulted roof mark the plain vaulting bays—unrelieved except by a large central boss—with a holly-moulded band of convoluted foliage ornament. The churches of St. Mary Aldermay and St. Katherine Cree both have groined Gothic ceilings in plaster—very reprehensible theoretically, but distinctly picturesque. And at St. Mary's Aldermay the arch spandrels of the nave arcade are charmingly filled with coats of arms, and flowers, and fruit, &c.—a good instance of the effect of confining ornament, using it to give special emphasis to particular features of construction—the wall above the arches being perfectly plain. Christ Church, Newgate, shows a sparing use of plaster adornment. And the beautiful little interior of St. Anne and St. Agnes, Aldersgate, shows in its large decorative panel borders, its shallow arch cofferings, and the enriched soffits of its corner spaces, some graceful and delightful examples of this Anglo-Italian Architectonic style of plaster work.

It has been reserved for the last few decades of this century, and the devotees of the "Gothic Revival," to find that plaster work is inappropriate to the interior of a church. In the seventeenth and eighteenth centuries, and until near the end of the first half of the nineteenth, plaster ceilings were the rule and not the exception in churches.

A great many very charming ones have disappeared before the hand of the restorer, but several seventeenth and numberless eighteenth century examples remain. I am glad to see that plaster work is regaining its place in church interiors; it provides, at any rate, a pleasing variant to ceilings of stained or painted deal, or to open roofs with timbers of small scantling and wrought "die-square." For the enriched ceiling of sanctuary chancel or side chapel, I think it is a most excellent material; and the invention of fibrous plaster makes it possible, with little difficulty and comparatively small cost, to use enriched plaster work, not only for ceilings, but for other decorative purposes in churches.

The slabs of plaster which bear portions of the design, or completely fill separate panels, are put up like wood-work, and screwed to the rafters, or firing pieces, put to receive them. Each slab should be composed of thinish plaster, embedding layers—usually two in number, I believe, of very wide-meshed canvas; the plaster being worked well through the meshes. They are stiffened with laths or battens, and can be worked to any required angle or curve. If the relief is not great they are very light. Where a number of slabs have to be joined to form a ceiling, without intermediate ribs, it is customary to pack damp canvas between their meeting edges, which not only protects them, but forms a stiff setting when it dries; the fissures are subsequently pointed in with plaster. Brass screws should be used for fixing, and the screw-holes, of course, must be stopped in. If steel screws are used, the heads require to be coated with japan or paint to prevent the inevitable rust from staining the plaster.

I put up a panelled ceiling of this kind over the sanctuary at Groombridge Church some two years ago. I believe that many of you have visited that building. In that case the panels

were each in one slab, and their edges were clipped by the overlapping oak ribs and fillets.

In my Church of St. Clement's, at Bradford, I had the good fortune to secure, for the decoration of the chancel roof, the services of Mr. George Frampton, who modelled the fibrous plaster ceiling, and of Mr. Anning Bell, who coloured it.

In this case Mr. Frampton was first provided with a model, to a scale, I think, of one quarter full size, of one side of the covered inner roof. On this he modelled his first sketch, which with some other details of the ceiling, he afterwards exhibited at the Arts and Crafts exhibition two years ago. He then set to work on a full-sized model of the eastern bay, and upon the repeating ornament of shields and rose trees, and the frieze of cherubs that fill the rest of the ceiling. Casts were made from his models and were screwed up, joined, and stopped in the manner I have before described. The ridge, cornice, and vertical ribs are of deal, and are painted and gilded with the rest of the ceiling, which was dry and paintable within a day or two of fixing.

The use of fibrous plaster enables one to escape the flatness and rigidity I have spoken of as due to finishing surfaces and running mouldings. The casts bear the direct impression of the modeller's handiwork. The use of this material is not without its artistic dangers, the chief of which is that its modelling is not as a rule done upon the actual ceiling. It is possible, of course, to model *in situ*, and then cast from the models elsewhere, and that, I fancy, would be one of the safest ways in which to prepare the design of a fibrous ceiling; for nothing can quite come up to the actual position and the actual lighting of the building for which the work is destined. The next best method is to arrange your model in the workshop at as nearly as possible the height that the ultimate casting will occupy, approximating as far as possible the conditions of light and surroundings, and modelling the ceiling from below. If you cannot manage this, it is wise, at least, to get your model either conveyed to the site it is to occupy, or hoisted up in some similar position for your judgment of effect.

It is essential in case of a ceiling with a cornice, and divided by plaster ribs, to have cornice and ribs cast from models also, not run. In the case of ribs this can be efficiently done by casting a reverse from the first model and pressing the clay into it to form ribs for the model section of the ceiling. The laying of the moist clay ribs into the ground surface of the model insures the avoidance of rigidity. I have said that it is impracticable to mould with the fingers the actual plaster so as to avoid casting altogether, unless that plaster differs very much from what we generally use. But that difference is now obtained, as I am told, by the use of old or deadened lime, and some special kind of sand, and ceilings and other decorative work are modelled in plaster and in position. That, it seems to me, must be the best plan possible when the object is to avoid repetition, and when cost admits of it; for where exact repetition can be avoided the better will be the result.

The consideration of decorative plaster work for the exteriors of buildings is almost a subject by itself. As you know, a great use of it was made in certain districts, the Eastern counties especially, in the fifteenth, sixteenth, and seventeenth centuries. "Sparrow's house" at Ipswich is a striking instance of rather coarse and crude, but very picturesque, adornment. A good deal of external plaster work (using that term to cover work in cement and sceleritic mortar) has been done in our time, as several of Mr. Norman Shaw's buildings testify. Until quite recent times the old traditional and delightful "stick-work" was done by village plasterers on rendered cottage fronts, but I fear that tradition has gone the way of many others.

One suggestion I would make with regard to external work in low relief, is that the relief should be stronger on the north side of a building than on the others.

I have now only a few words to say as to the treatment of finished internal plaster work. When the plaster—fibrous or otherwise—is perfectly dry, it can be treated with a thin coating of wax dissolved in turpentine, wiped or rubbed here and there with a rag; this gives it a pleasant, soft, ivory like appearance that is more agreeable than the even tint of distemper. (At Groombridge I had the shields and emblems entirely gilded, and then glazed over partially with thin oil colour, the whole of the remainder being waxed.) If heraldry is employed, the coats of arms must, of course, be coloured, or the blazonry is incomplete. There are some good instances of the effect of emblazoned coats occurring in a general field of

toned white plaster in the cloisters of Corpus College, Oxford. It is a contrast of which I am fond, that of richly tinted heraldry and toned white plaster work. In church work it is likely that colour over the whole surface of the work may be needed, and this presents no difficulties either in the case of oil colour or distemper; in the latter case the suction of the plaster will probably need to be stopped with a coat of priming. I referred just now to the effects of a cross light. In my opinion a ceiling lit from both sides requires colour, and, perhaps, gilding, more imperatively than one lit from side or end only, when the relief gets its full value through shadows.

Plaster reliefs may, of course, be readily used for decorating wall spaces or arch spandrels in churches.

There is, in fact, no end to its decorative applicability.

Time, and your patience, would fail me if I endeavoured to cover all the ground of my subject.

You will notice that I have omitted all consideration of Sgraffito work and Scagliola, which certainly come under the head of decorative plaster work; I did so advisedly, for the former subject alone would readily fill the limits of a paper like this.

For similar reasons I have not treated of foreign work—Italian, French, Spanish, or Mauresque, European or Asiatic—the subject is really a tremendous one. If I have succeeded in arousing any interest or enthusiasm for a very attractive craft, I have realised the full intention of my paper.

Mr. L. A. Shuffrey, in proposing a vote of thanks to the lecturer, said that Mr. Warren had touched upon most points connected with his subject, provided a line was drawn at the type of plaster work which was illustrated by the specimens exhibited in that room. But plaster work went a good deal further than that in England. In the Adam work, for instance, about which they had heard nothing that evening, there was a great deal of beauty, and there were many situations where that work seemed to be exceedingly suitable. But they would have to start upon it with rather different ideas from those suggested by the lecturer, otherwise they would find difficulties to contend with, as in the idea that the ground was to be wavy or uneven. He thought that a plain ground answered the purpose very well, especially if it were considered as a contrast to the modelled work which was put upon it. He remembered an important piece of advice which Mr. Stephen Webb gave him some time ago, and that was, when modelling ornament upon their ground, either in plaster or clay, a little bit of clay just rubbed along the edge where the modelled work intersected the ground, would do much to check the harshness which would otherwise result. He would like to lay stress upon the point that the lecturer had referred to as to the value of the ground. There was no doubt that a very little ornament, indeed, could be made to go a long way, and it was often found that a great deal of trouble was taken to model or to construct ornament which it would be better to remove altogether. In regard to the model of the frieze which Mr. Warren had brought there that evening, it would be much improved, he thought, if a considerable amount of the ornament were removed. As ornament largely contributed to cost and labour, this point should be kept in mind.

Mr. W. Millar said that in regard to the Adam work, it was not plaster at all, but composition, and it gave very little exercise for the modeller's art. Fibrous plaster had its advantages and disadvantages. Comparing it with lime plaster, it did not possess many advantages—for one thing, it did not afford the resistance to sound that lime plaster did, owing to its thinness, and it was not so fireproof, because it was backed with wood. It was generally believed that fibrous plaster was a modern invention, introduced by a French modeller about fifty years ago. When working in Paris, he had discovered a book on architecture by an architect who had visited Egypt, in which it was stated that the method of working fibrous plaster—plaster and linen—(canvas was apparently not known) was certainly practised in Egypt in the fourteenth century just as we did it now. In reading up for his forthcoming book on plain and decorative plaster work, he had discovered that fine linen and plaster were often used formerly in the decoration of coffins, while mummies were swathed in fine linen and plaster. Fibrous

plaster was very useful for ceiling work and in renovating old ceilings. At the extension of the Holborn Restaurant the fibrous plaster ceilings were fixed before the roofs were on, each floor being taken in succession, beginning at the bottom and working upwards.

Mr. Hampden W. Pratt seconded the vote of thanks to the lecturer, and said that with all the plaster work that was done now it was surprising that the speculative builder was so conservative in clinging to that old feature, the centre flower or ceiling flower. If there was one thing he was brought up to abominate more than another, it was that one ornament in the centre of the ceiling, and he was surprised to hear Mr. Warren speak of it as a legitimate feature. No doubt it could be done very nicely sometimes, but then one had to get out of one's mind the prejudice for centre flowers which were screwed up to the ceiling. With regard to modelling plaster so as to suit the light in the different rooms, that was an exceedingly difficult thing to do, more especially when daylight as well as artificial light had to be considered. It was really time to seriously reconsider the question of designing mouldings and ornament for ceilings now that the electric light was so much used in lighting rooms, for electric light did light up our ceilings more than either gas or other lights, and it produced very strong shadows. He was glad that Mr. Warren had referred to that illegitimate treatment for ceiling work, viz., the "swag." There was good authority for doing it in some of the old plaster work, but it seemed absurd, although an everyday occurrence, to hang swags on a flat ceiling.

Another mistake which was frequently made was in treating the cornice as part of the ceiling instead of as part of the wall. It was better to start with the idea that a cornice was part of the wall and not of the ceiling. The frieze was such an ordinary feature nowadays that if it were properly treated in connexion with the cornice would naturally form a crown or finial to the wall. Over-ornamentation was, no doubt, very frequently practised, and, in order to get good effect, reserve in all these matters must be very carefully studied. In regard to external work, he would have liked the lecturer to have given them a little more information on that point. No doubt others beside himself had had the same difficulties in getting external plaster work that would be weather-proof. Portland cement had been referred to, and he should like to know what plaster work could be relied upon for exposed positions.

The Chairman asked if there was any specification of proportions and materials that Mr. Warren would recommend for ornamental plaster ceilings. They had heard a very careful and accurate account of some specimens of old work which the lecturer had examined, but it would help them if they could have definitely from him a specification as to sand, and its proportions, at the time that he would recommend, and hints to workmen as to its proper slaking, and as to the advantage or disadvantage of using old lime. Mr. Warren had not mentioned Parian cement: he (the Chairman) was under the impression that Parian was comparatively easy to work with the fingers; that there was not the objection to working it with the hands that there was with ordinary plaster.

Mr. Millar said that Parian was formed from gypsum, so that they had plaster in a different state. Various solutions were applied to gypsum to give it hardness. Parian was a good material to model in, for it was pliable and mellow, and it afforded time to manipulate properly.

The Chairman said that that was an interesting and important point. In a ceiling recently done for him, with some amount of decoration about it, they floated in Portland and then set in Parian, after which the Parian was cut out back to the Portland, and the Parian ornaments were run in. Mr. Warren had wisely confined his attention to a particular class of work, viz., the domestic plaster work of England from the Jacobean period down to the beginning of the Adam time.

There was a point in what Mr. Shuffrey had said as to the eye-enjoying freedom in the ground; there were cases in which it was just as valuable to have it as in other cases it was valuable to be without it; and he (the speaker) thought that in proportion to the light and height of the room they required smoothness of ground and sharpness of detail; that where the light was moderate and the room was small in proportion and height, the more unevenness there was in the ground, the more delight there would be in the ceiling, and the freer and softer the mouldings the pleasanter it would be to the eye. He was very much averse to leading any one to suppose

that because a thing was uneven and rough it was beautiful, or, on the contrary, that because a thing was smooth and regular it was beautiful. They must be careful in avoiding Scylla that they did not fall into Charybdis. During the last excursion of the Association they saw a great deal of interesting plaster work in the heart of Kent. Those who took part in that excursion would remember King Charles's Chapel at Tunbridge Wells, Groombridge, and Holmbury, where there was an interesting ceiling which attracted some attention because the number of scattered bosses suggested to some of the members the practice of some nineteenth century decadent artists of leaving work unfinished for the sake of effect. An inspection of the work showed, however, that the design for the ceiling existed, but that it had not been completed. The effect was picturesque, but wholly accidental. At the Bank of England there were some interesting little domes in the passages and corridors, which were of plaster, and which would well repay a visit of inspection; and in modern work there was a charming ceiling by Mr. Macartney in Berkeley-square.

The vote of thanks was then put to the meeting and carried by acclamation.

Mr. Warren, in responding, said that in reply to Mr. Shuffrey as to the omission of historical information, his paper was not intended to be chronological. With regard to the Adam work, he had not omitted to refer to it with any slighting intentions, though he might add that he did not find it of the same exciting interest as the work of previous periods. It was dainty and pleasing, but very imitative. It not only repeated itself over and over again—its stock in trade they all knew; but those forms were not original, as an inspection of some of the old work at Rome would show. There was a traditional style about it, and the Adam brothers knew what they were about, and produced graceful and refined results. He had omitted specific mention in his paper of a great deal of Queen Anne work. His object had been to use past instances to exemplify qualities which he thought of importance. Mr. Shuffrey's criticism of his frieze was true, but he might point out that he was building up to what existed, which was a ceiling with very heavy beams. As to the question of the flat ground, he thought an absolutely flat ground was unpleasant.

Mr. Shuffrey asked how they could avoid it?

Mr. Warren said they must get the workman to give up the absolutely level floated ground. In the use of fibrous plaster there was no difficulty. Mr. Pratt seemed to think that he (the speaker) was in favour of the centre flower for ceilings. There was all the difference in the world between the centre flower which was palpably stuck on and the centre-piece which was worked into the ceiling. As to the influence of the electric light on ceilings, that was an important point. Since the adoption of the electric light objects were made more definite, and he did not think that the ceiling was thereby improved. He thought that they would have to pay special attention to mouldings, especially ceiling mouldings, where the electric light was used. As to external plaster work, he had not used it very extensively. He had used chiefly Portland cement and a silicious wash to give it the colour he required. Mr. Millar would no doubt be able to give them the information as to the nature of lime and the proportions which were best to put into the specification. As to the beautiful ceiling at Ashburnham House. The treatment of surfaces could easily be overdone in a room where the electric light was used, and great care was necessary in order to prevent this. It was extremely important also, where work was costly, to employ for ceiling or other plaster work a good artist, and leave the design to him. The more that was left to the modeller the better.

The architect should be responsible for the general lines of a decorative scheme, but the modeller, who had technical knowledge and skill, should be left to supply the details.

The Chairman, in calling upon Mr. Millar to add a few remarks on the question of specification, said that the ceiling in the passage to the building in which they were assembled was a charming example of a plaster moulded ceiling. The ceiling above them was a mixed blessing.

Mr. Millar said that, as to the specification of materials for ordinary plaster ceilings, the old Roman laws enforced a period of three years before lime could be used, and that was a law which might be followed with advantage at the present time. As to Portland cement, he could not see any objection to it, because it was

the strongest known cement we have. There was objection to the colour, but the material could be coloured to any requisite tint by the use of oxides. As a substitute for Portland cement, there was silicious or any hydraulic lime. Portland cement could always be modelled in, because it was so soft and pliable; but it must be finished up by the modeller went along, for it could not be left like clay or wax. As to the effects of light on ceiling work, he wished that architects would encourage hand work rather than cast work, as there was more opportunity for doing satisfactory work under such circumstances. The effects of light and shade could be better realised by the worker. As to cost, it ought to be as cheap as cast work, which in the first case had to be modelled in clay, then moulded, and then cast and fixed; whereas hand work could be done in one operation.

The Chairman announced that the next meeting would be on the 5th prox., when Mr. A. S. Flower would read a paper on "An Unwritten Chapter of English Architectural History." The meeting then terminated.

THE LONDON COUNTY COUNCIL INQUIRY.*

THE Special Inquiry Committee resumed and completed the examination of Mr. Blashill, the Superintending Architect of the London County Council, on Wednesday, January 13, at Spring Gardens, Sir Arthur Arnold being again in the chair.

The Chairman expressed a hope that the examination of witnesses would be concluded within the month, in order that the report of the Special Committee might be ready for consideration by the County Council before the end of the financial year. He also stated that Mr. Holloway, President of the Master Builders' Association, and a gentleman familiar with the conditions of carrying out engineering works in the Straits Settlements, had expressed their willingness to give evidence before the Committee.

Dr. Collins, in continuation of the examination of Mr. Blashill, asked for further information with regard to the inferior lime and timber referred to in previous questions, and with respect to the defective work discovered in a drain. With regard to the last point, the Architect said the defects were discovered through the drain being improperly laid in the first instance. It had been necessary to take a portion of it up, and in making the necessary alterations the defects were discovered. In the cases referred to, where the wages bill had been excessive, the workmen had put in more work than was necessary. It was not in painting only that this fault was observed. There was a case of brickwork, which was grouted where grouting was not necessary. Since the Architect's complaints, a method had been found to prevent disputes, and the jobbing work was now done to his entire satisfaction. In reply to further questions, Mr. Blashill repeated that the later works undertaken showed better results than the earlier works, that while work upon foundations always showed a profit, work upon superstructures generally showed a loss. He had expressed a hope that eventually the Council would succeed in attracting the best workmen, but so far that had not proved to be the case, but it must be admitted that the circumstances had not been favourable. He thought the dual method of letting some jobs to contractors on tenders, while reserving the right to execute others by direct employment, a good one. Where the employer had the power to do the work for himself at will, he had a check upon the contractor who might otherwise think he had the matter entirely in his own hands.

Mr. Dickinson cited a long list of jobs for which the total estimates amounted to 157,571*l.*, while the tenders accepted amounted to 162,454*l.*, or about 3 per cent. higher. Mr. Blashill said he could not charge his memory with details, but he had no objection to the inference sought to be drawn. In further reply to Mr. Dickinson, who also referred to the greater cost of the earlier jobs, the architect thought the difficulty necessarily arose from starting too many jobs at once with insufficient plant, but the chief cause was not getting enough work out of the workmen. There had in the past been great waste of time on these jobbing works. That arose from the Council's workmen, so far as he could gather, having a somewhat bigoted adherence to what he might call trade rules. It had been the rule that one workman must take another to a job. If

said nothing against that, but when it came to the case of the mere tightening of a joint, and the plumber examined it and then sent for the fitter to carry out the work, the cost was out of all proportion to the work done. A man would not act in the same way if he were a contractor's man. Matters were now improved, though there was something of the old spirit left. The men who were now doing jobs seemed to have a better notion of what was wanted, and they were better looked after. He would not abolish the Works Department, but he feared, with all the calls upon his time made by his own department, that he could not find the time for the supervision of that Department.

In reply to Mr. Gruning (architect) one of the assessors, Mr. Blashill stated that the quantities were taken out by his estimates by four quantity surveyors who were paid by the Council. The cost of the quantities was not added to the cost of the works. There had been no material alteration in the method of getting out the estimates. In giving out contracts he thought it better to select from a list of builders, the number in the list being considerable, than to offer work by open advertisement. In answer to other questions by Mr. Gruning, the witness said that all the jobs which had been refused by the Works Department had been afterwards carried out by contractors for amounts which were within the estimates on the whole. On one job carried out by the Department he found mortar being used of such a nature as would not only have been condemned had a private builder used it, but the builder might have been prosecuted. He could not pass such material. A sample of the mortar was asked for and produced. On the question of discounts allowed to the Works Committee he said they were of two classes—a cash discount of about 2½ per cent. with regard to which there was no question, and a larger amount allowed as trade discount for which he had required to see vouchers, but he had had the greatest difficulty in getting these from the Department.

Mr. Gruning: Why? They thought if I knew I should strike off the difference, if any. The witness added that the names of contractors were never submitted to him, but he recommended that the names should be submitted to some responsible officer of the Council like himself.

In reply to Mr. E. Waterhouse, assessor, the witness said it was important for the architect to see the works from time to time in order to be able to give certificates. He did not inspect for the Works Committee. In preparing his estimates he had to take care that they should not be higher and should not be lower than those which a substantial builder would prepare. Questioned with regard to the addition in the schedule of prices for jobbing works of 12½ per cent. upon the School Board schedule, Mr. Blashill explained that the 10,000 items in that schedule had been fixed at the cost of a great deal of trouble. He had adopted that schedule, but had found it necessary to add several thousands of items to it. On finding that on these latter there was an increase of 12½ per cent., he had increased the whole by that amount.

In reply to Sir Godfrey Lushington, the witness said he had not a list of these jobbing works. The fact that the actual cost of a certain list was 12,784*l.* upon a schedule value of 13,678*l.*, proved that the prices had not been exceeded, but it did not prove that the works would not have been done more cheaply by private contractors.

Mr. Jackson, the Assistant Solicitor to the Council, was next examined by the Chairman, Mr. Dickinson, and Mr. Beachcroft. The witness put in a statement, showing the changes made in the conditions of tendering since the institution of the Works Department. He stated, in answer to questions, that in the form of contract there had been no alteration.

Mr. Ilaward, the Comptroller of the Council, was next called. He put in a long statement showing the irregularities he had discovered in the accounts, and giving an analysis of the cases of what he termed fictitious transfers. The earliest irregular entries appeared in the books in July, 1895, the total amounts concerned for that and the current year being 7,229*l.* 11*s.* 10*d.*; about one half related to temporary buildings at Colney Hatch. Suspicions were strongly aroused on items being charged to the account of "Bexley Asylum Foundations," of materials such as yellow deal and flooring, hard core cement and lead pipe, which could not have been required in such foundations; and again in the same month (March, 1896) a charge to the account of "Lewisham Sewer" of yellow deal valued at 920*l.*, and bricks and cement amounting to 77*l.* 18*s.*, the

total sum represented by these fictitious transfers being nearly 1,000*l.* On examination, it was found that the Bexley job was not commenced until the April following, and that the delivery of materials did not commence until April 16. An examination of the Colney Hatch materials sheets, moreover, showed no record of the dispatch of the materials on the dates given in March. The Comptroller caused an abstract to be made of all the timber which had been sent to Colney Hatch, and compared it with what was credited to Colney Hatch as having been sent away to other jobs or returned to stock. He found that the total debits to Colney Hatch were insufficient to cover the surplus material purporting to have been sent away from Colney Hatch to other jobs. Both in value and quantity there appeared in many instances to have been more materials sent away after a job was finished than were ever charged to the job in the first instance. It was only after a prolonged investigation that the manager admitted that "An error had been made." In concluding his statement the Comptroller observed that he had no authority to go behind the manager's certificate, and that it was only the peculiarity of the circumstances that induced him to do so. The documents were in some cases tampered with, and there appeared to have been collusion between various officials of the Works Department. The whole subject was full of difficulty. Builders' cost accounts necessarily involved questions of a highly technical and intricate character. The difficulties inherent in such accounts were much increased during the first two years of the existence of the Works Department, owing to inadequate staff, want of organisation, and the condition of the premises at Belvedere-road. The regulations framed in 1894 were now being revised by order of the Works Committee.

In the course of his examination the Comptroller stated that the malpractices had not involved any pecuniary loss to the Council. If it had been so it would have been a case of fraud, and it would have been more easy to discover the irregularities.

The inquiry was then adjourned to Friday, January 15, when the examination of the Comptroller was resumed by Sir Arthur Arnold, who asked for further explanations with regard to an allowance of 963*l.* 10*s.* claimed by the Works Department in respect of extra cost to which they were put as compared with a contractor. The witness's opinion was that the claim should not be allowed, but it was a point to be considered.

In reply to Mr. Gruning, Mr. Howard said he had no special acquaintance with builders' accounts. The accounts of the Department might be more numerous than those of a builder doing the same amount of work, because the accounts of a public body must be more complete. He would not express an opinion as to whether a capital of 175,000*l.* for a turnover of 240,000*l.* a year was inordinate.

In reply to Mr. Dickinson, the witness stated that certain irregularities would, he thought, not have been found out if the late manager had not admitted them. He thought it would be advisable to appoint a works accountant, who should possess a knowledge of builders' accounts.

Dr. Collins, asking whether the witness could state the motives for malpractices which did not amount to pecuniary fraud, the Comptroller said he thought the motives had been stated in the course of the inquiry. The transfers made it appear that all the jobs were being carried out at a profit, instead of some at a profit and some at a loss.

Replying to Mr. Fletcher, the witness said that since 1894 he was able to check every item, but he could not check jobbing works except according to the time books.

Mr. Fletcher: Would jobbing works be better done by a contractor than by the Department? I should not like to answer that.

Don't you think it would be more economical if the manager was responsible only to a spending committee with your audit?—You must always have some central committee, but whether of a works or of a stores department is a matter for consideration. With regard to the question of abolishing the Works Committee, that was a matter that would require to be very carefully considered. A suggestion had been made by Mr. Blashill, but he only threw it out as a crude suggestion.

In reply to a question from Mr. Torrance, whether any system of check could be devised to prevent irregularities, the Comptroller expressed the opinion that where they had collusion between half-a-dozen persons and fictitious signatures it would be very difficult to devise a perfect system

* For reports of previous sittings, see our issues for December 19 and 26, and January 2.

of check. Certainly he thought the accounts had been better kept during the last two or three years. In reply to further questions from Mr. Beachcroft, Dr. Longstaff, and Sir Godfrey Lushington, the Comptroller gave explanations in detail of various paragraphs of his statement and of the appendices. He could not state that the cost of the works in progress and completed, but not yet reported, would reach £519,000, but he thought they would show some loss. With regard to malpractices, he thought they had got to the bottom of the discoveries.

The further examination of the witness was adjourned to Wednesday, the 20th inst.

Illustrations.

DESIGN FOR TECHNICAL INSTITUTE AND PUBLIC LIBRARY.

THIS design, of which we publish a view and plan, was submitted in competition for the West Ham Technical Institute and Public Library, and was intended to be constructed with red brick facings and stone dressings, with a roof of green slates and domes of copper or lead.

With the exception of the main front of the Technical School the structure was to be of one story on a high basement. It may be noted that the author has given a symmetrical treatment to the plan to suit the irregular site, and that the four angles are accentuated by towers. On the side of the view which is in shade the central feature is a bay of about 80 ft. in length.

The main scheme of the plan of the library was to get cross light and ventilation, and to make every external wall readily accessible in the event of fire.

The large hall was intended to be available for purposes of the Institute and also for separate letting to outsiders. Special attention was paid to exits in the event of fire.

In the Technical School the art class-rooms face north.

The small lecture theatres are placed on the quietest part of the site.

The aim of the author was to give a dignified "solid" appearance to the buildings, as being consonant with their purpose.

The estimated cost was under 40,000l. The design is by Mr. Edwin T. Hall.

The drawing was exhibited at the Royal Academy last year.

MAR LODGE, DEE SIDE, ABERDEEN-SHIRE.

This is the new Highland residence recently built for the Duke of Fife, whose last house in Mar Forest was destroyed by fire in 1895. In October of the same year the foundation-stone of the present house was laid by the Queen.

We give the general view and the plan of one floor; the shape of the plan is adopted to secure shelter from the prevailing winds up and down the valley.

The walls of the house are built of a light-coral coloured granite found on the estate. The timber is also native, being of Scotch fir from the forest of Mar. The upper parts of the gables are of half-timber construction, the spaces between the timbers being plastered, and harled with an outer coating of crushed quartz from the Cairngorm Mountains. The roofs of the building are covered with English made red tiles. Electricity is to be used for lighting as well as warming the interior.

In the centre of the building is a hall and grand staircase. By these access is obtained to the public rooms, including a large dining-room and a smaller dining-room. Then there is a spacious drawing-room, a large billiard-room, and twenty-six bedrooms, and also bedroom accommodation for twenty-five men-servants and forty maid-servants.

The stabling accommodation consists of thirty-six stalls, with two harness-rooms attached, two carriage houses, and mess-room and scullery.

The contractors are:—Mason, Mr. Edgar Gauld, Aberdeen; carpenter, Messrs. M'Robbie & Milne, Aberdeen; ironwork, Mr. George Bisset, Aberdeen; plumbers, Messrs. J. Blaikie & Son, Aberdeen; painters, Messrs. George Donald & Sons, Aberdeen; plaster and fire-proof flooring, Messrs. P. Stuart & Co., London; slater, Mr. James Grant, Ballater; electric light, Messrs. P. C. Middleton & Co., Aberdeen.

At the stables the contractors are:—Mason, Mr. George Hall, Aberdeen; carpenter, Mr. D. Macdonald, Braemar; plumbers, Messrs. J.

Blaikie & Son, Aberdeen; plasterers, Messrs. P. Stuart & Co., London; slater, Mr. James Grant, Ballater; and painters, Messrs. George Donald & Sons, Aberdeen.

The architect is Mr. A. Marshall Mackenzie, of Aberdeen.

CHURCH ROOM, ST. MARY'S, EWELL.

THE church room of the parish church of St. Mary, Ewell, was erected by the vicar during the autumn of 1894, and was opened by the late Bishop of Winchester in the early part of 1895.

The intention was to provide a small hall for gymnastic classes among the boys of the neighbourhood, besides its use as a common centre for parochial work. It is not primarily a mission hall, and the character of the neighbourhood and some of the purposes which the room was likely to serve suggested its architectural treatment.

It is fitted and furnished in a rather more finished manner than is usual in such halls; the walls are plastered over a green stained and panelled dado, while the rafters are hoarded in narrow widths of pitch pine, with mouldings forming panels capable of decoration hereafter.

There are also double doors in the ample porch, which is in two storeys, the upper part open to the room, with a projecting gallery, the front of which is hung as doors so that the apparatus and chairs can be stored when the whole area of the hall is required. This loft is also intended for a music gallery, on occasion, being approached by a stairway in the depth of the porch. The room will seat 115 very comfortably, and will hold up to 150 when necessary. The recessed fireplace helps in the arrangement of the chairs.

The use of the room as a gymnasium affected the construction also, to provide against the swing of the trapeze acting on an open roof. The room is divided into three bays by two strong arched trusses, to which the fireplace and porch provide three points of support, the fourth being a strong external buttress.

The trapeze and other apparatus hang or rest on two lattice-girder perulins of wood 1 ft. 9 in. deep resting upon the trusses and continuous from gable to gable. The turret, which will carry a large bell, also stands upon these framed perulins.

The end wall of the room is arranged for diagram and lantern exhibitions, and the gas-lighting is studied for that purpose and to avoid interference from the gymnastic apparatus.

There are four red Mansfield stone corbels to the trusses, excepting which the building is all brickwork and wood framing. It has been very well built, under the supervision of the architect, by Messrs. Cornish & Gaymer, of North Walsham, except the fencing in oak by Messrs. Agate, of Horsham. The contract price was 600l., excluding fittings. Messrs. Spencer & Co. supplied the gymnastic apparatus, Messrs. Turpin the wood block flooring, Mr. Jackson the lead glazing, Messrs. Bailey & Co. the gas fittings, Messrs. Mears & Co. the bell. The architect is Mr. Arthur T. Bolton, of Westminster. The drawings illustrated are by Mr. C. E. Mathews, sketched from the building after completion.

THE CONVENT, 26, BOW-ROAD, E.

THIS building, now being erected, is for the Sisters Marie Auxiliatrice, whose principal convent is at Paris.

These Sisters have been established for several years at 24, Bow-road, adjoining, their special work being amongst factory and working girls at the East End; this building, however, being inadequate for the community and the particular work they had undertaken, the adjoining site of No. 26 was purchased, on which to erect the building illustrated.

The materials of construction are walls of stock bricks in cement, with Gentry's red brick quoins, mouldings, and facings; Bath stonework in entrance doorway, niche, pinnacles, &c.; Stuart's granolithic copings and staircases; slate roofs, walls inside finished with trowelled stucco; Terazzo floors in corridors and entrance hall.

The building throughout will be heated with hot water, and the total cost is 6,280l.

The builder is Mr. W. Watson, of Ilford, and the architect Mr. J. H. Eastwood, of Kensington.

NEW BOARD SCHOOL, MERTON ABBEY, SURREY.

THIS is a new school for 430 boys, now being built for the Mitcham School Board upon a site containing an acre of ground, with a frontage of 100 ft. to Church-road, and 435 ft. to a proposed

road on the north side. The buildings consist of a central portion, containing a large hall 50 ft. 9 in. by 28 ft., around which are grouped four class-rooms for sixty boys each, and two wings on the east and west sides respectively, each accommodating 120 pupils. The class-rooms in each wing are for seventy and fifty boys respectively, divided the one from the other by a sliding glass partition, the withdrawal of which enables the two rooms to be thrown into one lecture-room 59 ft. by 22 ft. Cloakrooms, lavatory, and heating chamber are provided as shown on the plan, the whole being upon the ground-floor level, with the exception of the heating chamber, which is in the basement, and a committee and master's room (having a window overlooking the corridor, hall, &c.), which is situated over the north cloak room.

The walls externally are for the most part of hand-made and pressed red facing bricks, with dressings, &c., of Portland and Monk's Park stone. The half timber work is of English oak, and the roofs are covered with dark brinded-Brosley tiles from Madeley Wood.

Although 480 pupils have been provided for, it is not intended to carry out the whole of the work at once. The first portion of the building, with slight modifications of detail in the elevations, now in course of erection, includes the central hall and class rooms for 240 scholars, with the necessary accessories for their accommodation, and the boundary walls and gates.

The contract has been placed in the hands of Mr. John B. Potter, of Sutton and Epsom, whose tender was 4,763l. Mr. Rees Roberts is acting as clerk of works. The architect is Mr. H. P. Burke Downing, of London and Merton.

COMPETITIONS.

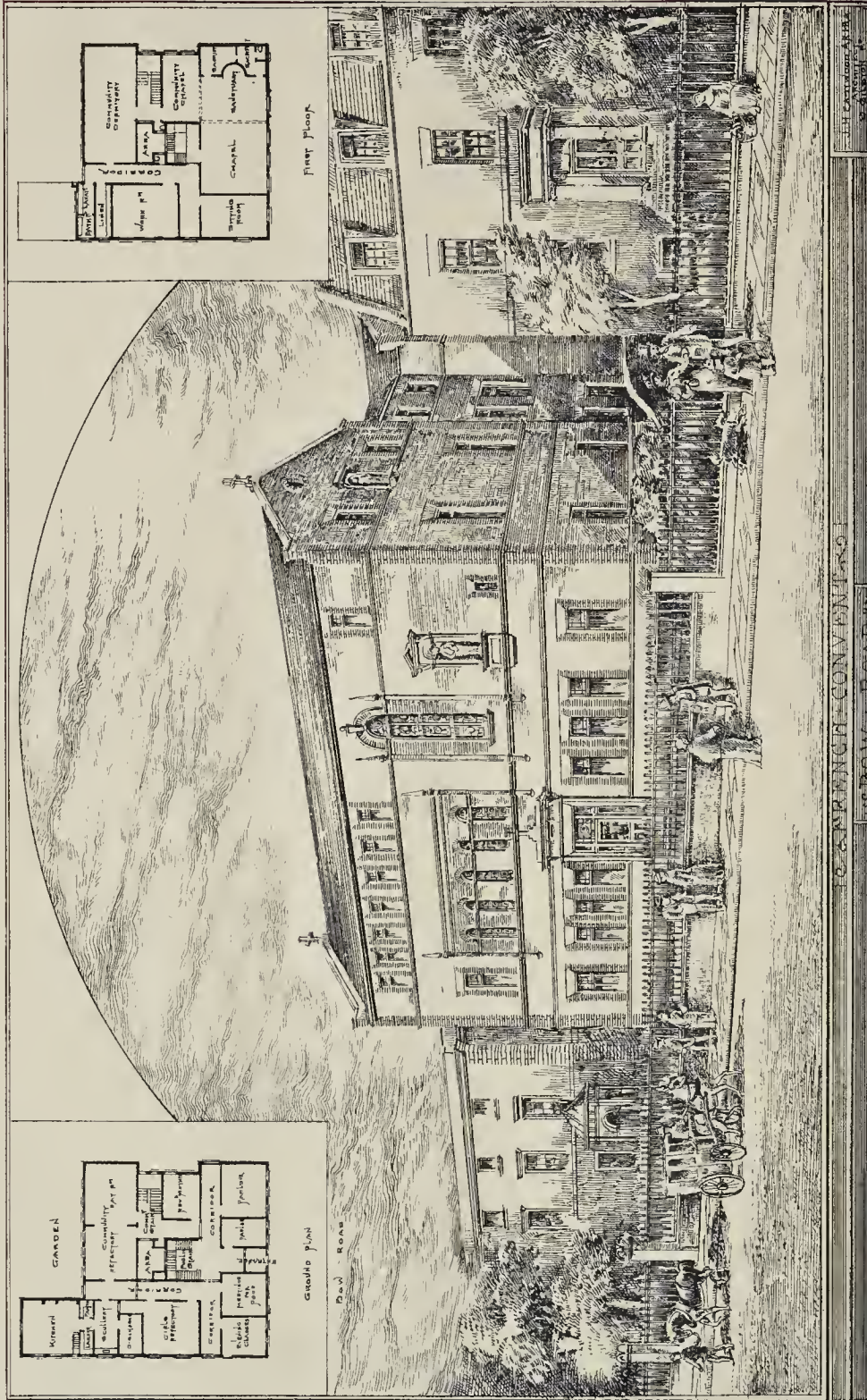
NEW GOVERNMENT SCHOOL BUILDINGS, DURBAN.—The Education Department recently offered two premiums, a first of 50l. and a second of 25l. for the best designs and plans for a proposed new girls' Model school at Durban, to be built on a rectangular piece of ground situated between Gale-street and Smith-street, at the foot of the Berea. Nine sets of plans were sent in to the Department. The first premium has been awarded to Messrs. Frank M. Kent and Matthew B. Price, two Home architects now employed in the draughtsmen's office of the Public Works Department. Messrs. Street-Wilson & Fyfe, architects, of Durban, have secured the second premium, and an alternative plan submitted by them has been highly commended. The plans of Messrs. Methven & Ritchie, of Durban, and Mr. Rowland Ridgway, of the Engineer's Department, Durban, were also highly commended. The adjudicators were the Engineer of the Public Works Department (Mr. J. E. Barnes), the Mayor of Durban (Mr. G. Payne), and the Superintendent Inspector of Schools (Mr. K. Russell). The new building is estimated to cost from 9,000l. to 10,000l., and will accommodate about 600 pupils. According to the plans placed first, it is to be a double-storey structure. There is to be a central hall 65 ft. by 35 ft., with a large class-room on each side, which may be thrown into the hall by means of sliding-doors, and will thus enlarge the hall to 120 ft. by 66 ft. The hall will have a gallery. The building is to contain two other class-rooms, and adequate accommodation for the staff, such as teachers' rooms, &c. On the front floor the plans show four other class-rooms, and verandahs extend nearly all around the building.—*Times of Natal*.

EDINBURGH ARCHITECTURAL ASSOCIATION.—The Council of this Association have arranged with Mr. Alexander Drew, Consulting Engineer (Constructural and Electrical), for a course of six lectures on the practical designing of iron and steel roofing. The lectures will deal with matters specially interesting to practising architects, civil and mechanical engineers, their assistants and artisans, and will be delivered in the Edinburgh Architectural Association's Rooms, Royal Institution, Princes-street. The first lecture was announced for Wednesday, this week; the remaining five will be given on January 27, February 3, 10, and 24, and March 3; at 8 p.m.

NEW BATHS FOR LOUGHBOROUGH.—At a meeting of the Loughborough Town Council, held on the 4th inst., a letter was read from Mr. Joseph Griggs, J.P., offering to erect and present to the town public baths at a cost of 3,000l. to commemorate the completion of the sixtieth year of the Queen's reign, upon a site to be provided by the Corporation. Mr. George H. Barrowcliff, architect, of Loughborough, has been entrusted with the work.

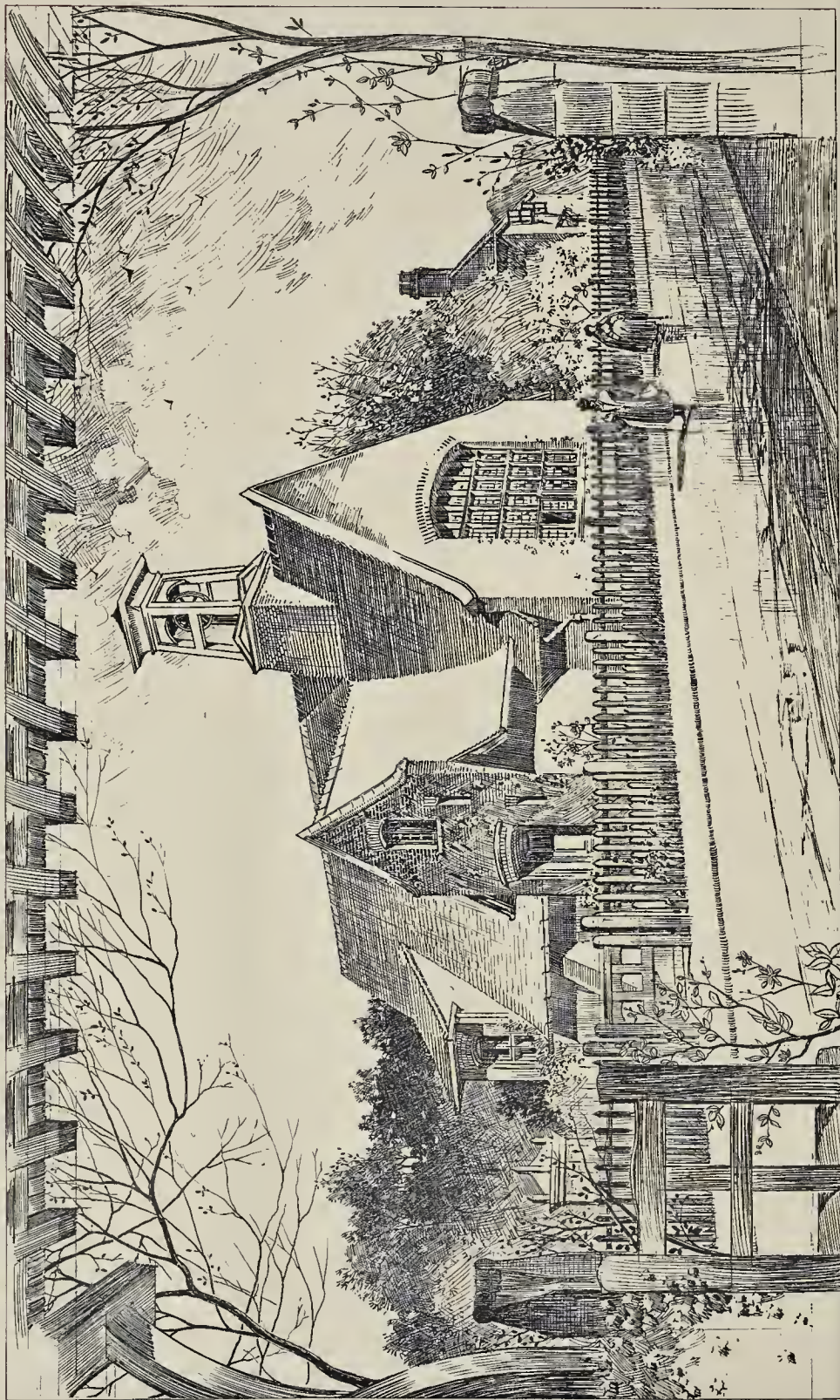


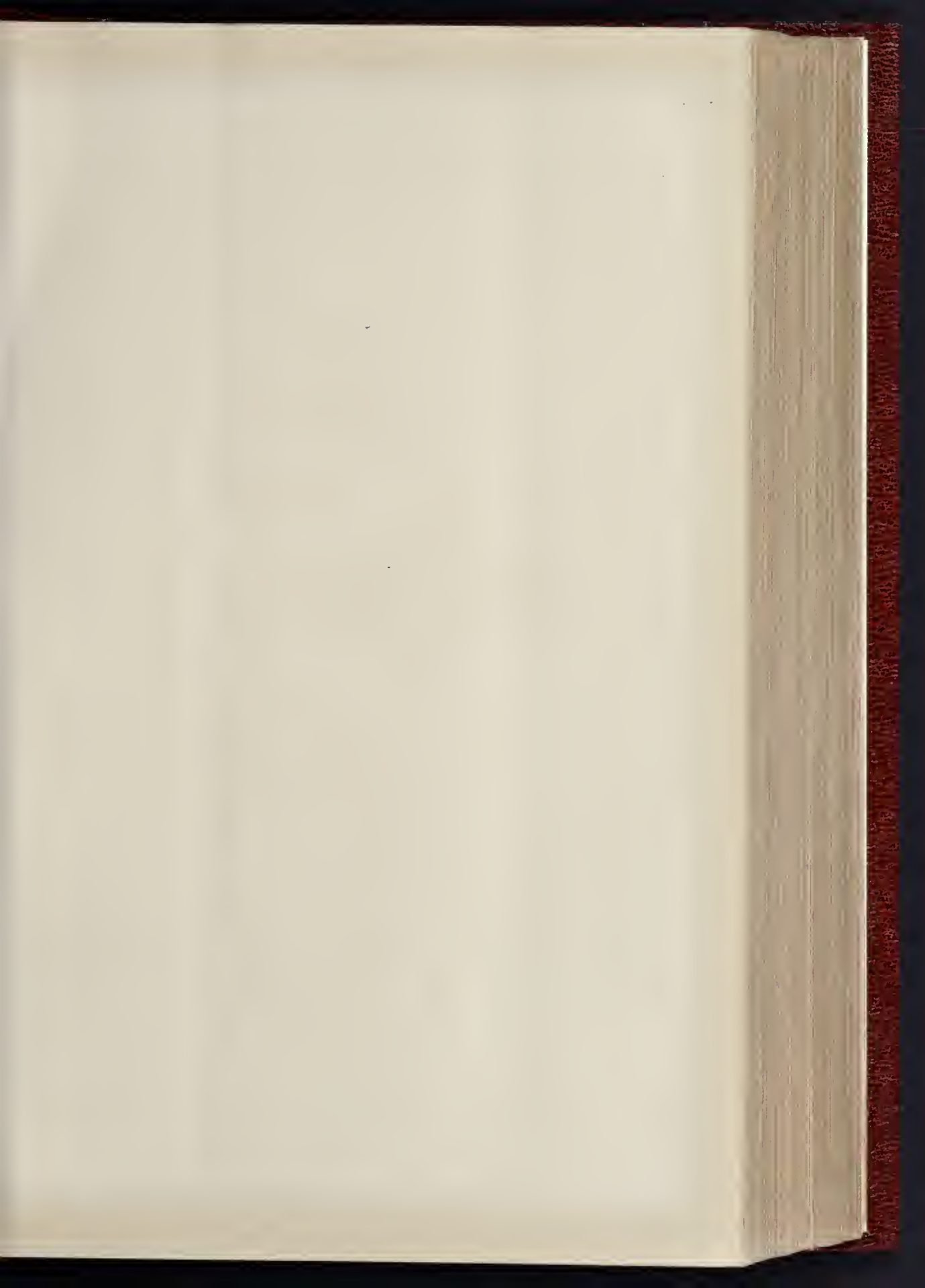
THE BUILDER. JANUARY 23, 1897



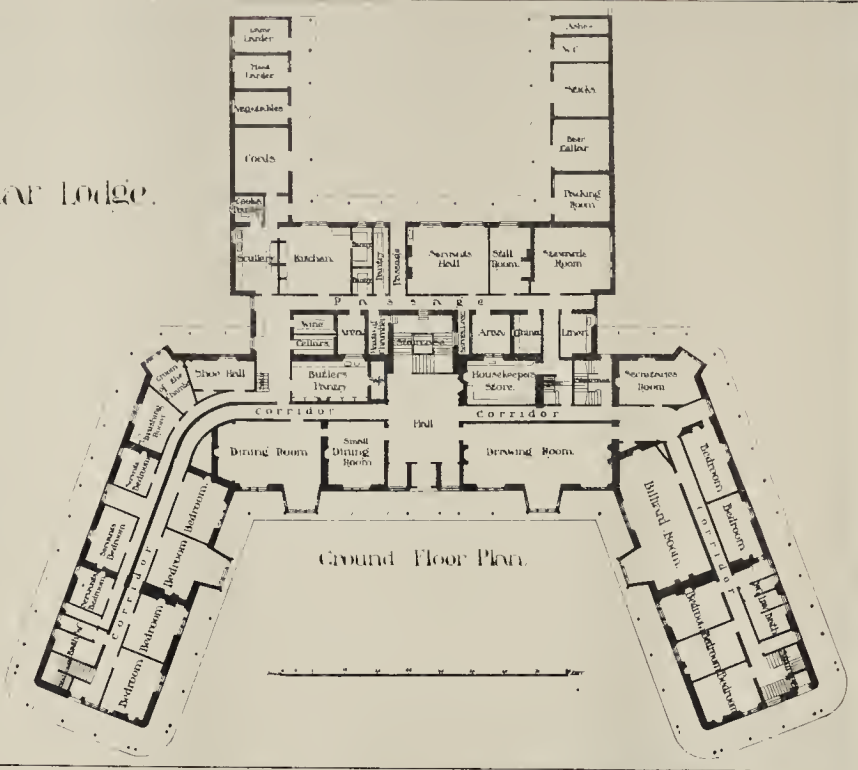


THE BUILDER. JANUARY 23, 1897.





Mar Lodge.

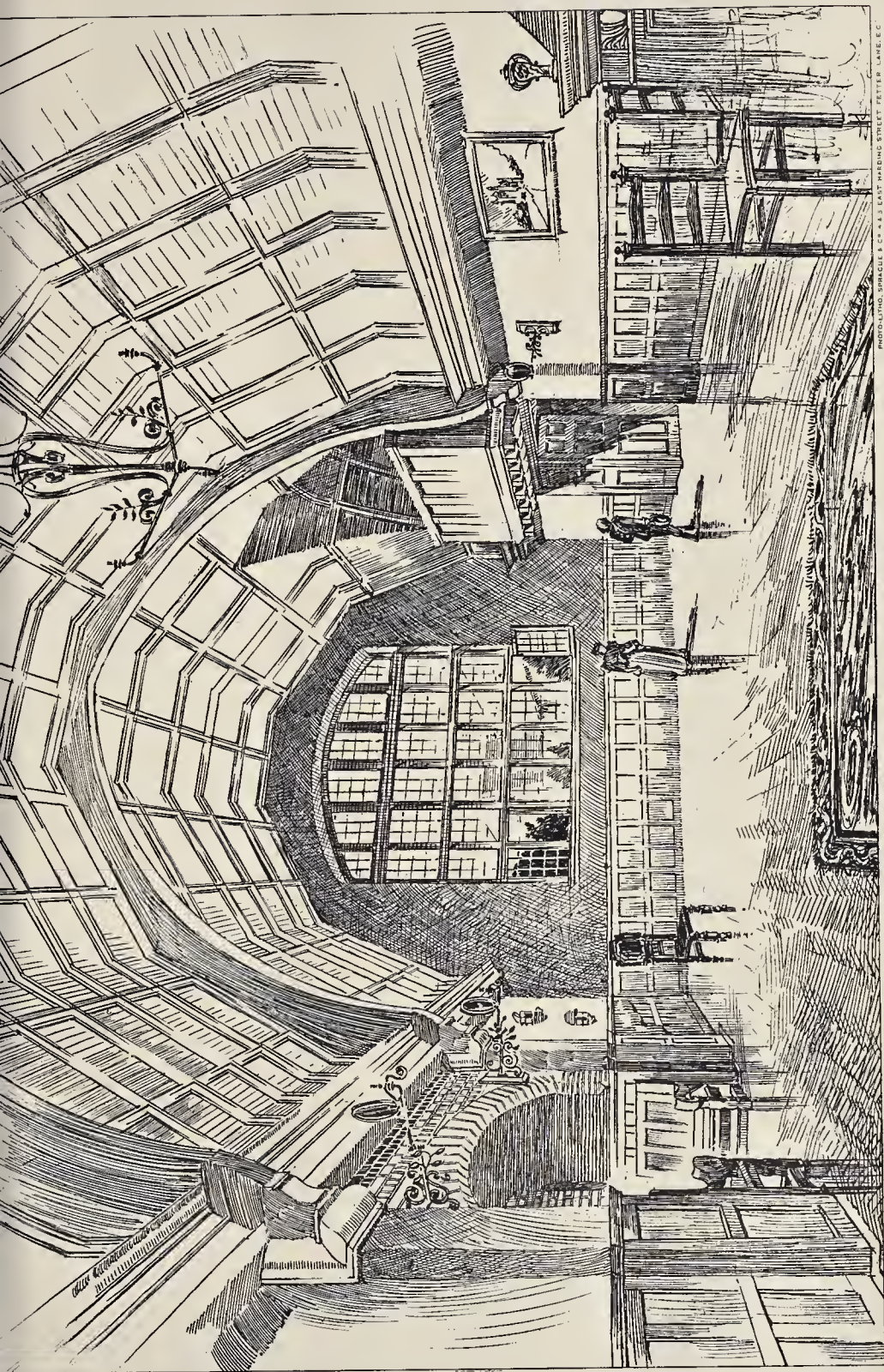


MAR LODGE, DEE-SIDE, ABERDEENSHIRE



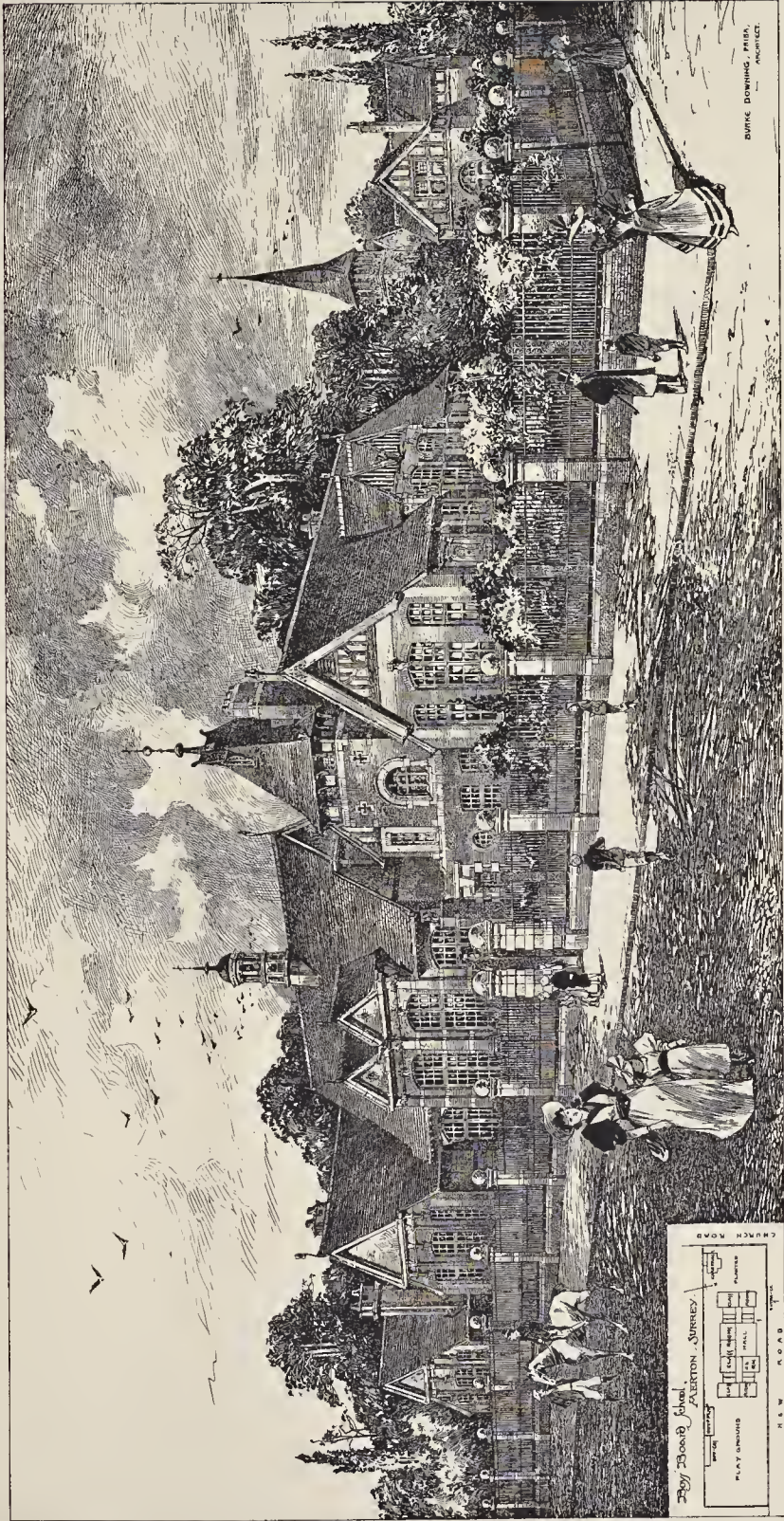
PHOTO. LEUNG, SIPAC, E. & CO. 41, EAST HADDON STREET, FRITH LANE, E.C.

LL MACKENZIE, A.R.S.A., F.R.I.B.A., ARCHITECT



PROF. AND SPRUCE & CO. 44, 45, EAST HIND STREET, LONDON, E.C.

CHURCH ROOM, ST. MARY'S, EWELL: INTERIOR.—MR. A. T. BOLTON, A.R.I.B.A., ARCHITECT





COMPETITION DESIGN FOR TECHNICAL INSTITUTE, WEST HAM By Mr E T Hall, F.R.I.B.A.

NEW DECORATIONS AT THE MANSION HOUSE.

The chief point which strikes one on visiting the Mansion House is its complete change of aspect. Remarkable before for its grimy and venerable aspect, it now presents an appearance of lightness and cleanliness which to many doubtless would be less in harmony with the associations and glamour of City pomp and splendour. As far as the public are concerned, the chief alterations would be noted in the Saloon and Egyptian Hall—the former forming an antechamber to the latter—and the State Drawing Rooms.

In the Saloon, which is interesting architecturally on account of the free columns and central lantern, the ceiling and upper part of the walls are schemed in ivory-cream and gold, stencilling being sparingly introduced, the dado being of a dark red. The tapestry panels from the Windsor works have been replaced in more prominent positions and are decoratively well worthy of the change. The vista from the vestibule, through the saloon into the Egyptian Hall, has also been improved by the removal of the gasaliers which formerly hung from the lantern. The Egyptian Hall has been renovated almost beyond compare. The upper part of the walls are treated in shimp pink, the dado below being dark crimson, as are the niches which serve to throw forward the statuary which they contain. This treatment of wall surface also serves to outline the Corinthian columns which flank the hall, and which are painted in cream and gold; the barrel vaulted coffered ceiling also now shows to advantage, the carving to the coffers having a blue background. The State Drawing Rooms have been taken in hand, the chimney-piece of correct Georgian type have been relieved of successive applications of stucco, gilt and paint, and show their original marble treatment. The wall panels are treated in yellow damask silk from Spitalfields looms, and these give brightness to apartments which are much in need of it. The decorations throughout are in quiet submission to Dance's architectural features, and we can congratulate the city that in this work of renovation, the character and requirements of the Chief Magistrate's residence have been maintained. Messrs. Gillow have executed the works under the superintendence of Mr. Andrew Murray, the City Surveyor.

ARCHITECTURAL SOCIETIES.

EDINBURGH ARCHITECTURAL SOCIETY.—The opening meeting of the present session of this Society was held in the Rooms, on the 13th inst., Mr. J. A. Williamson, A.R.I.B.A., President, in the chair. The minutes of the previous meeting having been read, the Hon. President, Mr. R. M. Cameron, delivered an opening address on "The Dean of Guild Court," and "Hints on Valuation." He pointed out the necessity of attending minutely to the requirements of the Court in the preparation of plans, so as to avoid any unnecessary delay in passing such plans; he also indicated the limit of the powers of the Court, besides giving some very interesting instances where the Court had used its utmost powers to the advantage of the amenity of the city. He afterwards gave some hints on valuation of property, pointing out that valuation may not be learnt from books, but must be gained by study of sales of property, land, &c., combined with forethought and common sense.

LEEDS ARCHITECTURAL SOCIETY.— "Sir Christopher Wren and his Work" was the title of a paper read on the 18th inst. by Mr. Arthur Straton, of the University College, Liverpool, to the members of the Leeds and Yorkshire Architectural Society, at the Mechanics' Institute. Born in 1630, Christopher Wren lived during the turbulent period of the Commonwealth. After taking full University degrees, he was induced, as the result chiefly of the great London fire of 1666, to turn his attention to architecture, though his studies had been arranged to fit him as an astronomer. How this diversion of his talents into the channel of architecture resulted is recorded in the annals of fame. The task that was early placed in his hands was a gigantic one; it was to rebuild St. Paul's Cathedral and about fifty London churches. For the performance of his huge work he received the stipend—a mere pittance—of 200*l.* per annum. The rebuilding of St. Paul's occupied nearly fifty years, the foundation-stone being laid in 1675, and the structure completed in 1723. Though his work was largely modelled

on the Italian masters, yet, strange to say, Sir Christopher Wren never visited Italy. He worked with the highest motives with which an architect can be imbued—the ennoblement of the art to which he contributed so much was the object of his aspirations and the aim of his labours. His career closed in 1723, when he died at the age of ninety-five years. The lecture was illustrated by a number of slides. Mr. W. Watson, President of the Society, occupied the chair.

YORK ARCHITECTURAL SOCIETY.—Members of the York Architectural Society and invited guests dined at the White Swan Hotel recently. After dinner a brief toast list was gone through, the remainder of the night being devoted to social intercourse and music. Mr. Henry Perkin, F.R.I.B.A., the President of the Society, occupied the chair, and there were present:—Mr. W. Watson, of Wakefield, President of the Leeds Architectural Society; Mr. A. W. Turner, York, one of the vice-presidents; Mr. Wm. Hepper, past-President; Mr. Geo. Benson, Mr. J. W. Knowles, Mr. Norman R. Yeomans, hon. treasurer; Mr. A. B. Burleigh, hon. secretary; Mr. E. A. Pollard, hon. assistant secretary, &c. The first toast was "The Queen," proposed from the chair. Mr. A. W. Turner then submitted "The Royal Institute of British Architects and Kindred Institutions." We lived in an age of progress and invention, he said, and the Institute and kindred institutions were taking active parts in the onward march. He advised youthful aspirants in the profession to pull with the times in educational matters, and to cultivate the thinking and reasoning faculties. Mr. W. Watson, in responding, remarked that lately the Royal Institute had done better work for the profession generally than was the case ten or fifteen years ago. Formerly it was sadly too exclusive. He thought the time had come when architects should be registered as one of the learned professions, and if such a result could be achieved during the present memorable year it would be a matter for great satisfaction. Mr. J. W. Knowles proposed "Success to the York Architectural Society," which, he said, was progressing, and had been in existence about fifteen years. The President made response. He called attention to the Syllabus and Papers for the fifteenth session, and stated that in March there will be an exhibition of the prize competition drawings of the Royal Institute of British Architects. He remarked that the Society fairly held its own in an increased membership, but there were several leading architects in York whom he would like to see amongst them. He spoke of the advantage of being allied with the Royal Institute and of benefits which members of the profession hoped to reap. He thought the Institute had shown a disposition to treat them fairly.—On Thursday evening last week, the first meeting of the winter session was held in the Church Institute, Mr. H. Perkin in the chair. Mr. Godfrey Bingley gave an address upon "A Study of English Architecture," and illustrated his subject with a series of lime-light views, including examples of domestic and ecclesiastical architecture. A vote of thanks was passed to Mr. Bingley.

ENGINEERING SOCIETIES.

INSTITUTION OF CIVIL ENGINEERS.—At a Students' Meeting of this Institution, on the 15th inst., a paper on "The Monier System of Construction" was read by Mr. Walter Beer, Stud Inst. C.E., Mr. Ewing Matheson, M.Inst. C.E., occupying the chair. In the brief historical account of the Monier system, with which the paper opened, the author showed how it originated in the attempts of a Parisian florist of that name to obtain large vessels of a material more durable than wood and lighter than concrete. The principle of the system was stated to be the combination of Portland-cement concrete with iron or steel in such a manner as to develop in the same material the high resistance, to compression and binding of the former, and the great tensile strength of the latter. It had been found that in such a combination the good qualities of both materials were retained, and no chemical action was found to occur between the iron and the moisture in the concrete. The latter adhered firmly to the smooth surface of the metal; and the co-efficients of expansion of the two constituents were for all practical purposes identical. The economy of the system in the construction of girders and arches was considerable, owing to its great strength and compactness, and further it was absolutely fire-proof. Large spans might be used for floors, and the small amount of head-room required was a factor often of great value.

Arches of 150 ft. or even greater span might be constructed, and the rise need not exceed one-tenth of the span, so that the system could be used in situations where brick and stone would be impossible. The author dealt with the practical details and cost of the method, stating the particular qualities of materials most advantageously used; and he also entered into a mathematical consideration of the relations existing between the dimensions and quality of the different portions of the structures and the stresses in them under known loads. The paper concluded with an account of tests to destruction of three Monier arches with a span of 12 ft. and a width of 4 ft. They were composed of three to one concrete, for which crushed granite, coke breeze, and crushed brick were respectively used, with a simple netting of 4-in. mesh, formed of $\frac{3}{8}$ -in. longitudinal rods and $\frac{1}{2}$ -in. transverse rods, embedded 1 in. above the undersides of the arches. The first arch was loaded uniformly, and after a central deflection of 2 in., failed when the load reached 11.7 cwt. per square foot. The second was loaded at one side of the centre only, and failed under a load of 4.8 cwt. per square foot, when the deflections at the unloaded and loaded sides and centre were respectively $\frac{1}{8}$ in., $\frac{1}{16}$ in., and $\frac{1}{4}$ in. The third arch was also broken by a load on one side only, but withstood a pressure of 7.0 cwt. per square foot. The paper was accompanied by drawings illustrating several examples of the system, including the arches upon which the author's tests were performed.

Correspondence.

To the Editor of THE BUILDER.

TESTS OF STEEL AND CONCRETE FLOORS.

SIR,—I have read with great interest your admirable article in this week's issue of the *Builder* upon "Tests of Steel and Concrete Floors." To avoid, however, any misapprehension, may I venture to explain that the "Golding" floor, which stood such a severe test, is, as a matter of fact, the Expanded Metal Company's Patent Fireproof Flooring, Mr. Golding being the inventor of expanded metal, as well as of this floor. H. B. TAYLOR, General Manager Expanded Metal Company.

A WARNING TO QUANTITY SURVEYORS.

SIR,—In the interest of fellow quantity surveyors we think it right to inform you that a man called on us on Wednesday last, professing to be an architect, and proposing to place a job in our hands for quantities. He promised to bring the drawings to-day (Tuesday).

He said he had been sent to us by an architect who is known to us—one well known in the profession.

Before he went he borrowed money with the plausible excuse that he had left his overcoat, which contained his money, at the dentist's.

On Monday one of us happened to be at another surveyor's office, when this same man turned up with the same tale of the job he proposed to bring, and with an introduction from another well-known architect.

It appears that neither of these architects knew the man personally, though he called on them both and asked them to recommend him a surveyor.

It is needless to add he failed to keep his appointment with us. SURVEYORS.

January 19, 1897.

SLATE TRADE IN 1896.—The year opened with a general stiffening of terms; the quarry proprietors, however, fearing a repetition of the "slump" of 1879, wisely kept prices at a level which they believed would not allow foreign slates to be imported at a profit, and the year would have been one of great prosperity for all in the trade but for the unfortunate strike at the Penrhyn Quarries, which, by reducing supplies, has given an impetus to the use of competing materials for roof covering, and has caused a heavy loss in wages. The make will show an increase, as present prices cause rock to be worked which would not pay at lower prices, and some small quarries have been reopened which were closed in bad times; but, owing to the limited area of workable rock, no great further increase is to be anticipated. Wages were advanced proportionately with prices, and many quarrymen who had left the district in less prosperous times have returned. In the way of legislation, open quarries have been placed under Government Inspectors, and an additional Truck Act has been passed, which will affect one quarries.

The Student's Column.

SPECIFICATIONS.—IV.

MASON.

IT is well to begin this trade with the stipulations as to quality of material and methods of workmanship which apply to all the varieties of stone, and then to indicate what parts of the works are to be of each particular kind, giving sizes of those items which are not figured or shown on the drawings. As there should be $\frac{3}{4}$ in. or larger-sized details of all the special features, the sizes of beds and heights of stones are better and more clearly denoted on these drawings than in the specification.

Materials.—All stone to be of the best quality of its respective kind, free from vents, sandholes, flaws, and other defects, thoroughly seasoned, and free from quarry sap (except in the case of those stones where the quarry sap in drying forms a protective film, in which case omit the requirement here and insert it under heading of those stones to which it applies), set on its natural bed, except where otherwise directed by this specification or the drawings, cleaned down at completion, and left perfect, all stone injured during the progress of the building by frost or other causes being taken out and replaced. All stones to hold their full scantlings, die-square at back, and no shellac is to be used on any account.

Workmanship.—All sizes of stones shown on the detail drawings, to be followed exactly, and the stonework to be put together with slate dowels 1 in. by 1 in. and 3 in. long, fitted to square cut mortises. Cramps, where necessary, to be of iron, and run with Spence's metal. All beds to be truly level, and no stones to be hollow bedded. All joggle joints to be V-joggles. (N.B.—If quarry-worked stone is allowed, say so, but stipulate that any damaged in transit is to be replaced by sound stone.)

Rubble-walling.—The walls of to be built of local limestone, from quarry, squared and brought up to level courses, not more than 2 ft. apart, and with not less than one through stone to each superficial yard. (If these walls, as usually done, are to have half-brick lining, specify thus.) These walls to have half-brick lining (better in cement), bonded to stonework, with headers in each course, one to every four stretchers. No bond stone to be built through brick lining. The face of stones to be scabbled and joints pointed with V joint in mortar.

Ashtar-facing.—The walls of to have ashtar-facing of stone, the stretchers stones to be $\frac{4}{3}$ in. thick, the headers 9 in. thick, with banders in long ($\frac{1}{3}$ in. less than thickness of wall) in the proportion of $\frac{1}{3}$ of wall surface. The joints to have dovetailed mortises run with lead as sketch. (Sketch the shape of lead plug or dowel preferred, or specify cramps of bronze or gunmetal.)

Rusticated Work.—The quoins to be 16 in. by 24 in. on bed, set to project 2 in. from ashtar facing with chamfer 2 in. wide around each face, and worked with snail-creep rusticated face (or other variety if desired) as directed by the architect. One specimen stone to be worked and approved before the others are commenced. (Describe also rusticated work to plinths or elsewhere.)

Arches.—(With rubble walling, arches are often used over lintols of dressed stone, if so, describe.) Turn relieving arches over lintols, the voussoirs 12 in. deep by average width of 6 in. with scabbled face and pointing to match facing. (Arches of dressed stone will, of course, come under heading of the particular kind of stone of which they are formed.)

Bath Stone.—The external stone work of to be of Box Ground stone, to be supplied by the Bath Stone Firms, Limited, hard and well seasoned, picked from stock by the architect or clerk of works (if so desired). (Or it may be specified that certain parts are to be Gorsham Down or Monk's Park, or other variety.)

The external Bath stone work after being cleaned down is to be treated with "Fluate," applied in accordance with the instructions of the manufacturers.

(Then describe the internal work, if any, to be executed in Combe Down, Farleigh Down, or whatever is selected.)

Kentish Ragstone.—This, of course, is usually employed only for rubble walling. In specifying it is important to mention that the stone is to be free from "hassock" where used externally. "Hassock" is useful internally occasionally.

Chalk.—For internal work only. Specify that it is to be from the "hull-head," free from veins,

shells, and flints, or even texture, and not to be in less size blocks than shown on the detail drawings.

Portland Stone.—Specify the bed, generally the "whit bed," though others may be used if desired. Say that overhanging cornices are to be joint bedded. This applies also to Bath stone.

(N.B.—In specifying Portland, Bath, and similar stones be particular to say how the face of stone is to be finished, whether tooled, dragged, or rubbed.)

For steps and landings, &c., old Portland stone, if obtainable, should be specified. Usually they are described as "hard Portland." Age adds hardness, a quality in which the beds vary.

With all limestones it is well to specify that they are not to be set in Portland cement.

Yorkshire Stone.—By this term is usually understood the more or less laminated or flag-stones, but there are a large number of free-stones in Yorkshire, as the various quarries in Huddersfield, Halifax, and elsewhere, which are useful for dressings.

Cornels and Cover Stones.—State size, whether "self faced" or "tooled," with "coped edges" where wanted.

Templates.—Give full list with size, whether "tooled" or how otherwise finished.

Steps and Thresholds.—Specify widths and depths, how much longer than openings, how finished, and if "back-jointed." Particularly note whether they are to be in one stone, or if not, how jointed and joggled. Say whether they are to be built in, or cut and pinned, and made good to.

Sills.—Give size and finish, whether sunk, weathered, throated, &c.

Cappings.—Give size and form, whether parallel, saddle backed, weathered or throated, and method of setting and jointing. If cramps are desired say so, quoting length and weight, and whether run with lead, Spence's metal, sulphur, or cement.

Hearths and Slabs.—Specify thickness, projection beyond opening, and description of surface, "tooled," or "rubbed."

Favings.—State thickness, widths of courses, or average sizes of stones, surface finish, method of setting.

Stairs.—Give sizes, amount pinned into walls, describe whether solid, spandril, or built up treads and risers, if related, moulded nosings, and whether returned. Also finish of surfaces and faces.

Chimney-pieces.—If plain, they can be sufficiently described verbally, widths and thicknesses of jambs, lintols, and shelves, whether chamfered or moulded, finish of surface, how set, if cramps are of iron or other metal, whether solid or boxed. Or a provisional sum can be allowed, or detail drawings be given.

Granite.—Usually the best way is to obtain separate estimate from merchants, and include as provisional sum, stating if it includes carriage; if not, where it comes from. If specified in detail, give quarry, and, of course, all sizes, whether polished, or machine worked. Stipulate that it is to be free from slippers, iron stains, and metallic veins.

Marble.—Here, again, a separate estimate and provision is best. If this is not done, give sizes, description of kind, whether polished, and stipulate that stopping is not to be allowed. In some marbles this, however, is almost impossible. Veining and colour to be approved. Specify method of fixing. In marble paving, as in black and white squares, give the sizes of these, with the thickness, and especially stipulate for evenness of colour and close joints.

Tile Paving.—Usually specify a certain make or get separate estimate and include provision. Specify who is to lay, and if contractor say how it is to be done, if jointed and laid in cement, also that surface is to be perfectly true and level. If manufacturer lays it provide for attendance and water.

Mosaic Paving.—Usually best done by separate contractor at stipulated amount or p.c. sum per yard. Attendance as for tile fixer.

Wall Tiling and Mosaic.—These follow same principles as described for paving.

Carving.—Allow provisional sum. State if contractor is to do boasting and specify sizes stones are to be left for carver. Provide for scaffolding and attendance and, if external, y. for shelter and screens. Sometimes provision may be only for models and contractor does carving. In all provisional sums for such work as described under this trade, and indeed for all provisional sums it is as well to state when the contractor is to pay, say within fourteen days after the architect has certified for payment and reserving power

to the employer to pay direct if contractor omits to pay within stipulated time and that in this event the contractor shall not be entitled to any profit on the provisional sum or sums.

GENERAL BUILDING NEWS.

CHURCH RESTORATION, LISKEARD.—In his report to the vicar and churchwardens, Mr. G. H. F. Prynne (architect) mentions that the tower of Liskeard Church is Norman in design and detail, although various conspicuous additions have been made at later periods. The tower arch is a curious example of Transitional work, and blending of the Norman and Early Pointed work. It seemed probable that defects in the tower showed themselves at an early date, possibly when the old Norman church was removed and the present late fifteenth century church was built, and subsequently a very considerable portion of the exterior was faced with granite. The western doorway, a late Perpendicular work, was probably inserted early in the seventeenth century. Walls were generally massive in bulk, and built of rough rubble work. The cornice under the battlement was very rich in early carving, and the thirty-four grotesque heads, &c., were of interest. The battlement itself, which was built in a solid manner in granite, was of later date. It was perfectly possible to repair and restore the tower in a satisfactory manner, but if undertaken thoroughly be roughly estimated the cost at 700l. to 800l., including the entire rehanging of bells upon a new frame. The one thing to be most careful about was that the architectural and archaeological interests were in no way injured. The repairs could well be done without any such injury, and one of the most interesting old towers in Cornwall preserved.—*Western Morning News.*

BOARD SCHOOLS, HALIFAX.—The new infants' Board School at Caddy Field, Halifax, was opened on the 11th inst. The total cost of the building and site was 3,200l. The plans adopted were selected in competition, the original scheme providing for 375 infants. At present only a portion of the scheme has been carried out to accommodate 165 children. The premises include a central hall, or assembly room 41 ft. by 22 ft. 6 in., three classrooms 18 ft. by 16 ft., and a teachers' room. Each classroom has a separate cloak-room, and a lavatory provided. The building is arranged to allow of the addition of four classrooms on the easterly side and on a higher level than the present structure. The contractors were—Mr. L. Firth, mason; Messrs. P. Greenwood & Son, Queensbury, joiners; Messrs. John Naylor & Son, plumbers; Messrs. Rushworth & Firth, slaters and plasterers; Messrs. George Greenwood & Son, concreters; Mr. John Berry, iron and steel work; Mr. T. Kushton, painting; Messrs. P. M. Walker & Co., ventilating; the Westminster Flooring Company, London, wood-block flooring; and Messrs. William Trusswell & Son, St. Asaph, heating apparatus. The architect was Mr. F. Walsh. —The buildings to be known as the Warley-road Board Schools were opened on the 11th inst. The architects were Messrs. Horsfall & Williams. The site of the building has cost nearly 1,200l., and the building and site together 13,200l. The entire cost was 16,000l. In addition to the ordinary accommodation, there are slippers and swimming baths, a workshop, a croking kitchen, &c. Provision is made for the three departments—boys, girls, and infants—furnishing accommodation for 1,132 scholars.

LIBERAL CLUB, COALVILLE, LEICESTER.—A new Liberal Club has just been opened at Coalville by Lord Crewe. The club has a frontage of 60 ft. to Marlborough-square. Messrs. Kelles & Fosbrooke, of Leicester, were the architects, and Messrs. Griffin Bros. the builders. The materials used are Ellistown pressed bricks with Derbyshire stone facings. Downstairs there is a vestibule and entrance-hall, leading to a smoke room, reading room, and temperance room. The remainder of the ground floor is taken up with lavatories, kitchen, and other offices. Upstairs there are billiard and card rooms, so constructed as to be formed into one apartment when required.

LLANELLY CHURCH RESTORATION, BRECONSHIRE.—The first portion of the work of restoration of this building has been completed, viz., the removal of the old spire, the repair of the external masonry of the tower, and the erection of the new spire. The architect was Mr. Baldwin, of Brecon, and the builder, Mr. Foster, of Abergavenny.

BOARD SCHOOLS, PAIGNTON.—The new Board Schools at Paignton were opened on the 11th inst. The schools being exclusively for girls, a kitchen is provided, with range, scullery, &c., for continuation classes. Teachers have their separate rooms. Mr. Rabbitt, of Paignton, built the schools, and plans by Messrs. Bridman & Sons. The contract price was 4,250l., but this has been exceeded by about 1,000l. Recently Mr. J. W. Rowell, of Newton Abbot, sat as arbitrator concerning the extras, but he has not yet given his award. Accommodation is provided for 384 children.

BANK, LINCOLN.—A new bank is in course of construction for Messrs. Peacock, Wilson & Co., of Lincoln. The architects are Messrs. W. Watkins & Son, of Lincoln. The building has a frontage to High-street of 42 ft., and an area of 1,080 square ft. In the front elevation all the enrichments are in

Doulton's brown-buff terra-cotta, the plain walling being in ordinary red brick work. The building consists of a basement, three stories, and attics, and there are two entrances, one giving admission to the banking office; the other to the manager's house and a passage common to some adjoining properties. The last-named entrance is closed by a Bostwick gate. In the basement, which is lined throughout with glazed bricks—as also is the passage, and a portion of the back yard—are the heating apparatus, the clerks' cloak-room, and other necessary requirements of a bank. On the ground floor is the banking office, the manager's room, and a waiting-room. The woodwork of the interior of the banking office is executed in oak with the exception of the counters and the desks, which are of mahogany. The ceiling will be an enriched plaster ceiling and a model plaster frieze 3 ft. deep round the room, these decorations being carried out by Mr. W. H. Horne, of Alle, near Bradford. On the first floor are drawing, and sitting rooms, and all requisite conveniences; the second floor is given up to bedrooms, above which are the attics. The building has been wired throughout for the electric light, a mode of illumination which will be adopted so soon as the Corporation are in a position to supply it. The consulting engineer in the department is Mr. J. E. Cole, of Sleaford. In the meantime gas has been laid on. The building is heated by the high-pressure hot-water system, worked from a boiler in the basement. A lift communicates with the banking office and the basement, and there is also a lift at the back for the elevation of tradesmen's goods, &c., to the manager's house. The contract for the buildings is in the hands of Messrs. Wadley & Co., of Horsham.

PROPOSED ENLARGEMENT OF CHURCH, CASTLE CRUICK, STAFFORD.—It is proposed to enlarge this church as a memorial to the late Vicars of Castle Church. Plans for the enlargement were made by the architect, the late Sir Gilbert G. Scott, R.A., who carried out the work, and these are in the hands of the committee. It was the intention of the late Vicar, as soon as the addition to the churchyard and enlargement of the schools had been carried out, to proceed with the enlargement of the church as a memorial to his minister, and, as the plans were approved by both of them, the committee think that no more fitting memorial could be desired. The plans consist of a new north aisle, organ chamber, and vestry. The additional accommodation will provide about seventy-five seats. Mr. J. O. Scott has been consulted and estimates the total cost at, say, 1,500l.—*Tamworth Mercury.*

EXTENSION OF THE BRITISH SCHOOLS, CHESTER.—Three new class-rooms have been added to the British Schools in Victoria-road, Chester. The work has been executed by the contractor, Mr. Thos. Mayers, of Rowton, from the designs of Messrs. T. M. Lockwood & Sons.

OFFICES FOR THE NEWCASTLE WATER COMPANY.—The Newcastle Water Company's new offices are situated in Pilgrim-street. The main portion of the structure is of Kenton stone, and the design is Italian Renaissance. The architects are Messrs. Freeman & Robins, of Newcastle. The main business portion of the building is the general rate office—some way from the main building to the rear, and is only one story high. This office measures 70 ft. by 30 ft. The walls of this room, as well as those of the neighbouring corridors and grand staircase leading to the various official apartments, are all lined with Burmantofts glazed tiling. The front offices on the ground floor of the new building are for the use of the secretary. On the first floor there is another suite of apartments, devoted to the engineer and his staff, and on the second floor there is a board-room. Above is a set of apartments for the use of the caretakers. In the rate offices the fittings are in Spanish mahogany, the moulded ceiling is by the Veronese Company, and the mosaic flooring by Messrs. Emley & Sons. The main light into this room comes through the roof, but there are a number of side windows which are filled with stained glass, from the works of Messrs. Atkinson Brothers, of Newcastle. The roof light extends nearly the whole length of the room, and is supported by ironwork, by Messrs. Somerset & Co., Newcastle, who have supplied the bulk of the heavy iron work used in the general construction of the building. The grand staircase consists of five flights of steps, all of Sicilian marble. The lower portion of the main hall is paved by a pillared and arched casement, the open spaces in which are filled with a light iron railing. The whole of the balustrades in the remaining portions of the staircase are in similar ironwork, wrought from the design of the architects. The secretary's room on the ground floor has the Acme patent flooring. The whole of the building has an independent telephonic installation whereby every room may be switched on to any other, or to the secretary's room. There is a lift going from the basement of the building to the top. The directors' room on the second floor front is an apartment measuring 40 ft. by 20 ft., and the ceiling is 20 ft. high. Round the room is a panelled mahogany dado with enriched carving. The carving was designed by Mr. Ralph Hedley, of Newcastle. The doorway is decorated with two sets of twisted pilasters on either side. The whole of the plumbing in the building has been carried out by Bland

Bros., Barras Bridge. The basement of the building contains, amongst other departments, rooms and stores for the company's inspectors and fitters. It also contains the lavatories for the general staff. Here also is the heating apparatus for the whole of the building. The system is that of Messrs. Ashwell & Nesbit. Messrs. W. B. Emley & Co. the marble, mosaic, and other work; Messrs. Robertson & Sons have done the outside painting; Messrs. T. Beck & Co. and Mr. W. Ferguson the plastering work; Mr. John Ferguson has been responsible for the general building—stone work, brick work, and joinery work. The electric light installation is by Messrs. Ernest Scott & Mountain, Limited, and the interior painting and decoration have been executed by Messrs. Sykes. Mr. J. Towers has acted as clerk of the works.

MEMORIAL HALL, CRANFORD, NORTHAMPTON.—A new reading-room has just been opened at Cranford in memory of the late Rev. Sir F. L. Robinson, Bart. Messrs. Blackwell & Thomson, architects, Kettering, prepared the plans; Mr. John Ball, of Burton Latimer, was selected to do the work. The building consists of a reading-room, 30 ft. by 20 ft., with porch entrance and offices.

CHURCH, SKIPNESS, ARGYLLSHIRE.—The new Established Church at Skipness was opened on the 13th inst. The church is from the designs of Mr. B. V. Johnson, of London. A feature of the building is the large stained-glass window presented by Mr. Graham, of Skipness. This window was executed by Messrs. J. Powell & Sons. Mr. Graham designed the window.

ST. PETER'S CHURCH, HORNSEY.—Plans were recently passed by the Hornsey District Council for St Peter's Church, which is to be erected at the corner of Wightman-road and Lausanne-road, and which is to replace the present iron building. The plans have been prepared by Messrs. James Brooks & Son, who were the architects for the new church of St. Mary. The building is to be of stone and brick with glazed roof. Provision has been made for a side chapel at the north-eastern corner, while on the south side of the choir is the organ chamber, with a large vestry beyond, divided by a movable partition. It is now only intended to erect the nave and aisles, which will accommodate 500 people, the estimated cost being 6,275l.

LIBERAL CLUB, CLEVEDON, SOMERSETSHIRE.—A new Liberal club has just been opened at Clevedon. The internal accommodation consists of entrance hall, refreshment bar, amusement room, and skittle alley, all on the ground floor. Several of these apartments can be thrown together to give accommodation for 300 or 350 persons attending political gatherings, concerts, &c. Above is a billiard room. The plans for the new club were prepared by Mr. H. G. Hewlett, of Clevedon, and Mr. W. A. Green carried out the contract.

PUBLIC BUILDINGS, BLYTH.—The new Council chamber and offices which have been erected in Seaford-street, Blyth, were informally opened a few days ago. The building, which has been erected by Mr. J. N. Healey, in accordance with plans by the Surveyor to the township, Mr. R. Grieves, is of pressed bricks, with stone dressings, a conspicuous feature in the structure being the centre gable and ornamental roof turret. The entrance hall is paved with ornamental tiles, and on either side of the entry are the various offices allotted to the officials of the Authority. On the first floor is the Council chamber, 34 ft. by 22 ft. Adjoining the Council chamber is an ante-room, which will be used as a committee room. Contiguous to the main building are the stables, hayloft, and outbuildings, which have been fitted out by Messrs. Dinning & Cooke, of Newcastle.

REBUILDING THE CAMBRIDGE MUSIC HALL, LONDON.—It is stated that the tender of Mr. R. S. Lambie, of 19,460l., for the rebuilding of the Royal Cambridge Music Hall, for the Consolidated Contract Corporation, Limited, from plans which have been prepared by Mr. D. H. Percival, architect, of Adelphi, has been accepted, and the work will be immediately proceeded with.

VILLAGE ROOM, BLACKHEATH.—A new village room has been built at Blackheath which has recently been opened. The work has been carried out by Messrs. Brown Bros., of Bramley. The architect is Mr. Townsend. There is accommodation for about 250 people.

COUNTY SCHOOL, MERTHYR.—The formal opening of the Merthyr County School took place recently. The school occupies a site on the Clock Field at Penydarren. It provides accommodation for 100 boys and 80 girls. The Building Committee offered a premium of 25l. for the best plan submitted for the erection of the school, but the one chosen was found to be far too expensive, exceeding considerably the stipulated cost of 15l. per head, and further designs were afterwards solicited, the basis of cost being raised to 25l. per head, and that of Mr. E. Lingen Barker, of Hereford, was selected and carried out, the builder being Mr. J. Williams, of Swansea. Before the building had been completed and opened for the reception of scholars, the cost had run up to 6,918l. 3s. 2d.—*Western Mail.*

WELSH CONGREGATIONAL CHAPEL, SWANSEA.—The foundation stones were laid recently of the new Welsh Congregational Chapel now being

erected in Henrietta-street, Swansea. The new building is expected to be opened towards the end of February. Its style is Romanesque. It is built of native stone. There will be a circular gallery, lobbies, with a staircase leading to a circular gallery. An organ chamber will be constructed, and a pastor's vestry, a cloakroom, a heating chamber, and a room for the combination of hydraulic and electric engine for the purpose of organ blowing. The builder is Mr. Billings, and Mr. W. W. Williams is the architect.

DISPENSARY, BEDMINSTER, BRISTOL.—A new branch of the Bristol Dispensary is being erected at Malago-road, in the centre of Bedminster. It was designed by Mr. W. V. Gough, and the contractor for its erection is Mr. George Humphreys. The building is of red brick, with Broseley tiles, the panel bearing the name, Bristol Dispensary, is of freestone. The building stands back from the road, and is approached within its own ground by an incline which rises to the central doorway. This opens into a hall 7 ft. in width, and on the one side of it is a large general waiting-room, to which the dispensary is attached; while on the other there is a second waiting-room connected with the doctors' consulting rooms. The first floor is arranged as a residence for the dispenser, and the basement is used as a store and also for the heating apparatus.

SCHOOLS, SWANSEA.—The foundation stones of St. Thomas School, Swansea, were laid recently. The building will consist of three departments—infants on the ground floor, girls on the next floor, and the boys on the top, the three departments being made to accommodate 1,200 children. Each department is planned with a large central hall, with classrooms leading into it. The cloakrooms and the lavatories for the boys are arranged on the level of their playground, with a terrace above for access for the girls and infants to their own playgrounds. The building will be in brick, with fire-proof and wood-block floors throughout. It is estimated to cost 10,500l. Mr. G. E. T. Lawrence, London, is the architect, and the builders are Messrs. J. & F. Weaver, Manselton.

SANITARY AND ENGINEERING NEWS.

ENGINEERING TRADES.—In Messrs. Matheson & Grant's half-yearly "Engineering Trades' Report" it is stated that the improvement in trade, which had fully set in at the time of their July report, has continued and increased. In regard to iron and steel, pig iron has, with occasional fluctuations, been rising in value since 1893. Flamingo pig iron, the material for steel-making, did not till recently share the same tendency, but now the diminished supply of Spanish ore, and the activity of the steel trade, have raised its price also. Finished iron and steel, as used by engineers, do not differ much in price. Every year the respective advantages of the two materials are becoming more clearly defined. Where smithing and welding are required, fibrous iron made from puddled blooms is likely to maintain its place as more suitable and trustworthy than steel. For light structural work, such as roofing, iron is still much used; but for larger structures steel is everywhere gaining. Nominally iron is cheaper than steel, but the facilities for manufacturing large plates and heavy sections of steel have been so improved, that the steel can be supplied at normal prices where, in the case of iron, considerably extra rates would be demanded. Mechanical engineers and ironfounders share in the general activity, and overtime is the rule in most of the factories. A considerable proportion of the home demand is due to the requirements of the steamship builders and for electrical plant of various kinds. Railway extensions abroad, under British management, involve corresponding additions to plant in the local repairing shops, most of which are supplied from this country. The expectations of an extensive introduction of motor carriages have proved premature, for although legislative restrictions to their use on town and country roads have been removed, none of the carriages yet exhibited are sufficiently successful to lead to general adoption. Machine-tool makers are well employed and are likely to continue so for the whole of the year. But besides satisfying the demands from the new or enlarged factories at home and abroad, the leading firms have of late been paying special attention to the improvement of old types of machines, by so balancing and speeding them as to increase greatly their output and economy. When once such improved tools are available, manufacturers are compelled by competition to use them, and old machines are brought down to a "scrap" value, though not worn out. In steel constructional work all the leading firms are well employed, though still to a considerable extent at the low prices that till recently prevailed. As, however, the aggregate tonnage under contract will occupy many of the factories till the summer, prices are likely to rise for those who are still able to offer delivery in reasonable time. On the railways there have been very large orders given out; the structural work of goods stations and sidings, as well as the strengthening, widening, and reconstruction of bridges on the main lines are still going on; and much work is in view for new railways already authorised. The shipments of bridgework to India still continue, and are likely to increase rather than diminish. As the continental factories are also well

engaged and the United States have not yet commenced to seriously compete with great Britain in foreign markets, the prospects for the year are favourable. Portland cement forms at present an exception to the general improvement, for although in the summer there was a slight recovery from the very low prices that had prevailed for some time, it has not continued, and prices are at a low level. The selling rates are ruled by the demand for export, which is almost entirely from the works on the Thames and Medway forming the London district, and is at present slack, the shipments to the United States especially having greatly fallen off during the last year.

INSANITARY AREAS, LEEDS.—A meeting of the Leeds Insanitary Areas Committee was held on the 17th inst., Ald. F. M. Lupton presiding. Having now obtained the permission of the Local Government Board to deal with the insanitary property in the neighbourhood of York-street, and also that at Camp Field, the Committee resolved to recommend the Council to proceed with schemes for dealing with the whole of the two areas. The greater area covers about sixteen acres, and it is bounded on the north by Dyer-street and High-street, and on the south by Marsh-lane. It is the Committee's intention to demolish much of the crowded and unhealthy property at present existing in the locality; to cut two or three broad streets through the property, and eventually, possibly, to make York-street and Marsh-lane each 60 ft. wide. The latter idea has not yet, however, taken the form of a written recommendation. As to the smaller area in Camp Field, the Corporation appear only within the last few weeks to have obtained the necessary sanction of the Local Government Board to proceed with the work, and this permission is granted conditionally, the Local Government Board stipulating that the Corporation shall provide the artisans' dwellings in the neighbourhood of the property demolished.—*Leeds Mercury.*

PROPOSED NEW STORAGE RESERVOIRS, EAST LONDON WATER SUPPLY.—The Bill which has been deposited at the next session by the East London Water Company sets out in the preamble that in order to enable the Company to supply the water required by the increasing population in their district, and to comply with their statutory obligations, it is necessary that they should be empowered to construct additional waterworks, and make agreements with other companies for the supply of water. In accordance with this preamble power is sought by the Company to construct two storage reservoirs. The larger of these two will be situated on Wild Marsh and Mitchell Marsh, Tottenham, and will occupy an area of fifty-eight acres. The smaller reservoir will cover an area of about thirty-four acres on Chingford Marsh and Wild Marsh. In connection with these works power is sought to divert and impound waters from the river Lea, Tottenham Mill Lead, Ching Brook, and Chingford Mill stream, and to construct aqueducts from these sources into the new storage reservoirs. The time sought for the construction of these works is seven years.

REFUSE DESTROYERS, LEEDS.—As the refuse destructor at Beckett-street, Leeds, is now somewhat out of date, it has been decided to have it remodelled, and plans for this purpose are being prepared by the Leeds City Engineer (Mr. T. Hewson).

A BRIDGE REMOVING FEAT.—The Great Eastern Railway Company, who have lately been replacing in a single night several of their bridges which span rivers, brought its own record on Saturday night, when, in spite of a snowstorm, the bridge over the river Lea to the south of Tottenham Station, on the main line, was replaced by a new bridge, the old one being removed and the new one placed *in situ* in nine hours. The old bridge was removed and the new one put in its place by the same process and at the same time. Mr. Wilson, the Chief Engineer, with a large body of officials, and gangs of men to the number of seventy, were on the bridge soon after 12 o'clock with a huge crane, several land crabs, a couple of 100-ton jacks, and several 50-ton jacks in reserve. At 12.35 a.m. operations were commenced. The first thing to do was to strip the rails from the old bridge, taking up the planking as well as the permanent way in order that the lifting apparatus could be attached to the girders to raise the whole bridge bodily to the extent of 18 in. This was to allow of movable trolleys or carriages to be placed underneath resting on transverse girders, which had been the most arduous part of the task, and occupied the men incessantly until a quarter to seven. Then, by means of powerful crabs and winches attached to the new bridge, this was slowly pulled into the place of the old, the latter being at the same time pushed out of the way. It was a dead weight to move of 250 tons, but it was accomplished in an hour. At a quarter to eight the new bridge was in its place, and the old bridge was by its side. The next thing to be done was to remove the trolleys or wheeled carriages from under

the new bridge, and lower it into its final position flush with the permanent way. The completing of this occupied the remainder of the morning, and then the levelling up and adjusting was gone on with; but at 2.20 the engineer's train was able to cross the new bridge, and the work was practically completed.—*The Times.*

PEMBROKE DOCK WATER AND DRAINAGE.—At the last monthly meeting of the Pembroke Town Council Mr. Beesley, C.E., attended, and submitted plans and estimates both for the sewerage and for supplying Pembroke Dock with water. The Council ultimately passed a resolution to apply to the Local Government Board for sanction to borrow 27,000*l.* for water purposes and a sum of 15,000*l.* for sewerage, being the engineer's estimates. Mr. Beesley was further instructed by the Council to prepare a scheme for the sewerage of the Pembroke Ward, and this he promised to do within a month, and the Town Clerk was instructed to inform the Local Government Board of this, and send the plans, &c., immediately.

GLASGOW: DISTRICT SUBWAY.—The Kelvin Bridge Station of the new District Subway is to be equipped with an electric lift, to carry fifteen passengers. It will be fitted with safety gear, automatic stops, and other accessories, and is now in course of erection by the makers, Messrs. Easton, Anderson, & Goolden, Limited, of Erith.

BRIGHTON SEA DEFENCES.—Important proposals on the subject of Madeira-road defences were, according to the *Daily Chronicle*, to be laid before the Brighton Town Council on Thursday. Following the gale of December 4, which swept away the Old Chain Pier, Mr. May, the Borough Engineer, called attention to the urgent necessity of building permanent defence works in view of the rapid encroachment of the sea between the Albion groyne and Royal Crescent groyne. He now points out that in fourteen years the high-water mark has advanced from 50 ft. to 70 ft., and that the denudation of the beach is steadily proceeding. He emphasises the need, Mr. May, in addition to the present groynes, and dwells on the importance, for the prosperity of Brighton, of the Madeira-road being made attractive for all classes, and as safe as possible for the use of residents and visitors. He recommends the construction of a low concrete wall similar to that being erected between the West Pier and the western boundary, and the opening up of a good view of the eastern foreshore, right through from Junction-road to Black Rock.—The line he suggests is 2,760 ft. in length, giving a roadway 85 ft. in width at the foot of Rock-placing steps. The wall, moreover, would reclaim and permanently preserve an additional area of two acres of foreshore, which might be laid out as lawns or otherwise, as might be deemed desirable. The cost of the scheme is approximately 25,000*l.* The Committee recommend the adoption of Mr. May's report, and that application be made to the Local Government Board to borrow 10,000*l.* for a period of thirty years, to defray the cost of the groynes, and that 25,000*l.*—the estimated cost of the wall—be borrowed under the powers of the Brighton Corporation Act, 1865.

FOREIGN.

FRANCE.—M. Ernest Barrias, sculptor, has just resigned his post of Vice-President of the Académie des Beaux-Arts on account of ill health. His successor will be chosen next week.—M. Edmond Detaille has been unanimously re-elected President of the Société des Artistes Français.—A recent circular by M. Derville, Director of the arrangement of the 1900 exhibition, predicts a triple exhibition of fine arts, in which decorative and industrial arts will take their place.—M. Puvion de Chavannes has now on view in the Durand Ruel Gallery, large but very faithful copies of his three large panels executed for the Boston Library.—La Philosophie, La Chimie, et l'Electricité.—The Municipal Council will be occupied this session in transferring the Gare d'Orléans to the site of the Cours des Comples. This operation, which is very much interesting the inhabitants of the centre of Paris, will most likely necessitate the rebuilding of the Pont Solferino and the clearing away of several roads on the two banks of the Seine. A new road will be carried through the Tuileries Garden, a prolongation of the Rue de la Paix and the Rue Castiglione.—M. Dubois, architect, of Angers, has just been elected President of the Société des Architectes at Angou.—The International Exhibition at Nice will be inaugurated on the 28th February 17.—The Municipality of Bourg is building a theatre in the town, which is to cost about 330,000 frs.—At the Musée Feltré, at Nantes, a monument has been erected to the memory of the artist Elie Delaunay. This monument, which has been executed by M. Montfort, architect, is ornamented with a marble medallion of the late artist, by M. Chavalan.—The new French hospital at Constantinople, which has just been solemnly inaugurated, has been built under the direction of the French architect, M. Carré, from the plans of the late Juste Bourmaeur.—The death of M. Edmund Petit of Villeneuve, architect, at the age of 57, is announced.—The death is also announced of M. Charles Lieprie at the age of 81. He was well known as a landscape painter, pupil of MM. Jean Paul Laurens

and Harpignies. He received medals at the Salons of 1865, 1869, and 1890. He painted nature with great charm and truth, and his panel of the "Jardin du Luxembourg" is one of the finest compositions that the Hotel de Ville possesses.

GERMANY.—The Emperor has bestowed the title of "Geheime Hofbauherr" on Mr. Inne, of Heidelberg, who is his Court Architect, and is also responsible for the mansion of Empress Friedrich at Cronberg, which was illustrated in the *Builder* some time back. At the same time, Mr. Geyer has been made "Hofbauherr."—One of the first reports by the new Architect Attaché at the German Embassy in London has been on the Arts and Crafts Exhibition, which he describes and illustrates at considerable length in the *Centralblatt der Bauverwaltung*.—Among the interesting series of lectures which is to be held this year at the "Arts and Crafts Museum" at Berlin, we notice that Mr. Richard Bornmann will discourse on the history of German houses.—The *Centralblatt der Bauverwaltung* reports that no less than sixteen competitors entered this year for the annual Schinkel studentship.—The Municipal Gas Works at Berlin have now been in existence for over fifty years, the first works dating from January 1, 1847. The fact is of some interest in this country as the first gas-works in Berlin originated through English enterprise in 1825, when "The Imperial Continental Gas Association" obtained the contract, the whole of which it held until 1846. The municipality has sunk a capital of nearly three and a-half millions sterling in its gas-works, which are managed by a special committee of the municipality. A publication has just been issued describing the working of this municipal institution.

AUSTRIA.—We have on a former occasion referred to the competition for the design of a Bohemian Museum at Reichenberg, in which Professor Ohmann, of Prague, obtained the first premium. It now appears, however, that the commission has not, after all, been given to this architect, and Herr Griesbach, of Berlin, has been called in by the Town Council.—The design for the new Government hospital at Amstetten was the subject of an important competition, but owing to the elaborate character of the work required only three candidates submitted schemes. The first premium was awarded to Messrs. Froehlich and Scheininger, of Vienna. It had generally been expected that more candidates would have entered, but the requirements were such that a limited competition, with a fixed honorarium for each candidate would have been more suitable.—Of architects recently deceased at Vienna, we regret to record, during the winter, the death of Professor Hanser, at the early age of fifty-five. Herr Hanser was well known in architectural circles, and for some time held important curatorships. Of work carried out under his directions, perhaps the most important was the restoration of the Cathedral at Spalatro.—The question of finding suitable habitations for the middle and lower classes appears to be causing considerable attention at Vienna at present, and interesting lectures on the subject have been given. From various statistics presented, it appears that 28,500 rooms are filled by 70,000 tenants, and not having a kitchen; not very satisfactory for a city that prides itself on its modern improvements.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. Henry A. Jones, Surveyor and Sanitary Specialist, has removed his offices from 11, Wellington-street, to 49, Bedford-street, Strand.—Messrs. Ernest Mathews & Co., slate merchants, request us to mention that all orders should be addressed to their City office, 61, St. Mary Axe, E.C.

APPOINTMENTS OF ARCHITECTS.—A special meeting of the Barry School Board was held on the 17th inst., to appoint an architect for the new schools to be erected on Barry Island. The applicants were Messrs. Gethin & Wallis, Cardiff; Mr. J. A. Owen, Cadoxton; Mr. W. E. Knapman, Barry Docks; Mr. George Thomas, Cardiff; Mr. G. A. Birkenhead, Penarth; Messrs. J. P. Jones, Richards, & Budgett, Cardiff; and Mr. W. H. Dashiwood, Cardiff. On division, Mr. Birkenhead was elected by five votes, Mr. Owen and Mr. Thomas receiving one vote each. The same gentlemen were candidates for the same appointment with reference to Cadoxton Moors School, the voting resulting in four in favour of Mr. Caple and three for Mr. George Thomas, the former being appointed.—*Western Mail.*

THE FIVE ARCHES, TENBY.—Mr. Freese James, the Borough Surveyor of Tenby, having advised the Town Council that this historical gateway required immediate attention, the Board have accepted his suggestion for putting it in repair, and have decided to carry out his plan at once.

BUILDING TRADES FEDERATION, DUNDEE.—A meeting of the Dundee Trades Council was held on the 13th inst., when a circular was read from the Glasgow and Suburbs Building Trades inviting the Dundee Trades Council to send a delegate to a conference to be held in Glasgow on February 13 for the purpose of considering a proposal to form a federation of the building trades of Scotland.—Mr. Joseph Cane stated that this year there was a want made to federate the Scottish trades, but while the

proposal was being considered a committee was endeavouring to get the federation of the building trades in Dundee. The trades in Dundee were generally in favour of the local federation, but when the scheme was put before them it was found that a number of the trades could not federate without the permission of the societies throughout the whole of Scotland. The masons in Dundee, for instance, could not enter into any scheme unless it included the consent of the whole of the members of the trade in Scotland, and the joiners were in the same position. If the national scheme were gone into, he believed a great many of the obstacles in the way of a local federation would be removed. He thought they ought to give the scheme the heartiest support, for there was no city in the country that required fed-ration more than Dundee.—Mr. T. Scott said he did not see how they as a Council could take up this matter by sending delegates to a conference of the building trades. The Council, however, could do their very best to get a conference of the building trades in Dundee to break down the little barriers that existed. But the trades should themselves send delegates to the conference. He moved that the Council take up the matter as he suggested. Mr. George Kirkaldy said he believed the joiners would do their very best to help forward the federation movement. Mr. John Thomson seconded Mr. Scott's motion, which was unanimously agreed to.

BUILDING TRADES' EXCHANGE FOR EDINBURGH AND DISTRICT.—A meeting, attended by close upon 200 of those interested in the formation of the proposed Building Trades' Exchange for Edinburgh and district, on somewhat similar lines to the Glasgow one, was held on the 18th inst. in Dowell's Rooms, Edinburgh, when a lecture was delivered by Colonel Bennett of Glasgow. Colonel Bennett gave a short sketch of the building exchanges he had visited in America. These, he thought, might be advantageously introduced into this country. They had in Glasgow, to a certain extent, proved the possibility of the existence of these exchanges in this country. The general principle on which they had been founded was that the builders in the United States, believing in a more intimate social relation and acquaintance with each other would check bitterness and rivalry, and keep the eagerness of competition within limits, and believing that the skill and knowledge of each member would in great measure be acquired by all, and their usefulness to the community in which they lived increased, formed themselves into associations which had gradually grown into what were now known as Building Exchanges. These institutions would exist in every large city. After referring specially to the Philadelphia Builders' Exchange, which he took as a model, the lecturer remarked that the weak part of the architect's office in this country was the want of professional journeymen to carry on their labour. Too much was attempted to be done by the young gentleman assistant, who failed to realise the real nature of the business till he started as a full-fledged architect for himself. Speaking of the value of the Exchange to trade, Colonel Bennett said the institution would be worth at least 50% a year to every one of them, and would soon put an end to shoddy work and shoddy work prices. The public would have more confidence in the tradesmen they employed, and a better feeling would be established between architects, surveyors, and tradesmen all round.—Mr. Cook, of the Glasgow Building Trades' Exchange, and Mr. John Laird, valuator, Glasgow, also spoke. The Chairman having called for an expression of opinion whether the proposed Building Trades' Exchange in the city and district should be gone on with, Councillor Graham Vooll, Leith, formally moved that such an association should be established for the encouragement and protection of the building trades and relative interests within the county of the city of Edinburgh or elsewhere within Scotland. Such an institution, he said, was most desirable, because at present there were no means by which merchants and builders could meet and transact business, except by their being called on by the merchants and travellers. Mr. Peter White seconded, and the motion was unanimously agreed to. The Chairman intimated that the number of shares applied for was between 700 and 800, which augured pretty well for a beginning. Colonel Bennett was thanked for his lecture, and a committee of twenty-five was appointed to forward the formation of the Exchange. Mr. John Nicol, solicitor, was appointed interim secretary.

EMBANKING THE WATERS OF THE NILE AT ASSOUAN IN UPPER EGYPT.—At a meeting of the Victoria Institute, held at Adelphi-terrace on Monday, Professor E. Hull, LL.D., F.R.S., described the last proposed scheme for embanking the waters of the Nile at Assouan in Upper Egypt. After referring to the long lapse of time during which the cultivation of the ground in Egypt had been carried on by irrigation, and having described the origin of the rise and fall of the Nile and the source of the fertilising sediment, the author proceeded to deal with the question of the proposed embankment of the Nile waters at the First Cataract, by which during the period of Low Nile the waters would accumulate to the extent of allowing a second flood by means of distributing canals carried down the valley on each side of the river. He also gave an historical sketch of the various projects proposed by Linant

de Bellefonds, Count de la Motte, and Mr. Prompt, and the final adoption of the Assouan site on the report of Mr. W. Willcocks, Director-General of Reservoirs, together with the arrangement by which the island of Philæ with its monuments would be preserved from injury. As regards the advantages of the scheme in increasing the productions of Egypt, it had been estimated by Mr. Garstin that the gain to the State would amount to 850,000l. per annum, and the increased value of the crops from Upper, Middle, and Lower Egypt to 16,000,000l. per annum. Many present took part in the discussion which ensued, in which the importance of a well-considered plan was urged in a land in which the ground teemed with hidden and other records of antiquity.

THE AUCTIONEERS' INSTITUTE.—The third meeting of the session of this Institute will be held in the lecture hall of the Institute, 57 and 58, Chancery-lane, on Tuesday next, the 26th inst. at 8 p.m., when a paper will be read by Professor Banister Fletcher upon "The Practice of Compen-sations."

CAPITAL AND LABOUR.

WAGES IN THE WOLVERHAMPTON BUILDING TRADES. The Wolverhampton Master Builders' Association have conceded a demand for an advance in wages from 9d. an hour, made on behalf of the operative carpenters and joiners, to take effect in April. Concessions were also made with regard to special rules. The bricklayers have handed in a notice for an advance of 1d. per hour, and an alteration of some of the working rules, and this demand is also likely to be granted. An advance will probably be received likewise later on by the labourers.

WAGES IN THE NORTH STAFFORDSHIRE BUILDING TRADE.—The North Staffordshire Master Builders' Association have given notice to the joiners, bricklayers, and masons of a reduction of wages of 1d. per hour, and to the labourers of a reduction of 1d. per hour, such alterations to come into force on May 1 next. The joiners, on the other hand, have given notice for 1d. per hour increase. The latter have also given notice for a new rule limiting the number of apprentices, a new rule revising the walking-to-work time in the morning, and a new rule for a representative of the men to be allowed to visit all shops and jobs. The Operative Bricklayers' Society have given notice of alteration in the rule as to two hours' notice, which was recently before the Potteries Stipendiary, in a case at Hanley. The present wages are:—Bricklayers, 9d.; joiners, 8d.; masons, 8d.; and bricklayers' labourers, 6d.

BRICKLAYERS' STRIKE AT BLYTH.—The bricklayers connected with the building trade at Blyth came out on strike on the 18th inst. It was intimated by the Master Builders' Association that it was intended to reduce the wages of bricklayers by 1d. per hour at the beginning of the present month. The men object to the proposed reduction, and as the masters remain firm in their demand, work has been suspended. The current rate is 9d. per hour.

LEGAL.

THE CLAIM AGAINST THE ST. PANCRAS GUARDIANS.

THE further hearing of this claim, which arises out of the contract for erecting the workhouse buildings in King's-road, was resumed at the Reference Court, in Portugal-street, before Mr. Ridley, Q.C., on the 18th inst., a report of the former proceedings having appeared in the issues of the *Builder* for November 21 and 28 and December 5 last.

It will be remembered that the plaintiffs, Messrs. Tom Drew-Bear, James Brown Henry Tolpitt, and the contractor, Mr. Wm. Brooks, of Folkestone, allege is due under a contract, for the erection of the workhouse buildings, the defendants being the St. Pancras Guardians and Messrs. Arthur and Christopher Harston, the architects. In November, 1894, the contract between Mr. Brooks and the Guardians was determined, owing to disputes between the contractor and Mr. Poole, the clerk of the works appointed by the Guardians Board, the plaintiffs' case being that the contractor, Brooks, was prevented from continuing the work by the action of Poole, who condemned the materials without sufficient cause. The defendants, while generally denying liability, relied on the Public Authorities Protection Act of 1893, which provides that they are not responsible for damages after the expiration of six months from the date of the occurrence alleged by the plaintiffs.

Mr. Reginald Bray and Mr. Alfred Hudson appeared as counsel for the plaintiffs and the contractor; Mr. English Harrison and Mr. W. Moyses for the defendants, the St. Pancras Guardians; and Mr. MacIntyre and Mr. R. W. Turner for the architects, Messrs. Arthur and Christopher Harston. When the hearing was resumed, Mr. Jas. Brown re-entered the witness-box, and, further cross-examined by Mr. Moyses, said that he personally made no complaint to the Guardians in the Armpit-trap matter, although it might have been mentioned in an interview. At a meeting of the Guardians the

matter of the plaster arch was specially referred to; a difficulty about the gas meter was also referred to. There was a meeting at a very early stage on the question of finance. The Guardians had assisted them. He first knew of the question of the hand-rail when it had been worked for about a fortnight or three weeks. He was afraid that his experience of building was that when special sub-contractors came upon works which were being executed, it always caused a certain amount of inconvenience. In the present case the special sub-contractor's work was of a very extensive kind. The special sub-contractors caused enormous delay. On April 21, 1893, there was held, at the Work-house, a meeting of the creditors, Mr. Boden being present. That meeting was just about the time when they were debating amongst themselves whether or not they would continue the contract, or let the thing take its natural course. It was about four days after that meeting when they decided to continue the contract. At that meeting Mr. Brooks gave a full account of his liabilities. Brooks made a complete and clean sheet as to how he stood. The Guardians then undertook, as far as they could, to support the contractors. Witness told the Guardians that they thought they could make a margin of profit. At the meeting of the Building Committee on May 4th at which he was present he stated that he and his fellow-inspectors were satisfied as to the manner in which Brooks was executing, and complied with, his contract. He (witness) asked the Guardians to strain a point to help the builders financially, and said that he and his fellow-inspectors would supply the materials on credit.

The Guardians consented, and gave general instructions to Messrs. Harston to make their certificates as close to the margin as they could. Witness had not investigated the history of the contract up to that date, he was sorry to say. He personally looked at the amount of work done, and the prices in the bills of quantities, and the possibility of carrying the job through with profit to the creditors. He had never heard of the harassing by the architects and the clerk of the works at that time. He had no idea of the ironwork being condemned until it was. If he had heard of that he should have hesitated before advising them to go on with the contract. They had had Brooks there, and Fearon, but they relied on the surveyor, who was taking quantities of the work. Mr. Drew-Bear had supplied a good deal of the ironwork, and some of it had been returned, and made good at that time.

Cross-examined by Mr. MacIntyre. Until the creditors took over the contract he was only once at the works, and that was the occasion when he went about there facing bricks. He only saw Mr. Harston once about them. Mr. Harston's complaint was that the bricks were knocked about. Witness saw that they were knocked about, but he protested that it was not their fault, but the fault of the railway cartage to the works. The bricks at the railway station he found in good condition, but those on the works had been somewhat damaged. That was the only complaint that Mr. Harston made about his bricks. The stock facing bricks could have been got for 35s. in 1893, but he could not say from memory about 1892. 1892 was not a particularly bad year for brick making. It was a wet spring, and that interfered with brick making. The architect, in his opinion, according to the specification would not be within the contract if he required bricks up to 70s.

Mr. MacIntyre: Do you suggest that whether the bricks were good or bad Mr. Harston ought to have passed them?—No, I do not suggest that. Is it or is it not in the discretion of the architect to say whether a particular brick is sufficient for the purpose or not?—I do not think an architect should read the specification unfairly. I think the builder is entitled to bring upon the work bricks sufficiently good for the type of work he is doing. I think I can say that he could have got proper bricks for that purpose for 35s. in 1893.

How many times did you go to examine the works after the creditors took over the matter over?—I should think twenty or thirty times. That was from April, 1893, till the end of the job. He never particularly examined the timber. The only thing he said about it was as to the two pieces produced. The specification said that it should be free from sap, but he suggested that that was almost an impossibility. He complained of two instances of stoppage of work through drainage. One of the cases was where the drains were left open at the back of block H. That arose through a leakage from some old cesspool or drain which could not be discovered. The duty of the clerk of the works then was to have immediately seen to it and to have got instructions what to do. Instead of that the thing was left open for weeks—a most dangerous thing to do. When Mr. Harston was instructed on the matter sometime after, he gave orders what to do in a few minutes. The clerk of the works ought to have seen to it. It was what he was there for. Fearon was not waiting for pipes to lay in the drainage at the time he spoke of. When he saw the plaster arch it was not good enough to be left. Mr. Harston was quite right to have it altered.

The learned Referee: I think it objectionable that there should be double cross-examination on every point. It is not fair to the witness.

Mr. MacIntyre agreed to adopt this suggestion. Cross-examination continued.

By the end of 1893 the great bulk of the work had been finished, and early in 1894 he instructed an accountant to go down to Folkestone to go through Brooks's books. The accountant had the assistance he ought to have had both from Brooks and Fearon. No complaints were made to him as to any interference, nor was his attention brought to any complaint. He remembered Mr. Drew-Bear writing a letter to him in February, 1894, in which he said that he was not at all satisfied with the accountant's work at Folkestone, nor as to Fearon's pulling him up when the work was half done. Witness was of opinion that the contract price was a sufficient one. Mr. Tolpitt had written to him to say that Brooks ought to have had another 25 per cent. on his contract price. Tolpitt, however, said that twelve months after the contract—in April, 1893. The labour bills consumed all their money, and that was the thing which troubled them. He had several interviews with Mr. Harston, and he should have been very much astonished if he only saw him three times at his office. Whenever he went to Mr. Harston personally he did not have any difficulty with him, except that he found that he was very stiff to compel Brooks to do things which he (witness) thought he ought not to compel him to do. Probably Mr. Harston thought it was his duty to do so under the contract. He now wished that he had gone to Mr. Harston more often. He had said a good many things to Mr. Harston which he did not want to repeat here. When Mr. Harston came upon the works he always settled things one way or the other. Brooks left the job about the end of 1894.

Re-examined by Mr. Bray :

During the execution of the contract great inconvenience, delay, and cost were occasioned by the slow progress of special sub-contracts covered by provisional items. Generally these provisional items were ordered by the contractor, who was then the master of the situation, but in the present case Messrs. Harston retained the sub-contracts in their own hands, thus permitting of delay. Witness found that bricks, which he regarded as sound, were condemned by the clerk of the works after they had been built in the walls. They showed no chipping on the face.

Mr. Bray proposed to ask the witness what was the general nature of the reputation of Messrs. Harstons with regard to their dealings with builders?

Mr. MacIntyre objected to the question being put.

Mr. Bray submitted that the question was admissible, inasmuch as it arose out of the cross-examination of the witness.

The learned Referee called for the shorthand notes of the last hearing.

These were read, from which it appeared that the witness stated in cross-examination that Messrs. Harstons bore a very high reputation as architects, and had been employed in that capacity for similar buildings to the St. Pancras Workhouse by the Metropolitan Asylums Board.

The learned Referee said that he being so, the question proposed to be put to the witness was admissible.

Re-examination continued: The witness said that Messrs. Harston's general reputation with reference to their dealings with builders was that they were hard, severe, and, he thought he might use the word, exacting. They would always do their duty to their clients. In consequence of this the contract with Mr. Harston one day in 1894, in his office, he recollected Mr. Arthur Harston coming in and saying to his brother:—"Here is another builder failed who worked for us. That makes three at the present time."

Mr. MacIntyre asked leave to further cross-examine the witness as to this conversation, and obtained permission to do so.

Further cross-examination by the learned counsel, the witness stated that that happened sometime in 1894. He knew two out of the three builders mentioned. One was Mr. Brooks; the second was Mr. Holland, of Poplar; but the third he would rather not mention, as he might be doing the man an injury.

Mr. MacIntyre: Will you give us the name on paper? (The witness did so.)

Cross-examination continued: He knew that Messrs. Harston's had been in practice for many years, and he knew that all their work was advertised:—"The lowest tender always accepted."

Mr. A. E. Brown, B.A. and B.Sc. (London), and son of the last witness examined, said that he managed the brick manufacturing department of the business. They commenced to supply red bricks for the St. Pancras Workhouse the latter part of August. They had supplied them before to Kirk & Randall. In consequence of complaints they had from the huller he went and visited the works. That was on August 25. He saw Mr. Fearon and Mr. Poole. He inspected a stack of bricks, and also work which had been built adjoining the stack. The bricks had been damaged slightly in transit. Looking at the bricks as a whole, he considered that there was cause for complaint, but not for refusing their use. He saw some blue pencil marks on the brickwork. Mr. Poole took him out and showed them to him. Poole told him

that he had instructed Fearon to cut those bricks out, as they were not fit to be in the work. He did not say why they were not fit to be in the work, and witness could not see any reason why they should not be there. He told Mr. Poole that he did not consider that he was justified in marking them. Poole immediately took out his pencil, lost his temper badly, and marked a great many more wholesales in the same way. That was on August 25, 1893.

Cross-examined by Mr. MacIntyre: Some of the bricks he saw stacked were chipped and very much wrong. He had been told that the bricks that Poole had marked were still in the building, and that Poole's condemnation was overruled by Mr. Harston and the bricks passed.

Mr. George Andrews, a director of Smead, Dean, & Co., examined, said that on September 20, 1892, Fearon came to him with reference to his supplying picked stock facing bricks, and, after examining their bricks, arranged to have some. Fearon selected the best kind of facing bricks, and ordered some ordinary stock. He ordered 10,000 facing bricks, and 24,000 ordinary stock. He afterwards heard that they were condemned. He charged 45s. for the 10,000, and 32s. for the others. Malm's were not quite the same sort of bricks as facing bricks, in malm's the earth was specially prepared, and they were a more expensive brick. They cost about 10s. per thousand more. A shipper was a harder brick than a picked stock facing, but not so uniform in colour. They were usually the same price as picked stock facings, but not always; in the present instance they were 3s. cheaper. They had supplied bricks to the Workhouse after the bricks Brooks left. They were not as good as the facing bricks, nor so good as the shippers. The price was 35s. a thousand. No complaint was made of them. Stock bricks were slightly more in 1892 than in 1893, about 1s. a thousand.

Cross-examined by Mr. MacIntyre: In the picked stock facings they had to get an uniformity of colour as bricks as they could, and as free from chips as possible. They never had bricks sent back to them. He did not know whether Poole was clerk of the works when the bricks were sent after Brooks had left.

Wm. Franks, a foreman bricklayer of eighteen years' experience, examined by Mr. Hudson said that he entered into the employ of Brooks in February, 1893 when he was put on the St. Pancras Workhouse as leading foreman. He was told by Poole that he must pick over the old bricks purchased by the Guardians. Poole continually complained of their use. A certain number of bats were used necessarily in breaking bond. Witness kept on picking the old bricks. The new work was in red rusticated corners and stock panels, and these were objected to by Poole. The colour was not right, they were too rough, and some were chipped—the latter complaint was well founded. Poole marked the bricks objected to with a piece of black carbon, which left a white mark that penetrated the material. Poole said that stocks were specified and he would have them. All the bricks used for facings were picked stocks excepting one lot of golden malms. Poole objected to the softness of these, and they had to be used for bull-noses in inside work. Of the bricks marked some were good and some had faults. Witness had four bricklayers on the ground for six weeks picking bricks, and others cutting out bricks, and thus delaying the removal of the scaffolding. Poole marked the whole of a pier on the front of C block, but witness did not pull it down, and it stood there now. It was such a common practice for Poole to condemn work that at last witness took no notice of it. The brickwork was generally well done. The condemnation of the girders also delayed witness. Poole would not allow old bats to be used for inside walls, for breaking bond, but new ones had to be snapped for the purpose.

Cross-examined by Mr. Harrison: Witness did not cut out all the bricks condemned by Poole, as there was no real ground of complaint.

George Edw. Wragg, secretary of Messrs. Eastwood & Co., with twenty-four years' experience, said that his firm manufactured between ninety and a hundred million bricks made by hand at Shoebraynes. They would vary in quality, first malms to cutters, mean seconds, pavers, shippers, malm stocks and common stocks, rough grizzles, and placks. The price of malm stocks varied from 10s. to 12s. above stocks. Brooks applied to witness for quotations, but witness declined to supply him.

In answer to the learned Referee, the witness said the best coloured and most expensive brick was the softest, because to get a hard, well-baked brick the colour had to be sacrificed.

Witness thought that some bricks marked and rejected, according to the specification, ought to have been passed, and that others were passed which ought to have been condemned.

Mr. George Armitage, of the firm of Armitage & Sons, stone merchants, the Robin Hood Quarries, Wakefield, examined, said that he supplied the landings and steps for the staircase work generally.

Some landing work stone was rejected as being laminated. Witness examined it, and as he could not find any defect in it, went to the architect's office with Poole. Mr. Harston hammered the stone in

order to split through the laminations, but it broke across. All landing stone was laminated. Mr. Harston then told Poole that if the landings were equal to the sample they ought to be used. The landings were, however, condemned by Poole, and were carted away from the works, and could now be seen at another builder's yard in Lambeth. The pieces produced by Fearon, and spoken to by the witness, were a fair sample.

Cross-examined by Mr. MacIntyre: The stone for the steps and that for the landings were of two different classes, the latter being laminated. He received a complaint calling attention to this fact. He replied, that the landings would wear as long as the steps, and that owing to the size required they could not be cut out of the same beds as that for the steps. The landings came from Scotgate Ash, near Pateley Bridge, the steps came from Bradford.

Mr. Frank Trickett, of the firm of Samuel Trickett & Sons, Great Northern Railway, King's Cross, stone merchants, with over twenty-five years' experience, examined, said that he had examined the samples of York landing referred to by the witness Armitage as having been rejected by Poole. It was excellent hard laminated material. It was practically impossible to get pieces of the size required in unlaminated stone, but the laminated stone was nearly twice as strong and durable as the unlaminated.

Cross-examined by Mr. Turner :

There was great difficulty in getting large pieces in unlaminated stone, and when obtained it would name so well.

In answer to the learned Referee, the witness said that the best and the highest-priced Yorkshire stone was the laminated. The expression, "free from laminations or other blemish," which occurred in the specification, was a very common one.

Charles Edward Newman, of Ironmonger-lane, E.C., secretary of the Thames Sand Company, examined, said that he supplied seven barge loads of Thames and pit sand to Brooks for the workhouse. The river sand came from near Gravesend and was universally used in the trade. In a commercial sense there was no "above bridge river sand" (such as was specified) on sale. Very small quantities were obtained for their own use by local builders. The Thames and pit sand supplied by witness was washed and screened by machinery, and was furnished to some of the largest builders.

Cross-examined by Mr. Turner: When witness had an order for pit sand he often delivered below bridge river sand. No salt remained in it.

In reply to the learned Referee, Mr. Turner stated that Poole rejected the sand as not being sufficiently coarse.

The learned Referee: We have had a very strong body of evidence that for some reason the clerk of works in this contract rejected every successive material brought on to the works as not good enough. The result seemed to have been delay, ruin to the contractor, and gross injustice.

Mr. Turner replied that the materials were not according to the specification of Mr. Harston, who surely had a right to demand from the contractor that which he specified.

The learned Referee remarked that he should be glad to hear Mr. Harston in the box.

Mr. Henry Tolpitt, timber merchant, of Folkestone, one of the plaintiffs in the action, as a member of the Committee of Inspection, examined, said that he supplied timber for the works from 1892 till the end. Of the 250 loads of small timber, 49 were removed, having been stated by Mr. Fearon to have been condemned by Poole, and of the 45 loads of large scantlings 17 loads were sent back, some not being even unloaded. He (witness) could find no reason for the rejection, as he was supplying Government contracts and other large undertakings with the same.

Cross-examined by Mr. Turner: The scantlings were supplied according to specification, and those accepted were identical with the ones sent back and from the same parcel as imported. Memel timber lying about in the open would be affected if freshly sawn.

Cross-examined by Mr. English Harrison: The tie-beams were unusually long, and it was difficult to get them absolutely free from sap. It was quite unusual to have so large a proportion rejected.

Mr. Daniel Thos. Heaven, timber merchant, of Greenwich-street, E.C. and late traveller for Messrs. Baines & Brard, of Reading, examined, said that between 1892 and 1894 that firm was supplying through witness flooring under this contract. Fearon was particular as to the qualities to be supplied. In April, 1893, in consequence of a letter from Fearon he (witness) saw Poole and Fearon and heard the complaints of the former. He (witness) afterwards supplied another brand, described in the price lists as equal in quality, and this flooring was also rejected as not being dry by Poole, with whom witness had another interview. They were, however, eventually passed.

Alfred Mier, of Meir & Son, timber merchants, King's-cross, also gave evidence of a similar character as to the flooring timber supplied. He stated that it was being constantly condemned, until he grew tired of supplying and replacing it.

Cross examined by Mr. Turner: The rejections were so numerous that after a time

ey never credited the timber in their books till the total load was signed for. The total amount supplied was from 400*l.* to 500*l.*, and the firm were editors for the last 20*l.* or so.

George Smith, examined, said that in April, 1894, he was foreman to Harston, who was then carrying a contract at the Bromley and Stepney Asylums, Messrs. Harstons being the architects. Witness and young Mr. Holland went over to see the brickwork at the St. Pancras workhouse. He considered the work was done fairly well.

Cross-examined by Mr. Turner: The work was done well, including some which had been marked with blue marks. George Smith, a foreman bricklayer, examined, gave evidence as to being engaged on the K or undry block, and as to the delays caused by Poole's complaints as to the brickwork, the levels, and by the engineers who fixed machinery.

George Akehurst and William John Taylor, foremen bricklayers, gave evidence corroborating the witness, and spoke as to Poole's rejection of plans and girders.

John Walker, a general contractor, examined, said that he had a contract with Brooks for making the roads to workhouse. Poole complained about the flints although they were similar to those supplied at the same date to Islington Vestry. He asked leave to withdraw from the contract but was persuaded to go on.

Wm. Brown, general foreman to Brooks from the commencement of the contract, was examined in great detail as to the rejection by Poole of bricks, timber, and other materials which the witness said he considered satisfactory, and that bricks and other work were allowed by Mr. Harston to remain, and could still be seen.

After hearing further evidence, the learned Referee, addressing counsel, said: I should just like to say that while there has been nothing brought before me tending to show that the architect was in fraud or collusion, yet there has been a mass of evidence produced, all going to show that they have not exercised their discretion fairly. It is for you to consider your future conduct of the case.

Mr. Hudson replied that the plaintiff's case would be shortly brought to a close.

The witness was then cross-examined by Mr. MacIntyre as to the materials rejected, with a view to show that they were imperfect, and not according to specification. The witness admitted that some of the bricks were much chipped, and that timber was little sappy on the edge.

Mr. MacIntyre called the witness's attention to his hoarding, cut on the previous day from the roof of Block C of the workhouse. One sample was, he said, sappy, another was all right, and was only from a young tree. He thought that both specimens ought to have been passed. The hoards rejected were not worse than these.

Mr. MacIntyre then called attention to a section of 9-in. wall, five courses high, and 4 ft. 6 in. long, in which the face of the bricks were certainly bipped. Witness replied that this was a very good sample of brickwork for a 9-in. wall, and that the bulk of the wall was being shown. The specimens were then turned round, when this proved to be the case, the other face being in good condition.

Joseph Holland, contractor, examined, said that he had carried out works at Stepney, in 1892-4, under Messrs. Harstons, when questions arose between the architects and himself as to the brickwork. Mr. Harston referred him to the St. Pancras Workhouse to see the work there as being what he wanted, and witness and his son and the witness George Smith went over and inspected the brickwork there.

Mr. Edward Massey, of the firm of Goddard, Massey, & Warner, of Nottingham, ironfounders, examined, said that they cast sixty-four columns for the workhouse to the order of Drew-Bear, Perks, & Co. On receiving a complaint as to eight of the castings, witness examined them with Mr. Drew-Bear at the workhouse, and as he could find no fault in them, he (witness) refused to replace them without fresh payment, and this was agreed to by Messrs. Drew-Bear, Perks, & Co. Witness wrote very strongly as he felt unjustly treated, and the castings were kept on exhibition at his works.

Wm. Jas. Bradshaw, manager for Messrs. Kirk & Randall, examined, said that he had been with that firm for just twenty-seven years, and one of the rejected candidates for the post of manager to the London County Council. He was frequently on the works at St. Pancras when his employers held the contract for the first portion of the workhouse.

The witness was proceeding to state that these were difficulties with the architects when Mr. English Harrison objected that this would not be evidence against the Guardians, as any dispute then arising was settled by reference.

Mr. MacIntyre on the same side submitted that evidence as to previous disputes was irrelevant, as tending to introduce fresh issues.

The learned Referee said that he should not allow evidence as to the arbitration; but he must hear the evidence in question as it affected the conduct of the architects.

Examination continued:

When Kirk & Randall had the contract Messrs. Harstons were the architects and Poole was the clerk of works. There were objections raised to

nearly all the materials—bricks, ballast, sand, timber, flooring—and the contract was abandoned by consent, and the surplus materials were taken over by Brooks. There were also disputes as to other contractors employed by the architects delaying the work.

Cross-examined by Mr. English Harrison: In the subsequent arbitration Kirk & Randall claimed about 4,300*l.*, and were awarded 1,500*l.*

John Gosby, clerk of works under the Folkestone School Board, and general foreman under Brooks at the workhouse from May, 1892, till December, 1894, examined, spoke as to the delay experienced in getting possession of the site owing to the fact that parts of the buildings to be reconstructed were occupied. He also described in detail the mode in which Poole complained of materials after they were built in. Witness was present when Brooks spoke to Poole about the treatment of his manager, foreman, and men, and of the wholesale rejections, and inquiring if Poole wished to ruin him. Poole went into his room and shut the door in their faces. The witness then corroborated the evidence given by the witness Fearon previously reported.

Cross-examined:

When he left the workhouse job he asked Mr. Harston to give him a testimonial, but that gentleman refused to give him one. He also asked Mr. Poole for a testimonial, but that gentleman also declined to give him one. He had worked for Fearon for twelve years. Witness was general foreman, and Fearon was manager. When Mr. Harston refused to give him a testimonial he said that he did not know enough of his qualifications to give him one.

Mr. MacIntyre: Is that all? His reply was by letter, was it not? Have you got the letter?

The witness replied that he had the letter, but not in court.

Mr. MacIntyre then read a copy of Mr. Harston's letter to the witness, in which it was stated that as he knew but little of the witness's qualifications, and the St. Pancras job was so unsatisfactory, he did not feel justified in giving the testimonial asked for.

The learned Referee said that there was no evidence that the contract was unsatisfactory.

Mr. MacIntyre dissented, and pointed to the materials supplied.

The learned Referee remarked that there was no definite evidence on which he could rely that any of the materials supplied were unsatisfactory.

Mr. MacIntyre replied that the learned Referee had not heard the defendants' evidence on that part of the case yet.

The learned Referee said that it had turned out, so far as he had been able to judge, that the objections were ill-founded. He would not say that the things were right to the utmost farthing, but it could not be said that the job in question was an unsatisfactory one.

Mr. MacIntyre: Let us take Brown's evidence, for instance. He admitted that the red bricks he saw were chipped and rubbed.

The learned Referee: Do you know of any job in London where bricks are not chipped or rubbed?

Mr. MacIntyre: Nor do I know of any job in London where some of the materials were not objected to by the architects.

Mr. Wm. Brooks, examined by Mr. Bray, said that he had been in the building trade ever since a child, and in business since 1870. Mr. Fearon was the practical manager of the job in question. His (witness's) overdraft was 200*l.* when he undertook the contract, and he had hook debts of about 200*l.* available, and the whole of his stock and plant, and independent of what the bank held, fifteen houses in Folkestone. He had made out a statement of what his position was when the contract was entered into.

Cross-examined by Mr. Moyses:—He had to make an arrangement for an overdraft when he undertook the contract, but they always had to do that. The largest contract he had had before this was the building of the Victoria Hospital at Folkestone. The contract price of that contract was 9,000*l.*, but it cost 10,000*l.* He had never had a contract in London before this, but he had worked under London architects. He could not recollect having a conversation with Mr. Milward on April 16, 1894, with regard to his financial position, but if that gentleman said that he had a conversation with him he could not contradict him.

Did you tell him that you had no complaint whatever to make against the Guardians, and that your misfortunes were due to a series of unfortunate circumstances, and having to pay trade union rate of wages?—I do not recollect the conversation, but, so far as I can recollect, that is what I should say on such an occasion.

Cross-examination continued:—He did not wish to make it an element that he had had to pay trade union wages. As gentlemen, the Guardians had treated him with great kindness.

Cross-examined:—Mr. Harston, independently of Poole, had treated him properly.

This evidence closing the plaintiff's case, Mr. English Harrison then proceeded to address the Court on behalf of the Guardians.

The learned counsel said that he did not propose to deal with the case so far as it concerned Messrs. Harstons, the architects, but only on behalf of the Guardians. The learned Referee would recollect

that the contract was a contract by which the builders undertook to do the work to the entire satisfaction of Messrs. Harstons. The architects were described to be the sole judges of, and were to determine, all differences arising between the parties, and therefore they were described there as being judges, and there could be no doubt that they were persons acting as arbitrators or quasi-arbitrators.

There was also a clause (on page 13) which dealt with the position Poole was to occupy, and therefore it was a contract by the builders that Poole was to act in the particular way set forth in this clause. The learned counsel read the clause, which ran as follows:—"The clerk of the works for the time being shall be considered to act solely as the inspector and assistant of the architects, and the contractor shall afford to him every facility on the work." Therefore, said Mr. Harrison, Poole was to be the assistant and inspector of the architects—that was to say, when materials were coming on the job he was to inspect them in the first instance. The learned Referee would notice how carefully the provisions were framed. As being the inspector and assistant of the architects, it might be said that he had to exercise the functions of the architect in ordering the execution of extra work. His power, however, was limited by a particular part of the clause. In order to avoid any ambiguity as to the power of Poole, it provided that he should have authority to do particular things. That part of the clause, he submitted, was most important, because it showed what sort of functions the clerk of the works was, under that clause, to perform.

The learned counsel then cited several cases with a view to showing that within the decisions of the courts the architects were arbitrators or quasi arbitrators. It was suggested at one time, continued Mr. Harrison, that the Guardians or the architects had been guilty of fraud; but it might now be stated, however, that the allegations with regard to that, which decorated the statement of claim, had been withdrawn. He therefore submitted that as the case now stood, it was quite clear that neither party to the litigation, neither the Guardians nor the plaintiffs, could bring an action against the architects for negligence in arriving at their conclusion. There was no warranty that they would bring any skill or care in the case at all. (The learned counsel cited cases in support of this contention.)

The learned Referee: I doubt very much whether an architect is not bound to bring to bear reasonable skill and care. I think there is that duty upon him.

Mr. MacIntyre: There is a duty upon him to act honestly. The learned Referee: I think he is like other people. He is like other skilled people. You say the architect is protected because the clause makes him an arbitrator. But I cannot help thinking that the arbitrator must bring reasonable skill and care upon it, and if he does not it is no decision at all. I have decided that before, more than once here, against the architect, because he had not brought his mind to bear upon it. I am quite sure of that. You say that he can do whatever he likes.

Mr. Harrison: No. I say that he must be honest, and not guilty of any fraud. The learned Referee: Suppose he said, "I know I am arbitrator, and nobody can question my decision, and I will let the builder understand I am master of this situation and that he is not." Suppose he said that?

Mr. Harrison: Then I should say he is not acting honestly. In that case the builder ought to go to the employer and say that he was not being treated fairly by the architect, and that he would not have it, and that the employer must employ another.

The learned Referee: The builder is put under the supervision of the architect under a contract. If he found fault with the architect, what do you think the employer would say? He would say the architect was the arbitrator, and that he could not go into it.

Mr. Harrison: I say that the law answers that in this way: If the employer chose to say that, he is then colluding with the architect to defeat the builder, and the law affords him the proper remedy at once.

The learned Referee: If an employer wrote to the architect, "I hope you will decide this in my favour," and the reply was, "Oh, yes," that would be collusion; but this is a very different thing. The collusion comes in because he asked the architect to do that thing. That is a different thing to what has arisen here.

Mr. Harrison: I dare say it is. I dare say Mr. MacIntyre will go into all that. But I have no doubt the substance of my friend's argument will be that when Mr. Harston was appealed to he went and looked at the thing and overruled Poole in many cases, and did not do so in other cases. In fact, that in some cases he affirmed Poole, and in others disaffirmed him, would be strong evidence that Mr. Harston was exercising his functions properly. Those, however, are all matters of fact I do not propose to enter into.

The learned Referee: He rejected, in point of fact, materials which ought to have been accepted, and so delayed the contract for a material time, and made it impossible for the builder to perform it in the way it was drawn. Does not that put an end to the contract?

COMPETITION, CONTRACTS, AND PUBLIC APPOINTMENT.

Table with multiple columns: COMPETITION (Nature of Work, By whom Advertised, Premiums, Designs to be delivered), CONTRACTS (Nature of Work or Materials, By whom Required, Forms of Tender, To be supplied, Tender to be delivered), and PUBLIC APPOINTMENT (Nature of Appointment, By whom Advertised, Salary, Applications to be received).

Those marked with an asterisk (*) are advertised in this Number. Competition, pp. iv. Contracts, pp. iv, vi, & viii. Public Appointment, pp. xvi, & xviii.

Mr. Harrison replied in the negative. The learned Referee: I cannot understand why not any more than giving up possession. If the architect has rejected material—good material—time after time, why should not that come into consideration on the contractor giving up the contract? Mr. Harrison: He has absolutely contracted with us to abide by the decision of the architect. The learned Referee: That is, as a reasonable man would arrive at—using the reason that God has given him. Mr. Harrison: He has contracted to abide by the decision of Mr. Harston. The learned Referee: Not however wrong he might be. I think that the things were good on the present evidence. Mr. Harrison, continuing his address, said that Mr. Harston having acted in the position of arbitrator, or quasi-arbitrator, they (the Guardians) could not in law be held responsible for those things. His contention was that, however negligent or wrong Mr. Harston might be found to have been, the Guardians could not be made responsible for that. If the learned Referee came to the conclusion even that the architect had been guilty of fraud his submission was that it would be impossible to hit the employers for that fraud. The learned counsel read a passage from Mr. Hudson's book to the effect that a contract of agency conveyed no authority to commit fraud, and the liability of the architect who committed fraud was personal to himself, and did not affect the employer unless collusion was proved, in which case the employer would be jointly liable with the architect. He (Mr. Harrison) wished to point out that the builders had acquiesced in the decisions of Mr. Harston and Poole according to the evidence as it now stood. When from time to time Poole said particular work ought not to go in, instead of taking the case before Mr. Harston, or where Mr. Harston had decided against them, instead of writing a letter to the Guardians, the holders preferred to say nothing at all about it. On the contrary, by the tone of Fenron's letters it appeared that he had been treated with great kindness by Mr. Harston. Now that Fenron had to get out of those letters he wished the learned Referee to believe they were written with a purpose. It was perfectly monstrous if the Guardians were to have the contract swept entirely away and left with the most rightful litigation and all sorts of demands on them, simply because Fenron did not wish to complain at the right moment. The learned counsel pointed out that one of the difficulties of the position was that the present board of guardians, being like the ratepayers who elected them, a more or less fluctuating body, was not the one which employed the architects or entered into the agreements with the builders; and, therefore, the plaintiffs sought to hit a body of gentlemen who were not responsible for the difficulties, and he (the learned counsel) represented a board who were not really responsible for the undertaking. Mr. Harrison argued at great length that the

case for the plaintiffs as to the alleged delay in getting possession of site, and the interference of sub-contractors by the clerk of the works, had been grossly exaggerated by certain witnesses, and especially by Fenron. (The case was proceeding when we went to press.) ALLEGED INTERFERENCE WITH A PARTY WALL. The case of Thornton v. Hunter came before Mr. Justice Romer, in the Chancery Division, on the 15th inst, on a motion by the plaintiff to restrain the defendant from the alleged interference with a party wall. Mr. Farwell, Q.C., on behalf of the plaintiff, said that as the wall had now been pulled down, and the footings had been removed, there was no question left on the motion now before the Court. He understood, however, that there was a dispute as to whether the wall in question was a party wall or not, and there were other questions at issue which would have to be decided at the trial. Mr. Alexander, Q.C., on behalf of the defendant agreed with his learned friend's statement, and his lordship allowed the motion to stand till the trial, no order being made except that the costs be reserved. ALLEGED OBSTRUCTION OF ANCIENT LIGHTS. The case of Neave v. Saxby was mentioned on motion to Mr. Justice Romer in the Chancery Division on the 15th inst. Mr. Neville, Q.C., on behalf of the plaintiffs, said that this was an action for the obstruction of his client's ancient lights. As the matter stood at present the building owners had given an undertaking to pull down if ordered to do so subsequently. That, of course, was only a temporary undertaking, but he (the learned counsel) had spoken to his learned friend (Mr. Levett, Q.C., representing the defendant), and he was prepared to continue that undertaking till the trial, and if his lordship would allow them to dispense with pleadings, and to have the action set down at once without pleadings, he (Mr. Neville) would be willing to take that course, and to accept his friend's undertaking. Mr. Levett said that he would admit the ancient lights, and he would put the issue solely upon "interference" or "no interference." His Lordship: Very well. IMPORTANT POINT UNDER THE LONDON BUILDING ACT, 1894. The case of Venner v. McDonnell came before Mr. Justice Wills and Mr. Justice Wright sitting as a Divisional Court of Queen's Bench on the 15th inst., it being a case in which the information

charged that the appellant (Venner), the secretary of the Royal Agricultural Hall, did at the instance of the District Surveyor, begin to execute a work in respect of which the appellants ought to have served a building notice before commencing, as provided by the London Building Act, 1894. It appeared that some of the seats in the Hall which had been removed for the purpose of an exhibition were re-erected without notice to the District Surveyor, and it was in respect of replacing of those seats that the information was laid. The iron columns which permanently supported the roof and galleries of the Hall have sockets attached to them, and the temporary and movable timbers, to which the seats are for the time being screwed or bolted on, are dropped or let in to the sockets. The District Surveyor, on being notified of the re-erecting of the seats, issued a notice requiring the appellants to repair the roof windows, or put up a fixed cupboard in his bedroom, or a new kitchen range, without giving notice to the District Surveyor, and without being subject to his supervision, nor without, even in the case of the most trivial matters, paying him half the fee which he would have been entitled on the original construction of the house or building. It was impossible to suppose that that was intended. The Act of 1894 was not retrospective, and the work in question was not work done to or on the building. The operation in question was not "the beginning of a structure" within Section 125 of the Act, and in his opinion the appeal must be allowed. Mr. Justice Wright concurred, and the appeal was accordingly allowed. Mr. Macmorren, Q.C., and Mr. R. C. Gilchrist appeared as counsel for the appellants, and Mr. Horace Avory for the respondent. MEETINGS. FRIDAY, JANUARY 23. Royal Institution.—Professor Dewart, M.A., F.R.S., on "Properties of Liquid Oxygen." Institution of Junior Engineers (Westminster Palace Hotel).—Professor A. Barr, D.Sc., on "Comparisons of Similar Structures, Large and Small." 8 p.m. SATURDAY, JANUARY 23. Institution of Junior Engineers.—Twelfth Annual Dinner, Westminster Palace Hotel. The President, H. A. R. Hincks, in the chair. 6.30 p.m. MONDAY, JANUARY 25. Surveyors' Institution.—Adjourned discussion on D. Howard Martin's paper entitled "The Future Development of the Surveyors' Institution." 8 p.m. Institution of Junior Engineers.—Mr. Willis Burton on "Material and Design in Pottery," II. 8 p.m.

TUESDAY, JANUARY 26.

Society of Arts (Applied Art Section).—Mr. W. H. T. John Hoop, M.A., on "The Artistic Treatment of Heraldry." 8 p.m.
Institution of Civil Engineers.—Colonel J. Pennycook on "The Division of the Plate." 8 p.m.
Auctioneers Institute.—Professor Banister Fletcher on "The Practice of Compensations." 8 p.m.
Newcastle Architectural Association (Students Meeting).—Severely Annual Social Gathering and Exhibition of Sketches, to be opened by the President of the Association, Mr. A. M. Dunn. 8 p.m.
Carlisle Architectural, Engineering, and Surveying Society.—Mr. Drinkwater Butt on "Columbian Antiquities, with special reference to Carlisle Cathedral and Casde."

WEDNESDAY, JANUARY 27.

Society of Arts.—8 p.m.
Edinburgh Architectural Association.—Mr. Alexander Reid, C.E., on "The Practical Designing of Iron and Steel Roofing." 8 p.m.
Royal Institution.—The British Architectural Society.—Mr. Ramsay Traquair on "Heraldry." 8 p.m.

THURSDAY, JANUARY 28.

Society of Antiquaries.—8.30 p.m.
Society for the Encouragement of the Fine Arts.—8 p.m.
London Institution.—Mr. Joseph Pennell on "The Johns and Use of the Pen." Illustrated. 6 p.m.
Royal Institution.—Professor H. A. Miers, M.A., F.R.S., on "Some Secrets of Crystals." 11 p.m.
Institution of Electrical Engineers.—Mr. F. T. Hollins on "The Electric Block and Mechanical Signals on Railways." 8 p.m.

FRIDAY, JANUARY 29.

Institution of Civil Engineers.—Students' Meeting.—Mr. H. Barrat on "An Experimental Investigation of the Efficiency of a Peton Waterwheel." 8 p.m.

SATURDAY, JANUARY 30.

London and Provincial Builders' Foremen's Association. Meeting at 11, Park-st., London-road, E.C.4.—January Quarterly Meeting. 7.30 p.m.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

4,043.—SLIDING WINDOW SHASSES; H. B. Bird and Others.—The object of this invention is to construct window frames with sliding shashes, the shashes may be opened inwards. This the inventor effects by a combination of hooks, slotted plates, clutch bolts, and clutch plates, &c., securing thereby the supporting top sash when lower one is opened inwards, and automatic detachment of the line and balance weight and its retention in position ready for re-attachment as required.
2,015.—WATER-CLOSED STOP SINK, &c.; S. S. Helber.—The basin is provided with its upper edge, a hollow flushing rim of special form, into which the flushing water enters prior to passing into the basin, by which an efficient action of the flushing water is secured, so as to clear out the pan or basin very effectually with a minimum amount of water.
2,155.—LAVATORIES; J. Shank. —In one form of lavatory shown there is, when in use, a continual flow of water from the front to the back, where a hollow gutter or other outlet is formed. A water-supply valve is arranged in connexion with the lavatory or in connexion with each basin of a series, each valve being controlled by a hinged footboard, on which the user stands. Other arrangements are noted in the specification.
3,451.—MITRE CRAMP; W. Ludlow.—The inventor forms a mitre cramp for picture framing, &c., by providing four metal plates, each plate being with two lips, and the plates forming a right angle with each other. Three of these plates are provided with a grooved pulley at outer angle, and the fourth, which is larger, bears a drum, with a plain flange on one side, and a ratchet wheel on the other. A handle is also provided to ratchet wheel, and a pawl to engage with its teeth. A cord passes around the pulleys, and connects them with the drum, which, when the latter is rotated by its handle, draws the corner plates firmly against the corners of the picture and under operation.
3,621.—MORTISE FASTENINGS; S. Hill and Another.—In a mortise fastening for a show-case, a pedestal, or other receptacle, the inventors fix a mortise fastening comprising an independent catch lever, with or without an enclosing metallic case, which is inserted with the mortice through an opening on front edge of door stile. This is actuated by a handle having a stem, which is passed through a small hole formed in the face of the stile, and thence into the edge of the catch lever of the mortise fastening.
18,743.—SECRET FOR SECURING NAILS, &c.; G. Fisher.—This patent relates to fixing curtain nails, hooks, &c., to walls. For this purpose inventor applies to walls hollow wall bolts or sockets, which the curtain nails, &c., can be secured. Such hollow wall bolts are cast in one piece, and have a boss, and the exterior surface is preferably notched, corrugated, or otherwise roughened. The wall bolt is also provided with a pinching screw to secure slank of curtain nails, &c.
24,002.—BUILDING, &c.; SLABS; A. Orig.—The invention consists in the use of templates having peculiar sections on their inner edges, whereby slabs, plates, bricks, &c., of cement, gypsum, artificial stone, &c., may be prepared with edges of such a kind that the slabs, when placed together, can receive between them another material to form joint, such middle space, when filled up, securing efficient bond. These slabs are well suited for waterproof floorings, &c.
NEW APPLICATIONS FOR LETTERS PATENT.
JANUARY 4.—162, T. & J. Jones, Sash Window Fastener Used in the Manufacture of Ceramic Tiles, and Glass for use in General House Decoration, Furniture Panels, &c.
JANUARY 5.—222, W. Starley, Nails.—234, J. Brindley, Machinery Used in the Manufacture of Ceramic Tiles.—229, T. Kemp, Inspection and Sweeping Inlets to Drains, Ponds, and Junctions.—288, H. Hawgood, Sash Fasteners.—302, A. Hayward, Window Shutter Fasteners.—312, R. Ewing, Joining Iron and other Metal Pipes.
JANUARY 6.—21, D. Dickson, Iron or Steel Dovetail or Wood Joint.—377, S. Shail, Kitchen Range.—389, J. Pawsey and G. Glasscock, Water Waste Preventing or Flushing Appa-

ratus.—410, G. Winock and H. Machepey, Machinery for Sawing Stone.—411, G. Winock and H. Machepey, Sawing of Stone.
JANUARY 7.—503, A. Lenton, Handles for Bits.
JANUARY 8.—252, J. Shank, Water-closets.—545, E. and L. Richards, Flushing Cistern Apparatus and Fittings.—563, G. Cande, Open Stoves and Flues therewith.
JANUARY 9.—595, R. Gregory, Road Scarifying Machine.

PROVISIONAL SPECIFICATIONS ACCEPTED.

24,981, L. Robertson, Application of the Double Water Valve Principle to Starting of Syphonic Action in Sanitary and other Fittings.—25,847, J. Moffat, Fireproof Floors, Ceilings, &c.—27,249, C. Bedford, Varnish.—27,329, W. Beynon, Raisers for Door and other Latches.—28,161, H. Powell, Window Sash Fastener.—28,213, E. Vaughan, Latch Mechanism of Front Door Locks.—28,227, H. Craig, Lavatory Basins.—28,332, E. Collins, Door and other Knobs and Terminal Ornaments.—28,430, H. and T. Sabine, Sanitary Pipes, &c.—28,495, N. Cooke, Flushing Rim for Water-closets, &c.—28,496, B. Cars, Gas Brackets.—28,520, G. Duffell, Water-closets.—28,545, H. Schrier, Tiles Suitable for Roofing.—28,824, T. Marley, Chimney Ventilating and like Cowls.—28,872, M. Mulreary, Fire Gates.—29,212, Petretille, Lint, Cement.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

4,703, J. Hannah, Fire Grates.—3,744, H. Lasenby, Locks of Window-shashes.—2,872, L. Seager, Ladders, Step Ladders, &c.—2,979, W. Reading, Grating for Intercepting Traps.—3,745, F. Phelps and P. Daw, Plumb Lines.—3,712, St. Basil, Gones for Water-closets, &c., commonly called Closet Cones.—5,161, T. Smith, Chimney-pots, as a means of ventilation for the prevention of down draughts.—24,929, O. La Rue, Traps for Sinks, &c.

SOME RECENT SALES OF PROPERTY: ESTATE EXCHANGE REPORT.

December 16.—By DOUGLAS YOUNG & Co. Clapham.—18 and 20, Fenchurch-st., u.t. 751 yrs., g.r. 174, r. 82d. £650
By ALFRED RICHARDS (at Tottenham). Tottenham.—52, 54, and 56, Willow-walk, f. r. 521 6s. 4d.
Edmonton.—2, Eastern-villas, f. 400
Leeds.—25, By HEPPER & SONS (at Leeds). Leeds.—37 to 45 (odd), and 37a, Wheelers-st.; 1 to 3, Wrigglesworth-row; and 17, 19, and 13, Wellholms, and cottage adjoining, f. r. 650
90, 92, and 94, Caledonia-rd.; 93, 95, and 97, Tonbridge-st., f. r. 1,124, 10s. 1,880
By SANDERS & SON (at Barnstable). Pilton, Devon.—Two enclosures of land, 22 a. 3 r. 2 1/2 p. f. 2,150
1 to 7, Bradford, f. r. 517. 520
Frampton, Lincolnshire.—A freehold farmhouse and 47 a. 0 r. 13 p. 1,950
Wildmore Fen, Lincolnshire.—Three freehold enclosures, 10 a. 3 r. 33 p. 475
Westville, Lincolnshire.—A freehold farmhouse and 183 a. 3 r. 10 p. 5,600
December 17.—By H. J. BLISS & SON. Bethnal Green.—259 and 261, Cambridge-rd., f. r. 210. 2,150
Walthamston.—15 and 17, St. Stephen's-rd., f. r. 32d. 10s. 285
By E. H. HENRY. Clapham.—3, Fortbridge-rd., u.t. 281 yrs., g.r. 74, r. 35d. 340
13, Lynette-av., u.t. 88 yrs., g.r. 74, r. 45d. 430
By MARK LIEBL & SON. Poplar.—4, Wooler-st., f. r. 120. 200
Bromley-by-Bow.—42 and 43, Tidey-st., f. r. 482, 2s. 530
113, Brunswick-rd., u.t. 424 yrs., g.r. 37, 10s. 215
By OSCAR, MARKS, & CO. (at Derby). Alfreton, Derbyshire.—Greenhill-lane, "The Red Lion" Inn, f. r. 60d. 5,700
Sleethmoor-rd., "The Laburnum" Inn, f. r. 19d. 1,500
Derby.—"The Cross Keys" Inn, f. r. 26d. 3,100
King-st., "The Railway" Inn, f. r. 19d. 15s. 3,175
1, "Nag's Head" Inn, f. r. 18d. 1,600
King-st., "The Four Horse Shoes" Inn, with barter's shop and smithy adjoining, f. r. 32d. 4,100
H. Wilcock's, u.t. 99 yrs., g.r. 5d. 4,000
Stephens, Bastow, & Co., u.t. 99 yrs., g.r. 5d. 4,000
Stephens & Sons, u.t. 99 yrs., g.r. 5d. 4,000
W. B. Bloxham, u.t. 99 yrs., g.r. 5d. 4,000
Camberwell.—121, Grosvenor-pk., u.t. 23 yrs., g.r. 5d. 15s. 300
By SANDERS & SON (at Barnstable). Loxhore, Devon.—"Coombe Farm," 122 a. f. also a house and grist mill at Loxhore Mills, f. also a house and grist mill at Loxhore Mills, f. 3,000
December 22.—By H. HENDRICKS (at Birmingham). Birmingham, Warwick.—85 and 87, Ransell-st., f. r. 40d. £710
Eyre-st., f.g.r. 32d., reversion in 92 yrs. 875
December 23.—By VILLER, SON, & CLEMENTS (at Rye). Camber-on-Sea, Sussex.—"Camber Farm," 133 a. 2 r. 38 p. f. 2,000
By A. DOWELL (at Edinburgh). Strachroch, Perth.—"Water of Rye" Estate of Lundie, 1,153 a. 1,330
Morebath, Roxburghshire.—The Estate of Morebath, Tofts & Grubbs, 1,275 a. 17,400
JANUARY 7.—By J. W. MICHOUX. Hoxton.—54, Linton-st., u.t. 303 yrs., g.r. 5d. 5s. r. 35d. 270
January 12.—By HARDS & BRADLEY. Dulwich.—23 to 245 (odd), Lordship-lane, u.t. 83 yrs., g.r. 62d. 1,045
By ROBINS, SNELL, & GORE. Hammersmith.—Brook Green, "Queen's Mansions" u.t. 983 yrs., g.r. 200d. e.r. 75d. 5,750

Contractive used in these lists.—F.g.r. for freehold improved ground; l.g.r. for leasehold ground; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; y.s. for years; s.t. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

PRICES CURRENT OF MATERIALS.

Table with columns for material names (Greenheart, Teak, Sapele, etc.), units (ton, 1000 ft., etc.), and prices (£/cwt, £/sq. ft., etc.). Includes sections for TIMBER, METALS, and OILS.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us not later than 10 a.m. on Thursdays. N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

Table for BEDFORD tenders. Columns: Bidder Name, Amount (£), and Remarks. Includes Messrs. Suter & Adams, Russell-Sellers, etc.

CHELMSFORD.—Accepted for the erection of a house at Writtle, near Chelmsford, for Mr. F. Parlett. Mr. K. Mawhood, architect, Chelmsford. £266 [No competition.]

EXETER.—For the demolition of St. David's Church, Exeter.—Bloxham, £530; Dart & Folland, £280; W. B. Terry, £294; W. H. Terry, £294; Richards & Co., £30; Wm. Gibson, £40. * Accepted.

Table for the erection of new church. Columns: Bidder Name, Whole Cost (£), and Temporary Works (£). Includes Laphorne & Co., Luscombe & Sons, etc.

LEEDS.—Accepted for erecting eighteen small terrace houses, for Sir John Barran Bart., at Chapel Allerton, Leeds. Mr. W. Carlyll, architect. Quantities by the architect: Bricklaying and Masonry.—Joseph Richardson, Chapel Allerton, £1,000; Carpentry and Joinery.—J. Wilson, Leeds, £320; Plumbing.—Wesley Bugge, Leeds, £42; Electrical.—Thomas Moore, Leeds, £40; Painting.—Watson, Worsnop, Chapel Allerton, £100. Total, £1,460.

LONDON.—For alterations and additions at 76, West End-lane, for M. E. Couper. W. Sumner & Co., Limited, £575.

LONDON.—For alterations and additions, including fireproof floors, &c., at 241, 243, 245, 247, Fitchley-rd. for Messrs. Green & Edwards. Mr. R. Gaggins, architect, 11, Gray's Inn-square, W.C.1.—Wm. McSwiggan, £2,657; W. Sumner & Co., Ltd., £2,150.

LONDON.—For alterations, including shop-front fittings, at 21, Regent-street, for Messrs. Aves & Co. W. Sumner & Co., Limited, £510.

LONDON.—For extension of show-room and addition to Nas 229, 230, Upper-street, Islington, N., for Mr. J. W. Lewis, Mr. E. Edmund J. Harris, architect, 22, Compton-terrace, Highbury, N. Extra in Cement. Dixon, £1,550; J. & S. per foot, £15; Jarvis & Son, £540; McCormick, £437; Wall & Co., £410; W. & A. B. B. B., £395; Fatman & Fotheringham, £297; R. Eadie, Lyndale-place, £190. * Accepted in cement.

LONDON.—For making up and paving Clonmel-road, and flagging part of New King's-road, Fulham, for the Fulham Vestry, Mr. Charles Botterill, Surveyor, Town Hall, Waltham Green, S.W. —

Table with columns: CLONMEL-RD., NEW KINGS-RD., and sub-columns: Rounley, York, Imperial, Victoria, Admanst., York, Admanst., Imperial, Victoria.

LONDON.—For paving Manson House-square, Camberwell-road, S.E., for the Camberwell Vestry, Mr. O. S. Brown, Surveyor, Vestry Hall, Camberwell, S.E. —

LONDON.—For building a factory, Cornwood-street, N., for The Town Company Limited, Mr. R. Medworth, architect, Bank-chambers, Station-road, Finsbury Park, N. —

OXFORD (Surrey).—For the erection of two villa residences, for Mr. Percy Ravencroft, on the Tusey Estate, Mr. H. Ewing, architect, Tunbridge Wells —

RAMSBOTTOM (Lancs.).—For paving, &c., Hope-street, and four other streets, for the Urban District Council, Ramsbottom. Quantities by surveyor:—

RYDE (H.W.).—For new Forester's Hall for Court Astrina No. 2, 255, Mr. J. I. Barton, architect, 7, St. Thomas's-street, Ryde —

RYDE.—Accepted for alterations and fitting up saloon bars at the "Crown Hotel," Ryde, Mr. John I. Barton, architect, 7, St. Thomas's-street, Ryde. —

SHOOTERS HILL.—Accepted for alterations and additions to the Crole-Wyndham Convalescent Home, Shrewsbury-lane, Mares, B. Scott and Seron-Morris, architects, 30, St. James's-street, W.C. —

WITHINGTON (Lancs.).—For the execution of street works in Withington —

Table with columns: Keppell-road, Warwick-road, Holland-road, Cavendish-road, Stockton-road, Beechwood-avenue, Lime-grove, and sub-columns: £, s, d.

SOUTHSEA.—For alterations and additions, including new shop-front, &c., at 35, 37, 39, and 41, King-road, Southsea, for Mr. J. Edgill, Messrs. Kake & Co., architects, Trudential buildings, Landport —

TONBRIDGE.—For pulling down and rebuilding shop and premises, No. 47, High-street. Mr. H. Elwig, jun., architect, Tunbridge Wells —

WORKING.—For complete grocery fittings at 24, Chertsey-road, Working, for Messrs. J. Douglas & Son, Mr. J. H. Waddell, architect, 20, High Holborn —

TO CORRESPONDENTS.

T. N. (Amount should have been stated).—Notice (We cannot answer the question. Consult the building by-laws in force in your own district). NOTE.—The responsibility of stated articles, and papers read at public meetings, rests of course, with the authors.

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The Builder.

VOL. LXXII. No. 2847.

JANUARY 30, 1897.

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Clifton College.	Roman Catholic Pro-Cathedral.	Assize Courts.	Greenbank Board Schools.
Lloyd's Bank	Buildings	Technical School's Exterior.	St. George's Technical Schools.
Medical Schools.	Technical Schools: Interior.	Business Premises, Clare-street	Entrance Hall, Messrs. Lysaght's Offices
Exterior of Messrs. Lysaght's Offices.	Dock Offices, Queen-square		

Double-Page Ink-Photo.

Double-Page Ink-Photo.

Double-Page Photo-Litho.
Single-Page Tone Block.
Single-Page Tone Block.

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The Architecture of Our Large Provincial Towns.

IV.—BRISTOL.

BEGARDED as a modern city, Bristol is deficient in having no great central or predominant building, like St. George's Hall at Liverpool and the Town Halls at Manchester and Leeds.

or is there any special or marked impressiveness in any of its lesser buildings of the modern period, though there are some very good ones among them—and yet, taken as a whole, there are few cities in the kingdom more interesting and picturesque than Bristol, its central portion at all events. The variety and irregularity of the ground, the winding network of mostly rather narrow streets, the manner in which modern and ancient buildings are jumbled together, and the presence of the long river-like harbour and shipping almost in the heart of the city, all combine to give Bristol a marked character of its own, which no one who has seen can readily forget.

Bristol is of course much more of an ancient city than those on which we have previously commented; and though we are dealing in these articles mainly with cities as they are at the present time, one cannot write of this one without remembering that it has a greater and more remarkable past story, and has retained more of the impress of the past in its streets, than any other large provincial town in England. It was for centuries the greatest English shipping port next to London. As late as 1735 Pope recorded its astonishment at the sight of "the quay along the old wall with houses on both sides, and in the middle of the street, as far as you can see, hundreds of ships, their masts as thick as they can stand by one another." The mixture of shipping and houses is not so striking now as in Pope's time, for the great days of Bristol as a seaport are (relatively at least) passed away; but this element of the picturesque still remains to some extent. The impression which it produced in those days of being a dirty city unfortunately is still produced, though in this case also we may say relatively only.

As in most cities which date from Mediaeval times, the main lines of the Mediaeval city

are still traceable in the lines of the modern streets. Bristol in the thirteenth century was what would now be called a small walled town in a rather long narrow irregular shape, on a small inland peninsula between a bend of the Avon and a loop of the Avon's small tributary the Frome, which encircled the city westward. The west end expanded rather and ended in an approximate half circle, the line of which is followed by St. Stephen's-street and part of Baldwin-street. At the east end, where the space between the Avon and Frome narrowed, stood the castle, the position of which is now only recorded by the names of Castle-green and Castle-street. As the castle must have fully commanded the narrow neck of land between the two rivers, and they formed a natural moat around all the rest of the Mediaeval town, its natural position was a very strong one, and no wonder that it was the scene of frequent fights and sieges.

This ground on which the Mediaeval town stood is still one of the two specially interesting portions of Bristol, and still readily traceable. The preparation for what we may call the other interesting section of the city was made when, in the middle of the thirteenth century, the bend of the Frome at the north-west of the city wall was joined with the Avon by a wide straight canal running southwards from the city parallel with a reach of the Avon eastward of it, enclosing between them a parallelogram of low flat land rather longer than its width, extending southwards from the city wall, and surrounded on three sides by water, on the east and south by the Avon (which here turns almost at a right angle)* and on the west by the new channel. This land, bought from the Abbey of St. Augustine in order to make the new channel, was marsh land at the time, and appears as "The Marsh" in old maps. At the beginning of the eighteenth century, however, this flat peninsula was to enter on a new stage of existence, and, with Queen-square as its centre, to become the fashionable residential quarter for the time; again in due time to fall from that position into its present curious medley of new warehouses and old residences.

The centre of ancient Bristol was at the

* This, which was originally a reach of the Avon, is now all part of a floating dock following the old course of the river, the actual river Avon having been taken across south of it by a new cut made at the beginning of the present century.

"Cross" now represented by the junction of High, Broad, Corn and Wine streets. The cross itself, of late fourteenth century date, now in the grounds at Stourhead, was removed in 1733, and stood on the site of an earlier cross, and a very curious drawing "by Robert Ricart, a lay brother of the Fraternity of Calenders" is preserved amongst the archives of the City.* An illustration of the cross at Stourhead was given in the *Builder*. Apart from the removal of the cross and the three churches, the centre of the city may be said to exist much in its old state. Many individual buildings have indeed been destroyed, and replaced by others more in keeping with the requirements of the time, but the thoroughfares in this part of the city retain to a large extent their somewhat tortuous character, and much of interest is still to be found in and behind them. The great Norman castle that stood east of the city, between the Avon and Frome, hardly exists in anything but name. One or two vaulted rooms remain, however, incorporated with modern buildings, and by street names it is possible to identify sites. The walls, too, that formerly surrounded the city have, with the exception of one or two fragments, entirely disappeared; and of the city gates only one, St. John's Gate, exists. Of the three old streets south of the Avon and Bristol Bridge, two, Redcliffe-street and Temple-street, had gates at their southern end, and another, St. Leonard's Gate, stood on the site of Clare-street, not far from St. Stephen's Church. Bristol was rich, and is still, in churches. We have already dealt at length with the cathedral, formerly the church of the monastery of Saint Augustine, and detailed reference is, therefore, unnecessary. It stood west of the city proper, outside the wall, and formed one of a series of religious foundations which surrounded the city on all sides. St. Mark's Church, known as the Mayor's Chapel, and formerly attached to the hospital founded by the Gaunts, is rich in glass, armorial tiles, and monuments; and a window of Decorated period, with a profusion of ball flower ornament, will recall the work in the south aisle of Gloucester Cathedral. It has lately been restored, and a shallow north transept has been added. The site of the hospital itself is now occupied by the Merchant Venturers' School, in Union-street. St. Stephen's is remark-

* Pooley's Crosses of Gloucestershire.

able for its fine western tower, crowned with an elaborate parapet and pinnacles; the interior is noticeable for the figures of angels which take the place of caps in the piers, and for a good light modern wrought-iron chancel screen. St. John's, with its comparatively low tower and spire, forms a picturesque feature in Broad-street, built with the church on the City wall, and the City gate. Christ Church, at the corner of Broad-street and Wine-street, is a classic church with a tower and spire, rather reminding one of a Wren City church; the lower story of the tower has been enriched in recent times, with carved ornament rather too florid and out of keeping with its general style; the interior is divided into three aisles by an odd-looking colonnade of columns with classic capitals but of Gothic tenacity of proportion. All Saints, near the opposite corner, has a picturesque octagonal lantern on a plain ugly tower, and surprises one internally by two western bays with Norman piers, above which, where the arches should be, the space is filled up by secular structures which encroach on the church, leaving a flat ceiling over the aisles, on a level with the Norman capitals. St. Nicholas, near the quay, has a lofty spire and interesting crypt, and this church also extended over the gate that spanned the City approach to old Bristol Bridge. Externally the church is a large square-lined very late Gothic structure; internally we find a flat Renaissance plaster ceiling painted in gaudy colouring. In the western porch is a very rich late Gothic canopied tomb with a re-

cumbent figure; a work dated, as far as can be read, "162—"; for so late a date it is remarkably pure Gothic of its kind. Eastward, without the walls, are the interesting churches of St. James and St. Phillip, the former showing a fine and well-preserved Norman nave, while within the walls, near St. Nicholas, are the churches of

St. Peter and St. Mary-le-Port. Southward are three churches, St. Mary Redcliffe (outside the walls), and St. Thomas and the Temple churches, both standing in streets of the same name. St. Mary Redcliffe is perhaps one of the best known, as it is undoubtedly one of the finest parochial churches in the kingdom; it will only be necessary here to



St. Stephen's Church, Bristol.



Bristol Tower of the Temple Church



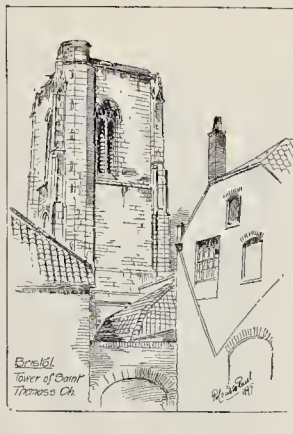
St. Peter's Hospital.
(taken from a photograph.)



New Buildings Bristol for the PROVIDENT LIFE INSURANCE CO. (See Henry Edwards' Article)

speak of the beauty of its Decorated tower and north porch, and the grand scale on which the church was rebuilt in early fifteenth century times. Some interesting glass fills the lower windows of the tower; a curious whale rib, popularly known as a rib of the dun cow that is said to have supplied Bristol with milk, is a relic of the days of Cabot; and the room over the north porch is memorable for its connexion with the boy Chatterton, whose monument stands at the angle of the churchyard. St. Mary Redcliffe is in fact the architectural jewel of Bristol, but it is too well known to need a passing illustration, and should rather be the subject of a special illustration and plan, as a pendant to the cathedral, to which it is in fact in some respects superior; on some future occasion we may endeavour to give it the separate attention which it merits.

St. Thomas's Church is of no great interest, but its weather-beaten tower is a good example of simple Perpendicular work, shorn of its parapet and pinnacles like its neighbour the Temple Church. The tower of this latter leans away from the church considerably towards the west, and the somewhat curious design of its belfry stage is accounted for by the present belfry being a later edition to the tower. Originally it was finished with the trefoil parapet, now forming a broad band below the belfry windows (see sketch). There are many remains of domestic work in and about the city. In St. Mary-le-Port-street and Peter-street, in Broad-street, and, until lately, in the Pithay were many of the old timbered houses. The house now known as St. Peter's Hospital, formerly the house of the Nortons, merchants of Bristol, is a very elaborate building with projecting windows, and good fireplaces, and at the angle of High and Wine streets still stands a curious timbered house, the material for which is said to have been brought from



Bristol
 Tower of Saint
 Thomas's Ch.

Holland. Of earlier date is the beautiful doorway in the Welsh Back, near St. Nicholas Church; the hall of Canyng's house in Redcliffe-street, with a fine roof; a house formerly the offices of the *Times and Mirror*; and some fragments of the Dominican Priory. The Red Lodge, on St. Michaels Hill, is a later building, with fine fireplaces and ceilings. Other old houses are still to be seen in Temple, St. Nicholas, and Redcliffe streets, south of the bridge, but this approach to Bristol has been much altered of late years by the making of the new street, Victoria-street, from the joint station to the bridge; and large warehouses now occupy the sites of old buildings. But, in spite of much recent alteration, the city retains a remarkable number of interesting ancient buildings, both ecclesiastical and domestic.

Turning to what is our more special object

on this occasion, the modern element in the city, we naturally look first at the latest completed "public improvement," which has consisted in filling up the end portion of the dock on the old line of the Frome, northwest of the old "city," and forming a central place here. There was once talk of building on this filled-up ground a new Bristol Town Hall or Municipal Buildings, and it is a great pity this was not done, as Bristol wants a central building, and this would have been an ideal site for one. The still greater pity is that the opportunity even of making a fine place has been utterly thrown away, and the whole thing completely bungled. A long irregular enclosure has been formed with railings, the entrance at each end flanked by large but commonplace stone pedestals each supporting a thin lamp-post for which the pedestals are absurdly too large. The sides of this enclosure have been formed into flowerbeds confined with irregular wobble-waggle lines of fencing, and the centre of the space is marked by a tall thin iron lamp-post. There is not the slightest dignity of design in the whole thing. Near the upper (west) end of the enclosure is a poor statue of Burke on a still poorer pedestal, bearing the fine sentence (we know not when uttered). "I wish to be a Member of Parliament, to have my share of doing good and resisting evil." The cynic who is acquainted with the political history of the city may be disposed to remind the Bristol people of the fact, which they evidently wish to forget, that Bristol rejected its brilliant representative, after three years' service, exactly because he was too forward in "doing good and resisting evil," and preferred abstract right and justice before the immediate commercial interests of his constituents. At the other end is a better statue of Edward Colston, on a better pedestal than the other, with some decorative historical bronze reliefs attached

to the four faces; the bronze dolphins at the angles, however, do not combine with the stone-work, and look like rather unmeaning excrescences. Altogether, the *place* is a rather sad spectacle of wasted opportunities. The buildings surrounding it form an irregular mass of commonplace structures, which unfortunately seem in too good repair to present much chance of rebuilding and improvement. Near the dock, facing the west end of the *place*, the owners of a long block of warehouses have made a spirited attempt to embellish the end of their line of buildings with a pediment decorated with symbolical figures and ornament in terracotta, and an octagonal angle turret, and deserve credit for the attempt. At the north side of the *place* the Roman Catholic church of St. Mary, a severe Grecian structure, shows up well by contrast with the motley crowd of buildings round it, and gives in fact the only touch of architectural dignity to the scene, though in an old-fashioned manner.*

Colston Hall, designed by Mr. Foster and which, as almost every one knows, is the main public hall of Bristol, suffers from being in a back position and having a very inadequate façade, which by no means architecturally suggests the importance of the building in its rear, though it is meritorious in itself for simplicity of design and some good detail, especially in the treatment of the upper story with its coupled colonnettes connected by a square-section lintel decorated with carved ornament. The top finishes level, with a sufficiently well-marked cornice. The interior is rather coarse and incongruous in detail; side-aisles are formed by circular columns which do not diminish, which spring from gigantic splayed bases of Gothic character, and end in classical capitals carrying the ends of highly-decorated entablatures which run back to the walls, over the galleries. The whole of this upper part seems too heavy for the columns, as well as out of keeping with them. The plain panelled barrel vault of the ceiling has a good effect, and the entrance staircase is spacious and shows a well designed balustrade of transitional Norman character. The whole building is rather a mixture of styles; Classic, Norman, and touches of Byzantine; a sort of mixture to which there seems to be rather a tendency in modern Bristol architecture. However, there are many worse public rooms than Colston Hall, though it is unfortunate that its exterior architectural effect is rather *manqué*.

Clare-street, Corn-street, and Wine-street, which, running in a continuous line, form the backbone from west to east of the old city, contain a good many of the best commercial buildings; and though Bristol can show no one street comparable in interest and importance with Park-row at Leeds, there are a sufficient number of interesting and more than creditable buildings to be found. One of the most recent buildings in this neighbourhood, the new Capital and Counties Bank (illustrated in one of our lithographs),

* The *place* has however been put to a good practical purpose in forming a "tramway centre," where all the principal lines of tramway meet or cross, so as to facilitate intercommunication. The tramway service in Bristol is very well worked, at very low fares. The electric tramway to Kingswood, worked by overhead wires (before mentioned in these columns), and which starts from a point further east, in Old Market street, seems to answer very well, and is run through the streets at a speed which suggests the idea that they will kill somebody some day, if they have not done so already.



The Royal Exchange.



New Offices, Baldwin-street (Mr. E. Gabriel).

by Mr. Milverton Drake, has secured two frontages, one in Clare-street (at the bottom of Corn-street), and one in Baldwin-street, the building running through from one to another; the upper portion, as will be seen, is treated identically in both fronts; in the lower portion the principal entrance in Clare-street is distinguished by a decorative entrance door with some well-executed carving, though the bracketted-out piece, carrying a second pediment below the larger one, seems rather an excrescence. The best portion of the design is the treat-

ment of the first and second floor windows between the columns. On the left hand going up Clare-street the new Provident Life Office, an angle building, is a very good design with a great deal of character; the ground floor lighted by large circular-headed windows on short baluster-like pilasters; two stories of oriel windows above with a carved frieze between them, and an open arched loggia at the top, ranging vertically with the ground floor arches. There is good detail in this building, which is picturesque and satisfactory also as a



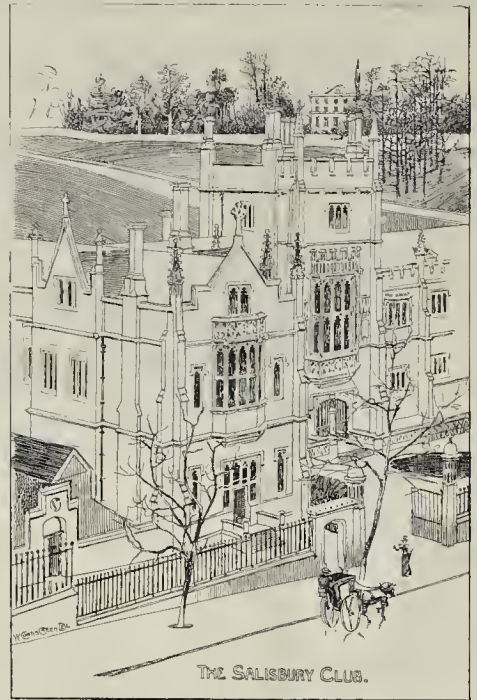
ole. The architect is Mr. H. Edwards. little further up on the same side General Assurance Company show a classic front (not recent) of some originality, especially in the treatment of the first-floor windows and their surroundings; and at the corner of Corn-street and St. Stephen-street is the very dignified Classic building of the Royal Insurance Company. This Company has always endeavoured to secure good architecture in its offices (as we have seen lately in the Liverpool competition), and the Bristol building is no exception. It is a really Classic structure, the ground-floor treated with coupled pilasters with rusticated courses running through from one to another; above is an order of fluted pilasters at the sides, the front to Corn-street being specially treated with columns and heavy rusticated angle piers. The carved details of the doorways are rich and refined. Above is the National Provincial Bank is rather a mixture of styles; painted rusticated arches on the ground story with polished granite cornices in the jambs; there is a richly rusticated Corinthian order above, the whole effective, but the upper and lower portions do not harmonise. The little façade of the "Old Bank," two doors above it, is a pleasing specimen of old-fashioned Classic design. The Wells and Dorset Bank, with its rusticated arched ground story and an order of polished granite Corinthian columns above is rather showy than really artistic; and opposite to this the Liverpool London and Globe Insurance Company shows a front which is still more open to the same objection; it is altogether overdone, and yet not unobtrusive in design, with coupled Roman Corinthian columns in two stories, finishing above in coupled statues—everything in its place; it would have been twice as effective

had the lower portion been more simply and boldly treated. Lloyd's Bank, higher up on the north side of the street, though a little overdone with sculpture, is a really fine and effective Classic front, all the more so for the great depth of projection and reveal which it shows, with a noble contempt for economy of stone-work. This front would make its effect anywhere. Opposite to it the more simple and conventional front of the Royal Exchange carries on the face of it "Wood of Bath—his mark." It is dignified, but bears a very remarkable similarity to other works by the same architect, who seems to have mastered one effect of Classic architecture, the plain rusticated ground story with a plain order above, and stuck to it. But this, like all his buildings, has the charm of carefully considered proportion. The County Hall, at the angle of Corn-street with Broad-street, is an example of pure Greek architecture, by some one with the Erechtheion strongly pervading his mind; its only ornaments are two great Ionic columns flanking the slightly-recessed centre and entrance, with answering pilasters on the remainder of the front, and a band of carved ornament, also from the Erechtheion, dividing the height of the front; it is perfectly cold and expressionless, but not without a certain dignity and importance, and carried out by an architect who at all events understood the particular aim which he had taken in hand. At the commencement of Wine-street stands the well-known old half-timbered house already referred to, and said to have been brought from Holland. There are no modern buildings along Wine-street of any importance. The general aspect of this street, as well as of others in the centre of Bristol, is very much affected by the practice

which prevails of placing shop signs and names on large lettered boards fixed at right angles to the houses and projecting out over the pavement. This is convenient for the shopkeepers and perhaps to some extent for the public who wish to find a particular class of shop, and it gives a certain picturesque effect to the view along a street, but it is very injurious to the architectural effect where there are any buildings worth attention. While on this class of subject we may mention also that at Bristol, as at Leeds, we find the naming of streets carried out in a very partial and inefficient manner; many corners even of important streets presenting no name to the visitor, who has to get to the other end before he finds out what street he is in, and perhaps does not discover it even then. This is a matter which the city authorities should take in hand. On the west side of Broad-street, the principal street crossing at right angles to the central line of Corn and Wine streets, is the Guildhall, by Mr. Pope, a respectable building in Late Gothic style and showing a very good knowledge of that phase of Gothic; it is decorated with statues in legal costume in niches between the windows. The building is expressive of its purpose, in so far as it may be said to be in what is a kind of conventionally accepted "Guildhall style." It is oddly contrasted with the Bank of England next door to it, evidently one of Cockerell's designs, a severe façade with a Doric order running through the ground story and a mezzanine, with circular-headed windows and a pediment above. In its way it is a dignified work, with "Bank of England" written (architecturally) on its face. On the opposite side of the same street is the large mass of the Grand Hotel, a building in Italian style

which deserves credit as being of a far better and more refined type of architecture than we usually find in large modern hotels; the open loggia with colonettes, at the top, is a pretty feature in itself, but it looks a decidedly weak support for the large and boldly projecting cornice immediately over it. Unfortunately whatever architectural effect the building might have had is nearly ruined by the projection of the ground floor shops at the base, a commercial advantage possibly, but a great injury to the building in every other sense. In Small-street, another of the cross streets, the Post Office on one side and the Assize Courts opposite furnish the same kind of marked contrast of style as the Guildhall and the Bank of England in Broad-street. The Assize Courts, by Mr. Pope, is one of the best modern buildings in Bristol; a small illustration of it, from an old drawing lent by the architects, is given on one of our lithograph plates. The left hand portion is the Assize Courts front, the part on the other side of the tower being occupied by the Law Library, and it will be seen how well and characteristically this portion of the front is treated. The courts are good-looking and spacious Gothic interiors; no attempt has been made to differentiate the architectural treatment of the Crown and Civil Courts; it would have been better to have endeavoured to express architecturally their difference of character and purpose. The Post Office, a blank piece of regulation Classic architecture, has nevertheless the same kind of merit as the Bank of England—it expresses its purpose; it can hardly be taken for anything but the Post Office. This expression is chiefly the result of the treatment of the two recessed openings or porticoes breaking the flat line of the front, and screened each by two columns; one marking the entrance to the offices, the other the recess for access to the letter-boxes. In spite of its very cold and formal architecture, the Bristol Post Office is much less objectionable in point of architectural taste than the more florid and pretentious buildings which have recently been erected as Post Offices in some of our large towns.

The eastern portion of the city centre, as well as some of the narrow streets in other portions, contain a good many bits of picturesque old houses and shops, all looking however, very grimy and dirty, and leading to a question whether their room would not be better than their company, on sanitary grounds at all events. There appears to be very little new building going on; besides the one or two quite recent buildings which we have mentioned, there is a new block of offices in course of erection in Baldwin-street by a London architect, Mr. Gabriel, of which we give an illustration. Among other buildings in the city quarter which may be noticed in passing are the Bristol Municipal Charities, a good brick free Classic front in St. Stephen-street, nearly facing the *place*; the Bristol Property Companies Offices a few doors further on, a building in rather florid Classic, costly, but with somewhat coarse details. At the south end of St. Stephen-street the *Western Daily Press* offices shows a large mass of plain and solid brickwork satisfactory in itself; it would have been better without the corbels under the first floor string course, which carry nothing and



are only unnecessary ornament, the string course being broken round them to give them a finish. A building which is to impress chiefly by its plainness and solidity is best left as plain as possible. The blocks of offices about Baldwin-street, mostly brick more or less ornamentally treated, are commonplace enough. At the rounded corner leading off into Charlotte-street something bold has been attempted in the way of a Gothic offices front, with large pointed-arched compartments nearly the whole height of the building, the piers between them balanced on bracketed columns on the ground story in a not very satisfactory manner.

Among buildings of the warehouse class there are some well-meant and creditable attempts. At the corner of Broad Mead a Union-street Messrs. Fry's great warehouse shows a rather powerful and effective treatment of the two lower stories in grey granite with very deep reveals to the windows. It is unfortunate that the rest of the building is in the disagreeable yellow brick rather too largely employed in modern Bristol. We may observe that the sense of the powerful effect of deep reveals to openings has been a good deal recognised in Bristol. We see it again in the very creditable block of Gothic warehouses on the south side of Broad Mead (Hall's oil warehouses), with large pointed arches on the ground floor and a series of lofty couplets and trefoiled windows above; evidently an effort of the Gothic revival, and a building of more than average merit for a warehouse. Messrs. Worth & Co. make a milk attempt at a Gothic warehouse in Queen-street, not remarkable, but deserving credit for the intention of treating a warehouse architecturally. Messrs. Robinson's stationery warehouse, close to Bristol Bridge in a plainer and more warehouse style, a good purpose-like building, diversified with a touch of art in the small sculptured frieze round the angle tower.

In the north quarter of the city portion, the neighbourhood of Bridewell-street, so many staring brick buildings of the modern sort are pleasantly contrasted by the quiet brick front of the All Saints' Almshouse adjoining them. In this quarter the corner Police Station and Police Courts show a very suitable architectural treatment, and the iron gateway to the Police Courts is well designed. This is however a very tiny, slightly quarter of the city, full of ha-



smantled corners and rubbish-covered lots for which there seems to be no outlet to be found; we presume that from various uses there is little building enterprise, capital to lay out on building, at present; it the state of things resulting gives a solitary and neglected aspect to this and many other portions of the city. The large angular piece of broken-up ground south of St. James's Churchyard is we presume intended to be treated in some scheme of public improvement; it is to be hoped it will be better carried out than the neutral place.

The flat peninsula before referred to, south of the city proper, is the most curious and characteristic part of Bristol. Surrounding on three sides are quays and shipping-warehouses, including the one really grand and powerfully designed warehouse in Bristol, the well-known one on Welsh Back, on the east side of the peninsula, by Messrs. Gougeon & Gough, of which we give a small illustration as a reminder; it was illustrated in an engraving in our pages many years ago. In the centre is the once fashionable Queen-square, a very fine large square surrounded by what passed for very handsome residences in the reign of good Queen Anne, and nearly all lapsed into offices. On one side is the new building for the Bristol Clock Offices, by Mr. Milverton Drake, of which we give an illustration; a good building, but not harmonising with its surroundings. King-street, crossing from east to west, is full of picturesque curiosities; half timber houses; the faded Classic front of what was once the Mayor's Hall, now a warehouse; the old quadrangle of almshouses with their red-tiled roofs; the stone front of the old Bristol library, with its columned porch, standing back from the street; at the end the small but dignified Classic stone building of the Merchant Venturers' Hall, with its handsome iron gates gilt and emblazoned with the Venturers' arms and their sturdy motto, "Indocilis pauperiem timet." Down the west side runs the wide avenue of Prince's-street, with warehouses on one side and on the other side various fine handsome buildings now fallen from their high estate; the largest being the fine front of what is now the offices of the Great Western Railway Company, still bearing on its walls the apparently incongruous motto, "Curas cithara tollit"—"The lyres we lay away our cares"; for this was once the Assembly Rooms of the Bristol aristocracy

who abode in Queen-square. At the end of the vista one may probably see the masts of a large ship. A more picturesque corner than this, one more full of curious associations and suggestions of past times and social, commercial, and architectural changes, is perhaps not to be found in any city in England; to see it is alone worth a visit to Bristol.

On the road up to the higher ground where Clifton commences there are various buildings of more or less architectural interest; the Almshouses in Colston-street, by Messrs. Foster & Wood, a pleasant bit of domestic Gothic with its quadrangle and timber-gallery; the Technical Schools by Mr. Robins, just off the bottom of Park-street, of which we give two illustrations; in Park-street the pleasant bit of old Classic taste shown in the circular colonnaded portico of what was originally the Bristol Institution, (a relic of Cockerell's refined taste); and at the top of Park-street the Museum, an important building in a rather nondescript but picturesque Gothic style, apparently partly suggested by the Ducal Palace at Venice, though with a difference. Behind this is the Medical School, a building, like a church and one or two others near it, in rather a tame Gothic style; and in fact, with the exception of Street's well-known church at Clifton, one cannot say much of Bristol modern Gothic churches as a rule; at the best they do not generally merit a higher title than pretty. Higher up there is a group of buildings, including the Italian front of the School of Science and Art (it is a "front" only, science and art not having apparently been able to turn the corner), the front of the Victoria Rooms with its colonnaded portico, and one or two others, which, though no single building is of much architectural worth itself, combine to make a somewhat effective group in connexion with the open space which they adjoin.

Among miscellaneous points to be noted in and about Bristol is the frequent occurrence of old Classic buildings, fronts to the street mostly, of more or less merit, and which speak of some former dignity of the site or the building which has now passed away. Thus in Broad Mead there is the elegant Ionic façade to a covered gallery, a kind of deserted "Burlington Arcade" (but of much better architecture); the Classic house with an order, facing the open space of St. James's Barton; the old Classic

building with a columned portico in Bath-street, now occupied as a warehouse, but which suggests the idea of having once been a district Town Hall or assembly room. In most towns one finds these remnants of the Renaissance or of the Classic revival, but they seem more frequent than usual in Bristol, and crop up in most unexpected places, telling of social or other changes in their neighbourhood. Near St. James's Barton the small old St. James's Square is a curious nook of past respectability, with its projecting shell hoods over the front doors. Among the fountains that at the end of St. Nicholas Church, erected by Bristol iron merchants some half a century ago, with a bronze angel holding up an appropriate text over it, is well intended; had it been carried out now the sculpture and general design would probably have been better. The old fountain close to the wall of St. John's Church, in a recess in the wall, with a much faded Renaissance frieze of griffins &c. over it, is interesting in another sense. Also one may note the picturesque view to be found on turning down to the dock wall at the opening near the end of Peter-street; the mass of irregular buildings grouped about the water are all ugly enough taken separately, but the whole picture is a remarkable one.

The interest of Bristol mostly ceases with the central part of the city. One may take tram journeys of exploration this way and that, but from Dan to Beersheba is mostly barren of all interest. On Kingswood road are the St. George's Technical Schools by Mr. Bligh Bond; on the road to Bishopston the Colston Girls' School; of both of which we give illustrations. But the one suburb of Bristol, to speak of, is Clifton; and what a suburb! Even Edinburgh can hardly match the effect of Clifton Down for beauty and picturesqueness; whether from above, looking down on the Avon and the smoky town, or from below, where we see the ends of the terraces rising on the top of the precipitous rock, and the wooded banks of the Avon, and the Suspension Bridge crossing the view. Architecturally indeed there is little to say about Clifton (which is perhaps hardly within the scope of this article); the style of the houses is for the most part simply the "respectable residence" style; the buildings of Clifton College are fairly good architecturally, and there has evidently been an intention to make them so; but they cannot be said to be of any great architectural interest; they again, like the churches, are "pretty" rather than anything else. But everything in Clifton seems spacious and well kept; the roads wide and clean, the houses mostly pretty well spaced; and the splendour of its position, with the wide open downs contiguous to it, makes one regard the architecture as rather a secondary matter. It may be partly the striking contrast between this lofty and picturesque suburb and the smoky town immediately below it that gives to Clifton its special effect; certain it is that there is no spot in England, forming almost a portion of a great city, to equal it in beauty and in that impression of romantic charm which no familiarity seems able to weaken or destroy.*

CONGREGATIONAL CHURCH, PERTH.—Messrs. H. B. W. Steel & Balfour have been appointed architects for the new Congregational church to be erected in Kinnoull-street, Perth.

* The next of this series of articles, on the architecture of Cardiff, will appear in our issue of March 13.

NOTES.

A QUESTION was asked on this subject in the House of Commons last week, and though the reply of Mr. Macartney amounted to an admission that the question must be shelved for the present, still it is encouraging to find that it has by no means been lost sight of, and that Foreign Powers have been consulted in regard to a common agreement on the subject; but they are not unanimous, and it appears to be considered that no definite step can be taken until unanimity has been obtained. The "Nautical Almanac" for 1901 has therefore been calculated on the existing system. It is something to find that there has been a distinct move made towards obtaining a general consensus of governments in the adoption of a "world-time." But is unanimity among the leading governments an absolute necessity in the case? Surely a reasonable majority might agree on the adoption of the new system, and the conservative objectors would then have to adopt it whether they would or not. The convenience of a "world-time" would be so great that a minority of objectors among civilised nations ought not to be allowed to delay its adoption, which is a matter of course sooner or later.

WE lately had occasion to refer to the considerable expenditure on public works for the coming year on the part of the Imperial Parliament of Germany. The various budgets of the separate German States are now being published, and it appears that Prussia proposes spending no less than seventy-four million marks—or 3,700,000*l.*—on building operations. The Prussian railways absorb 2,200,000*l.* of this sum, whilst the Commissioner of Works will expend 650,000*l.* for the purposes of his department only. The Educational Department proposes spending 250,000*l.*, and the Ministry of Justice over 200,000*l.* As in the case of the Imperial budget, much of the money will only be voted "on account" to large works spread over a number of years, and this particularly refers to the railway administration. The extension of the Wiesbaden Station, for instance, this year only requires 50,000*l.* out of a total proposed expenditure of 500,000*l.* In a similar way, there are many votes "on account" for Prussian canals, harbours, or inland waterways; the Ministry of Justice will be spending 50,000*l.* on a prison, the total cost of which will be 150,000*l.* There appears, however, to be a distinct decrease in the number of large architectural works in hand for the present year. The Cathedral at Berlin, which is estimated at 500,000*l.*, appears to be the only important architectural monument to be paid for by the Prussian Diet. The sixth vote on account for this building for 1897 will be 80,000*l.*

WE presume that the question asked by Mr. Carvell Williams a week ago in the House of Commons, whether the Government would consider the expediency of transferring the maintenance and repair of the fabrics of our cathedrals from Deans and Chapters to Her Majesty's Board of Works, "as in Scotland," was part of the echo of the Peterborough controversy. Mr. Balfour, we are glad to record, had the good sense to give a curt and direct negative to the question. One is not

always satisfied with what Deans and Chapters do to the cathedrals, but we may certainly expect more reverence for the buildings at their hands than at those of the Office of Works, considering what sort of persons may from time to time have sway there. Imagine the cathedrals of England under the temporary charge of Mr. Shaw Lefevre or the late Mr. Ayrton!

FROM a communication to the *Times* it appears that the Trustees of St. Cross have

taken the right course in regard to their proposed new buildings. They will enlarge the hospital, but for this purpose they will take the old master's house, and build a new master's house outside the precinct, so that there will be no intrusion of modern building to destroy the unique effect of this relic of ancient life. In some cases we might think that this tenderness about intruding a modern building which was practically wanted was carrying reverence for the past too far; but St. Cross is unique; the nation cannot afford that it should be spoiled.

A MEETING of persons chiefly concerned in sailing and boating on the Thames was held

on Friday last at Kew Bridge in furtherance of the proposal to make a new lock on the Thames at or just below Putney. The advantages to the sailing clubs, members of two of which, the "Thames" and "London" sailing clubs, moved and seconded the resolution in favour of the new lock, are obvious; and the rowing clubs would seem to be as much concerned in the improvement; it is surprising that none of them appear to have been represented on the occasion. The advantage to the general public also, in so far as the appearance of the river at that part and the sanitary condition of the banks are concerned, is indubitable. On the other hand it must not be forgotten that there are interests on the other side. One minor one was mentioned at the meeting—the barge-repairing industry at Brentford, which would of course be practically ruined by the interposition of a lock which would prevent barges coming up with the tide. But the serious question for the general public is the effect on the lower tidal reach of the Thames of any alteration which shortens the tidal flow, and this point seems to be hitherto entirely lost sight of by those who hold meetings and pass resolutions in favour of the new lock—or rather it is a point they know nothing about. For many reasons we should like to see the scheme carried out, but it ought not to be done until the opinion of one or two of the first river and harbour engineers of the day has been taken in regard to the probable effect of the scheme on the lower Thames.

WE regret to find that the efforts of the Acton District Council to have the fatal level

crossing in their district closed, and a bridge placed in its stead, have not proved successful. It is obviously necessary that the Board of Trade should be empowered by statute to oblige railway companies to place bridges over their lines, in such places, as level crossings are dangerous to the public safety. It is preposterous that where the public safety is imperilled, the Government department which has the superintendence of the

railway system should be unable to compel a railway company who ought, but will not, make such necessary improvements, to do so. It is the more absurd because, when a new line has to be made, it is possible to prevent dangerous level crossings from being made. Localities change their character and a crossing which may not be dangerous at one time, may, a few years hence, become distinctly perilous to the public safety.

Motor Cars as Dust-carts.

THE expected development of motor cars as private carriages has not yet given much sign, and it seems likely that the first uses of the newly legalised method of locomotion will be for humbler and more practical needs. It was stated some weeks ago that one of two large shops had given orders for motor cars to take their goods round; and we now see that the District Council of Chiswick has ordered two for use as dust-carts. Economy is the main object in the order, the Council expecting to be able by this means to carry out the dust-collecting themselves instead of by contract. If the experiment is successful in an economic sense, it will be an advantage to the public not only in saving rates, but in all probability the greater efficiency with which the work will be carried out.

Accumulator Charging.

THE St. Pancras Vestry, considering the probable great demand there will be soon for charging accumulators for motor cars, has fixed the price for charging them at 2*d.* per unit, subject to certain regulations as to the times at which their central stations will be prepared to do this. Of course, they are only able to do it at this low figure because the most of their machinery is lying idle the greater part of the day and it pays them to run it, and sell electricity at a trifle more than the bare cost of production. We expect that very few companies will be able to underbid them. At this price it would pay a good many people, who are late consumers, to have a waggon load of accumulators, which they could send out in the morning a week to get charged, and then use the electricity for ordinary lighting purposes. It would certainly pay a good many small manufacturers to buy a motor a barrow load of accumulators, especially where the power is only wanted intermittently. The action of the Electric Committee is to be warmly commended, and we hope that it will bring down the price of charging accumulators for electric launches, bicycle lamps, &c., which has been hitherto almost prohibitive. On the Thames they used to charge 1*s.* 6*d.* a unit of charging electric launches, until last year the Kingston Corporation came in and brought down the price to 1*s.* 3*d.*, being content with a modest 300 per cent. of profit.

Bolsover Church.

THE parish church which, excepting the Cavendish Chapel, was destroyed by fire early last Sunday morning, consisted of nave, aisles, chancel, and western tower capped with a low spire of the kind not unusual in the locality. It was erected, for the most part, *circa* 1200, instead of one built in 1000 on the site of a Christian church built, so we say, nearly four hundred years before. Norman work remained a semi-circular arch above the chancel doorway, with a carved

of the Crucifixion in the tympanum, and a font with late fifteenth-century tracery on it. Transitional Norman were the chancel arches, and many of the arch stones embedded in the later walls. The tower and spire were early English; the south aisle and east window, decorated; the west window, Perpendicular. In 1878, Messrs. Shillitoe & Morgan, of Campsall, restored the fabric under the superintendence of Mr. J. D. Mitchell-Withers, of Sheffield. The restoration comprised a new north aisle and arcade, a new roof replacing the low fifteenth-century roof over the nave, rebuilding of the chancel arch, an organ-chamber, complete renovation of the chancel, a Bath stone reredos, and roof of red Staffordshire tiling. In the course of the work some Transitional capitals were recovered and walled in as corbels in the south aisle. In that aisle was recessed a stone much injured by the fire) found in 1704 outside the north door, where it had served, inverted, as a step. The stone bears a relief, in high relief, of the Adoration, once richly coloured, of supposed fourteenth-century workmanship. The organ was entrusted by Messrs. Foster & Andrews, of Hull. Messrs. Taylor, of Loughborough, recast the bells, and Mr. Smith, of Derby, made the clock. In the chancel was the tomb of Huntingdon Smythson (d. 1648), reputed architect of the first portion of Welbeck Abbey, for Sir Charles Cavendish, and of the riding-house and tables. William (Cavendish) first Duke of Newcastle is said to have sent Smythson to Italy to collect the best designs for his additions to Bolsover Castle, being the unfinished range of buildings on the terrace, including gallery 220 ft. by 28 ft.* In the Cavendish chapel, built 1618, were buried several of that house. Sir Charles's monument has his effigy, armour-clad, under an enriched arch in Corinthian columns; below is a figure of his second wife, co-heir of Cuthbert, Lord Eggle, the epitaph by Ben Jonson. The effigy is supposed to have originated in the vestry, which stands over the warming-apparatus. We read that the church was insured for 3,150*l.*, and that the Duke of Portland has decided to open a restoration fund with a donation of 1,000*l.*

In a paper at the Society of Artistic Heraldry, on Tuesday evening, Mr. W. H. St. John Hope dealt with this interesting subject in a very concise and suggestive way. He, moreover, illustrated his lecture by a very fine series of lantern slides and a number of photographs of the stall plates of the Knights of the Garter, coloured by hand, from St. George's Chapel, Windsor. Being the only set of facsimiles, they are extremely interesting and valuable. Mr. Hope assumed that his audience were to some extent conversant with the rudiments of the science and terms of heraldry, and drew attention to the varying forms of shields, from the early "heater" shield to the elaborate forms of the Renaissance period, when the ancient form of shield in many cases is hardly observable in the design. Seals form a very fruitful field for the study of heraldic devices and badges, and the fertility of design in these was well

shown by the lantern slides, a sad contrast to these being the design for the half-crown now in circulation. We might add a still worse example in the four-shilling piece, in which one of the chief causes of the success of ancient designs—the proper filling of the "field" by the "charge"—seems to have been wholly ignored. "Supporters" again in the old designs did support either the shield or the helmet. Attention was drawn in this connexion to the poor design of the Royal Arms over the entrance to the New Portrait Gallery. How largely heraldry entered into mediæval life was instanced by extracts of bequests of personal apparel, furniture hangings, and plate, all of which were richly decorated in gold and colour. The application of heraldry to architecture was illustrated by the well-known gateway to the Monastery of Kirkham, in Yorkshire, and the sumptuous shrine of the Percys at Beverley; but the number of ancient examples is legion, and almost every mediæval church and manor house in the kingdom bears evidence of the value of heraldry as a decorative addition to the building. Its application to wood and metal were also illustrated by screens, and the fine gates and tomb of Henry VII. at Westminster Abbey. Although heraldry may be a "lost art," and the necessity for it in these days may not be apparent, yet Mr. Hope's plea for its proper and careful designing and also for freedom, as opposed to mechanical treatment, is one that all interested in the decorative arts must welcome and support.

We read that the parish church, dedicated to All Saints, of Connington, near Stilton, in Huntingdonshire, is in a dangerous condition, and that Mr. Thompson, of Peterborough, having examined the fabric, reports that a serious settlement has taken place. The church, with its fine tower, with battlements and pinnacles, was erected *temp.* Henry VII. It contains monuments to the Cottons, and Heathcotes, and memorials to Robert Bruce, King of Scotland, and Prince Henry, who, in 1152, predeceased his father, David I. Prince Henry's third son was David, Earl of Huntingdon.

This exhibition has just opened in its usual quarters in the Rue de l'Art et Littéraire." Volney, to close on February 19. The most important work there is a portrait of Dr. Peyrot by M. Bonnat. M. Benjamin-Constant has sent a fine study for the portrait of Lord Dufferin, and M. Carolus Duran a figure of an Armenian in many-coloured vestments. M. Jules Lefevre exhibits the portrait of his wife, and M. Weerts a portrait of M. Henri Brisson, painted with the minute precision of a Flemish painter of the seventeenth century. We may mention also a curious and mystical composition by M. Desvallières entitled "The Annunciation," and which recalls the early Florentine school; a fine autumn landscape by M. Frank Lamy, a twilight effect by M. Gosselin, two small humorous pictures by M. Jean Weber, a bust of a woman by M. Puech, and a powerfully modelled bust of a man by M. Alfred Boucher.

The Society of Painters in Water-Colours has opened an exhibition of works of some of its lately deceased members—Mr. Alfred

Hunt, Lord Leighton, Mr. G. Fripp, Mr. Alfred D. Fripp, Mr. Beavis, Mr. E. K. Johnson, and Mr. du Maurier. Of the works of the three last not much need be said; Mr. du Maurier was certainly not at his best in colour; Mr. Beavis's are good cattle paintings uninformed by the higher spirit of art; Mr. Johnson's figures are such as are popular in illustrated periodicals for general readers. The works of Lord Leighton which are exhibited only consist of two or three unimportant studies; the bulk of his work of this class is in other exhibitions. The strength of the exhibition lies in the works of Hunt and the two Fripps, the former standing however quite apart as something on a higher level. One could in fact hardly have a more remarkable proof of the varied nature of Hunt's powers than is shown in the twenty-seven works by his hand which are grouped at the commencement of the catalogue. Compare the wonderfully solid drawing, "Cumberland Fells" (2) with such an atmospheric vision as "Sunlit Rain, Warkworth," (22) and "Robin Hood's Bay, Grey Morning" (15), and reflect that these are by the same hand, and we realise a variety of power such as no landscape painter since Turner has attained. In such a drawing as No. 22 we lose the impression of brush work and pigments altogether; it is as if rain and misty light had been caught on the paper. There are other very fine works by Hunt scattered about in the collection, every one of which makes its mark; "Carnedd Llewellyn—heavy shower passing along" (78) is one of the finest. The contrast between these and such excellent works of their kind as those of Geo. Fripp exemplifies strongly the difference between genius and talent. On the other hand some of Alfred Fripp's works appear to greater advantage than his brother's; his style is, at its best, the quintessence of pure delicate water-colour painting, and his large drawing "Durdle Door" (162), with its aerial distance and the bright effect of sunlight on the sea-water through the natural aisle formed by the rock near the foreground, strikes us even more than it did when first exhibited here some years ago. Another noteworthy work, exhibited long before that, and exceptional among Alfred Fripp's productions, is the figure group of an old man, a child, and dog, "The Coming Storm" (212). The colour is rather conventional, but there is a unity of expression and thought and composition about it which stamps it as a remarkable work of art in its way.

THE BAZIN ROLLER BOAT.

A PAPER was read before the Society of Arts, last week, by the French journalist, M. Emile Gautier, descriptive of the long talked of "roller boat." Sir Frederick Bramwell, an ideal chairman of the old school, presided. As might be expected, the novelty and unusual interest of the subject brought together many well-known experts in marine architecture, who were, doubtless, somewhat disappointed at the absence of scientific details notable in the paper. It is certainly worthy of comment that a journalist, neither conversant with our language, nor pretending to scientific knowledge, should have been deputed by M. Bazin to read a paper on his invention before a scientific society, and it is not to be wondered at that, during the discussion, several of the speakers should have complained of the absence of details, and the impossibility of obtaining them from the author. As a literary production, we think the translator of the paper has every reason to be proud of the result of his by no means easy task, but as an addition to what has already been published

* See the views by H. Rooke, in Pegge's account of Bolsover and Peak Castles, 1785; Bibliotheca Topogr. Brit.; also in the *Builder* September 22, November 17, and (fire-places) December 15, 1888; and Deependock's view, 1695.

in this country, we find little, if anything, fresh to notice.

Many of our readers are doubtless already familiar with the general design of the roller boat as now being constructed, and at the moment nearing completion, at Rouen. Speaking generally, the vessel consists of a deck or platform, 131 ft. 3 in. by 38 ft. 9 in., carried by means of bearings on six hollow disc wheels 32 ft. 10 in. diameter, and something like a cigar in section, being 11 ft. 9 in. thick at the centre between the skins. Each pair of wheels is mounted on an axle (after the fashion of paddle-wheels), and is driven by independent engines. The main propelling power is developed by an ordinary screw propeller mounted at the end of a central inclined shaft driven by engines of 550-horse power, while those for the rollers develop 660-horse power each, making a total of 750-horse power available for propelling the vessel. The deck is fitted with cabins, deck-houses, hoats, engine-rooms, &c., much on the same lines as any ordinary passenger steamer. When the vessel is in motion the rollers are caused to revolve at such a speed that the forward motion of the boat is about 60 per cent. of the velocity at the circumference of the rollers.

So much for a brief description of M. Bazin's invention as embodied in his experimental craft. Now let us turn to the principles involved which have led the inventor to this novel departure from all our preconceived ideas of an ideal high-speed vessel, for it is mainly on the score of speed that claims are made for the roller boat. We may best do this by following M. Bazin in the history of his invention. Having set himself the task of reducing the skin friction of vessels so as to increase their speed, his first thought turned, somewhat naturally, to a similar solution on terra firma, viz., wheels, and he, therefore, experimented with revolving hollow discs, but with no success. Taking a single disc, however, he found that when caused to rotate (the axis being horizontal) it travelled much further through the water, with a definite impulse, than with the same effort applied to the disc when not revolving, and therefore naturally, he drew the deduction that the revolutions of the wheel have a beneficial effect in aiding its forward motion. Oddly enough, however, he noticed that the revolving disc had no forward motion unless pushed. Conclusive as this simple experiment may at first sight appear, we are tempted to think that it contains a fallacy, which is this: does the distance travelled by the revolving disc exceed the distance which the same disc would travel under the influence of the same push and *plus the energy stored in its revolving mass?*

So far as we are aware, no definite information has ever been put forward on this point, and when we come to examine the results of trials with the model which was made before the present boat, with a platform 16 ft. 5 in. long, we find a similar vagueness, under the cloak of apparent simplicity. In the case of the model, which the author of the present paper, however, passes over as not worthy of much attention (notwithstanding the fact that it was upon the results obtained with it that money was forthcoming to build the present boat), the propeller and rollers were driven by electricity, which lends itself to a simple measurement of the power used. When the rollers were at rest a considerable excess of force was required to drive the model at a given speed as compared with when the rollers were also driven, but no idea is given as to the relative powers employed. As far as we are aware, the only quantitative experiment before the public is that of the model pulled by a known force, both with the rollers revolving and at rest. When the rollers revolved at their most efficient speed the time occupied in crossing the tank was rather less than half that when the rollers were at rest. So far, so good; but what was the power absorbed by the rollers during the operation? We are told nothing beyond the fact that they were driven by *clockwork*; thus the power required may have been comparatively small or comparatively great—we fear the latter.

Judging from the relative powers of the propelling and roller engines of the present boat, the anticipated relation seems to be as 5 to 2, but we are strongly tempted to doubt whether full allowance has been made for the water, which, at the speed proposed, will be carried a certain distance up the surfaces of the rollers, acting as a continual retarding weight. Also, as the rollers are immersed to one-third their diameter, there can only be a very small part of their surface which can be said to roll through the water; all the other parts will be passing through the water at a greater or less speed in an inclined direction,

causing very considerable skin friction to be overcome. Added to all this it is very apparent that for a given carrying capacity the dead weight of a roller boat must be fully double, if not treble, that of an ordinary boat. Further, six small boats, which the rollers virtually are, must have a far greater wetted skin, and therefore skin friction, than a single boat of the same tonnage.

Again, the author, and also M. Bazin, seem quite to ignore the inertia of the water. In an ordinary vessel the water has to be displaced only once, while in the roller boat it will be displaced six times. Looked at from every standpoint, there appear to be causes at work tending to show that M. Bazin and his backers are destined to disappointment. The immense strength required for the platform construction, the gyroscopic action of the rollers, and consequent great stresses in a rough sea, the friction of the roller bearings carrying the platform, the problem of keeping the direct acting roller engines dry, the comparatively deep draught of the rollers, and numerous other problems to be solved, are enough to show that if success is achieved it will be to the lasting honour and renown of M. Bazin, which we should much have liked to be able to look forward to with a greater hope of fulfilment.

The roller boat will, it is proposed, shortly cross the Channel, and anchor just below London Bridge; so that our London readers will have, doubtless, an opportunity of judging for themselves before very long.

ARCHITECTURAL SOCIETIES.

EDINBURGH ARCHITECTURAL SOCIETY.—A meeting of the Edinburgh Architectural Society was held on the 20th inst.—Mr. G. S. Aitken in the chair—when Mr. Alexander Drew, C.E., delivered the first of a series of lectures on "The Practical Designing of Iron and Steel Roofing." At the outset the lecturer pointed out the difference in treatment which was necessary in substituting iron or steel for timber in roof framework, and noted generally the lines on which this treatment should proceed. The necessity of considerable practical training and experience was emphasised, and it was claimed that only those possessing such special training were competent to design thoroughly practical and economical structures. It was admitted, however, that in the case of the smaller and more ordinary types of framework frequently met with in everyday practice, sufficient knowledge might be acquired by study to prevent the architect from falling into serious error, and ensure the result being at least practical and safe, if not the best and most economical. A vote of thanks was accorded the lecturer, on the motion of Mr. D. Hunter Crawford.

DEVON AND EXETER ARCHITECTURAL SOCIETY.—Mr. Edmund Sedding read a paper on the 21st inst. at the Plymouth School of Art before the Devon and Exeter Architectural Society, the subject being "Local Gothic Architecture." He said that, situated as Plymouth was, amid scenery of considerable beauty, it was incumbent on those who designed in that town that they should design well. The architectural status of a town or city depended on the character of its domestic buildings; if they were mean and of a second-rate order the architectural character of that town would be in comparison. Referring to the two great divisions of architecture, Classic and Gothic, and after giving reasons for the adoption of the latter, which he described as the national architecture, Mr. Sedding said the inhabitants of Plymouth had acted wisely in erecting their principal public buildings in the Gothic style, which was so adaptable to the climate and so much more suitable for constructional methods. With regard to the decoration of architecture, which he described as the most important part of this fine art, he remarked that it should be of Gothic character, in proper proportion to the distance at which it was placed from the eye—not as the Greeks placed it, on the top of their buildings, but as the Goths placed it, at the entrances to their buildings. There was very little in the way of stimulant in Plymouth for the architectural student like museums or old buildings. It was necessary to be in touch with old work in order to design well, and that could be done if only the trouble were taken. He advised that the Society should spend their afternoons in visiting old buildings when the weather permitted. A vote of thanks terminated the proceedings.—*Western Mercury.*

CARLISLE ARCHITECTURAL, ENGINEERING, AND SURVEYING SOCIETY.—An ordinary meet-

ing of this Society was held at the Town Hall on Tuesday last, Mr. A. W. Johnston in the chair. Minutes of the last meeting having been read and confirmed, the Chairman presented to the late Hon. Secretary, Mr. E. B. B. Newton, who has recently obtained an appointment under the Borough Engineer of Rochdale, four standard works on professional subjects, a testimonial on behalf of the members of the Society, and acknowledging his abilities and energy as Hon. Secretary and Treasurer. Mr. Newton returned thanks to the members in suitable terms. Mr. Drinkwater then read a paper on some Cumbrian antiquities, illustrated by limelight, and gave an interesting account of the various old parish churches in Cumberland, and also a few of the remaining buildings of antiquity in Carlisle. The lecturer concluded by describing the cathedral and castle, and the ancient relics therein. A vote of thanks terminated the proceedings.

ARCHÆOLOGICAL SOCIETIES.

SOCIETY OF ANTIQUARIES.—January 14, Sir A. W. Franks, President, in the chair. This being an evening appointed for the election of Fellows, no papers were read. Mr. C. H. Read exhibited a silver dish of north Indian work. Mr. Henry Willett, through the President, exhibited a curious painting by Cranach, representing apparently Mary, the daughter of John Constant and her brother, John Ernest. Mr. J. O. Scot exhibited a full-sized drawing of part of the Westminster front. The President referred to the statement concerning Peterborough Cathedral which had been circulated among the Fellows and others, accompanied by the specification which had been kindly prepared for the Society by the Society for the Protection of Ancient Buildings. The Council, unfortunately, had not been able to submit the specification to an engineer as they had proposed, owing to the blank refusal of the Dean and Chapter to allow any one to examine the front on behalf of the Society. The following resolution was proposed by Mr. Norman, seconded by Rev. R. B. Gardner, and carried with only one dissentient:—

"That the Society thanks the President and Council for the admirable way in which they have taken action about the west front of Peterborough Cathedral."

The following gentlemen were elected Fellows: Sir S. Montagu, Bart., M.P.; Rev. F. C. Hippkins; Messrs. W. A. Littleale, W. W. Watts, J. M. Mackinlay, D'Arcy Power, and G. L. Beechforth.—January 21, Sir John Evans in the chair. Major Braithwaite Wilson exhibited a complete set of twelve painted wooden trenchers or roundels of the sixteenth century in their original box. Mr. Percy Stone exhibited and described a silver gilt case of mathematical instruments, several of unique character, made by Bartholomew Newsome, clock-maker to Queen Elizabeth, who died in 1597. Mr. Arthur Evans read a paper on a remarkable hoard of gold votive objects from Ireland recently acquired by Mr. Robert Day, F.S.A., of Cork, and which were exhibited to the Society. The objects were found by a ploughman in subsoiling near the sea on the north-west coast of Ireland. The relics, which were all of gold, consisted of a small votive boat, with yards and spars, the place for the mast, benches for eighteen rowers and miniature oars, grappling-iron, and forked punting poles; a howl intended for suspension from four rings; two chains of exquisitely fine fabric with remarkable fastenings; two twisted neck-rings, or torques, and a large hollow gold collar with bold repousse work designs of Celtic character—beyond question the most magnificent object of the kind ever discovered. Examining the objects in detail, Mr. Evans maintained that not to speak of the very satisfactory nature of the evidence as to the actual finding, there was no sufficient reason for doubting that the relics were deposited at the same place and time. There were, it was true, three classes of objects. The fine chains, perhaps imported; the gold collar and torques, made probably by an indigenous Irish goldsmith for actual wear; and the howl and boat of thinner and paler gold, designed for a purely votive purpose. The curious mechanism of the fastening of the collar was compared of that of some gold torques found near Carcassonne, dating from the end of the second century B.C., and perhaps part of the celebrated *aurum Tolosanum* carried off by the Romans from the Temple treasure. The balance of evidence, however, inclined to the view that the Irish torque belonged to the first century of our era. The fastening of the chains closely resembled very late Ptolemaic or early

gypto-Roman examples from Alexandria. Mr. Adams scouted the idea that the boat necessarily implied a "Viking" origin. In form and details was purely Celtic, and it seemed to be a rough del—of the votive kind—of a ship with a her keel and ribs, but with hide-covered sides, fabric of which had been borrowed by Caesar himself from the ancient British ship-builders, a vessel before them, with its yards and sails, essentially an ocean-going type, such as had developed itself on the Atlantic shores. In characteristic Scandinavian craft adapted for use on an inland sea, oars were the important feature. The deposit of such a hoard, containing miniature ship, in the neighbourhood of the lake, and on a rocky part of the coast, pointed to the conclusion that it was a thank-offering vowed some marine divinity by an ancient Irish sea-god who had escaped from the perils of the ves. It might well have been dedicated to the deity Neptune, Nuada Necht, the British deities, whose temple, with illustrations of his fine attributes, had been discovered at Avebury, and whose name—in its Welsh form—had still survived, as associated with the port of London, in Ludgate-hill.

TIMBER TRADES' BENEVOLENT SOCIETY.

A MEETING of the Timber Trade of the United Kingdom was held at Carpenters' Hall, London, on Monday afternoon, for the purpose of founding a Benevolent Society for the Timber Trade in celebration of the Queen's long reign. The object of the Institution, as set forth in the proposed scheme, is to grant pensions and also temporary relief to deserving and necessitous members of the timber trade, and to widows and children of the same. The qualifications for pensions were stated to be as follows:—(a) Candidates must have been in the timber trade at least ten years, and must be British subjects, and must have been engaged in business either as makers, agents, merchants (foreign or English), sellers, managers, clerks, or foremen; they must not be less than fifty years of age, unless it proved to the satisfaction of the Committee or if nominated, that at an earlier age they are incapacitated from earning a livelihood. (b) Widows of the same, during widowhood, and subject to like conditions as regards age and incapacity. (c) Children. The Society will use its best endeavours to secure the election of children of all mentioned in paragraph (a) to the benefits of recognised orphan asylums. In addition to temporary help, rule 4 provides for an immediate grant of money up to 20*l.* to be made in cases of temporary and urgent necessity, at the discretion of the Committee. It is proposed that the amount of annuity granted shall not be less than 25*l.* or more than 50*l.*, payable quarterly in advance, and become due on January 1, May 1, August 1, and November 1 each year. Rule 7 provides that a single payment of five guineas entitles the donor to one vote for life, of ten guineas to two votes, and so on in proportion. That an annual subscription of half-a-guinea entitles the subscriber to one vote, one guinea to two votes, and so on in proportion. Such subscriptions shall be payable in advance, and will fall due on January 1 in each year. That executors paying to the funds of the society a sum of twenty guineas shall be entitled one life vote each, and to a further life vote for every additional twenty guineas so paid.

Mr. E. J. Morgan, having been elected chairman, Mr. C. Bird moved the following resolution:— "That a Society, to be called the Timber Trades' Benevolent Society, be formed to provide annuities, temporary relief for necessitous and deserving makers, agents, travellers, merchants, managers, clerks, and foremen engaged in the timber trade (being British subjects), and their widows and children, and at this meeting pledges itself to do everything in its power to promote the speedy formation and establishment of the Society."

In doing so he said that there was no organisation or federation in the timber trade whereby members of the trade could be called together to discuss matters of importance, and he thought that theirs was one of the very few trades in England, if not the only one, which had no benevolent or philanthropic society to help their fellow brethren in time of need. He had been specially struck with the great amount of good which the Builders' Benevolent Institution had done, and it was his hope to raise a similar society in the timber trade. The scope of the society was not to be limited to London, but they hoped to extend it all over the country. He was

glad to state that over 3,000*l.* had already been subscribed.

Mr. C. J. Wade seconded the motion. Mr. Neame said that many foreigners were employed in the timber trades in this country, and he desired to know if they would be excluded from the benefits of the scheme. In his opinion, if they had been a certain number of years in the trade they ought to receive the same advantages as British subjects.

After some discussion on this point, the motion was agreed to unanimously after amendment, the words "in the United Kingdom for not less than ten consecutive years" being substituted for "being British subjects."

On the motion of Mr. C. Churchill, it was agreed that Mr. W. L. T. Foy be elected first President of the Society.

The following officers were also elected:—as Treasurer, Mr. E. J. Morgan; as Trustees, Messrs. Beeton, Bolton, and Price; and the following gentlemen were elected to form the Committee:—Messrs. C. Churchill, R. Brandt, J. E. Cobbett, B. G. Elliott, R. Foster, T. Gabriel, P. Hoar, L. Neame, F. Nicholson, G. H. Renton, A. Rafferty, T. Stevenson, J. A. Wilson, T. Booth, W. H. Rider, C. Leary, Gellatly, Mulford, R. J. Kidman.

The Bank of England having been appointed Bankers of the Society, a vote of thanks was accorded to the Master and Court of the Carpenters' Company for the use of their hall for the meeting. A vote of thanks was also passed to the Chairman, and to Messrs. Bird and Wade, Honorary Secretaries *pro tem.*, for their efforts in founding the Society.

The donations to the fund so far amount to 3,617*l.*, and the subscriptions to 396*l.* The meeting then terminated.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council, the first after the Christmas recess, was held on Tuesday, in the County Hall, Spring-gardens, Sir Arthur Arnold, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee it was agreed to lend the St. James's Vestry 3,850*l.* for electric lighting purposes; the Fulham Vestry 4,150*l.* for street improvements; the Wandsworth and Clapham Guardians 10,000*l.* for alterations to Tooting College; and the Asylums Board 100,000*l.* towards the cost of erecting the Grove Hospital.

The Cost of Paving Streets.—The adjourned report of the Parliamentary Committee stated that a letter had been received from the Vestry of Hammersmith, forwarding suggested clauses to empower Vestries to borrow and the Council to lend money for the execution of paving works in new streets, so as to enable Vestries to extend payments by owners over a period not exceeding twenty years, and asking the Council to insert the clauses in one of their Bills in the next session. Section 77 of the Metropolitan Management Act, 1862, gives the Vestries a discretionary power to accept the payment of apportioned expenses in new streets by instalments spread over a period of not exceeding twenty years, but it does not give the Vestries power to borrow the money for the execution of paving works in new streets, and thus enable them to give the owners of premises, who have to pay, the benefit of the Act. On receipt of the letter, the Vestry asked what steps had been taken by them to ascertain the views of the Local Authorities, and they subsequently forwarded a statement showing the nature of the replies received to a letter addressed by them to all the Vestries and District Boards. The replies were twenty-three in number—six being in favour, seven against, and ten in favour of no action or simply acknowledging the letter from the Vestry of Hammersmith. On the whole, a consideration of the circumstances inclined the Committee to the opinion that the proposal was a reasonable one, and they recommended that the request of the Vestry of Hammersmith be complied with.

On the motion of Mr. T. W. Williams, the recommendation was referred back.

Mr. N. W. Hubbard then proposed, and it was agreed, that the Committee should consider "whether powers should not be obtained providing for the cost of paving works in new streets being in all cases borne by the freeholders."

Combined Drainage.—The following adjourned report of the Main Drainage Committee was then considered:—

"The Council on February 12, 1895, decided to apply to Parliament for an amendment of the definition of the words *sewer* and *drain* in the Metropolitan Local Management Act, so that the mean-

ing of the word *drain* should be made to include any drain the plan of which has not been approved as a sewer under Section 69 of the Act of 1855, and Sections 45 and 46 of the Act of 1862. A Bill was subsequently prepared and circulated among the Local Authorities, who arranged for a conference to be held to which representatives of the Council were nominated. After several meetings of the conference had taken place, the terms of the Bill were generally agreed upon. Such Bill was approved by the Council on January 28, 1896, and in due course introduced into Parliament as a public Bill. In view, however, of the opposition offered to the Bill it was withdrawn before the second reading on July 20, and the Parliamentary Committee have now asked us to report to the Council what further steps should be taken with respect to it. Having regard to the representations made on the subject by a large majority of the Local Authorities, we are of opinion that the Council should again, as the Central Authority, endeavour to give effect to the desire of the Local Authorities by promoting, as far as possible, the Bill in question; and we accordingly recommend—"That the Metropolitan Sewers and Drains Bill be re-introduced in the next session of Parliament, and that the Parliamentary Committee be instructed to take the necessary steps for that purpose."

Mr. Boulnois, M.P., said he hoped the Council would not go forward with the Bill, as it was an unjust Bill and would inflict great hardships upon many householders.

Mr. Cornwall said that the Local Authorities were anxious to get a correct definition of the word "sewer."

The recommendation was subsequently agreed to.

Protection of the British Museum and the Natural History Museum from Fire.—The Trustees of the British Museum having expressed the hope that the Council would allow the new chief officer of the fire brigade to render the same services in connexion with the protection from fire of the British Museum and the Natural History Museum as were undertaken by his predecessors in office, the Fire Brigade Committee recommended, and it was agreed, that Commander Wells be allowed, during the pleasure of the Council, to undertake the periodic inspection of the fire appliances in the British Museum and the Natural History Museum, and the instruction in the use of such appliances of the museum employees; it being understood that neither he nor the Council accepts any responsibility in the matter, and that no payment is to be made to him by the Trustees for his services.

Technical Education.—Mr. Sidney Webb brought up a report of the Technical Education Board, which stated that the most important new feature of the Board's work during the past quarter had been the very successful start made at the Central School of Arts and Crafts, but every other branch had increased in extent and variety.

Mr. H. Clarke expressed his satisfaction at the excellent work which had been done by the Board since its inception. It had been the means of rescuing London from a discreditable position in regard to technical education.

Mr. Roberts thought the funds of the Board should be devoted more to the improvement of practical handicrafts and less to the purposes of scientific study. He suggested that more encouragement should be given to the training of workmen, and he specially referred to hick-laying and plastering work. Could not the Board give a higher standard to brickwork, so that intelligent lads might be induced to take up that work?

Mr. Sidney Webb said they were pressing forward technical classes for mechanics as fast as they could, but the difficulty was in regard to the attendance in consequence of the late hours to which some trades worked. He desired to appeal to employers to make some reduction in their hours, and was pleased to be able to state that the leading printing firms had consented to allow their apprentices to leave at half-past five in the evening.

Theatre, Deptford.—The report of the Theatres and Music Halls Committee contained the following paragraph, the recommendation being agreed to:—

"We have considered nine drawings, dated 15th and one dated January 19, 1897, which have been submitted on behalf of Messrs. D. Allen & Sons for a new theatre which it is proposed to erect at Deptford on a site directly facing the Broadway, and having frontages to the New Cross-road and Tanner's Hill, and which will have seating accommodation for 1,500 persons. The site has a total boundary of 417 ft.; of this 98 ft. 6 in. abut on New Cross-road, and 96 ft. on Tanner's Hill, which it is proposed to widen to 35 ft. at the narrowest point. It will be seen, therefore, that 194 ft. 6 in. abut on public thoroughfares of the required width

instead of 208 ft. 6 in. as required by the Council's regulations. This small difference is, in our opinion, amply compensated for by the formation of a private way 10 ft. wide on the south side leading into Pearson's Avenue, and we therefore think the site a satisfactory one. The construction and arrangement of the theatre as shown on the drawings submitted is satisfactory, and we recommend—

* That the nine drawings, dated 15th as amended by the one dated January 19, 1897, be approved, on condition that the works be commenced within six months, and be carried out in all respects in accordance with the Council's regulations and the provisions of the London Building Act, 1894, and that upon our reporting the completion of the building in accordance with the approved drawings and the above conditions a certificate under the Metropolis Management and Building Acts Amendment Act, 1878, be sealed and issued to the owners of the premises.

Marylebone-road Widening.—The Building Act Committee reported that they had again considered an application for consent, subject to specified conditions, to the erection of buildings upon the site of Nos. 250 to 268, Marylebone-road. The proposal was to extend the frontage of the new buildings 7 ft. at the western end and 15 ft. at the eastern end beyond the line of the old buildings which they were to replace, and in consideration of this advanced line sufficient land in front would be given up between the road between Stafford-street and Lisson-grove to 70 ft., the area of the land to be surrendered being about 3,350 ft. If the application be granted, an improvement would be effected; but, in view of the disinclination which the Council had repeatedly evinced to permit any advancement of the building line in Marylebone-road, they had decided to recommend the Council not to give its consent to the application.

Mr. Reed moved an amendment to refer the report back, with instructions to the Committee to consider and report whether some recommendation could not be submitted to the Council to secure the widening of the Marylebone-road.

Mr. Roberts hoped the amendment would not be adopted. The proposed encroachment would spoil this splendid boulevard.

Dr. Longstaff said if the application were granted he did not see how they could refuse consent to a similar encroachment along the whole line of the forecourts in the Marylebone-road.

On a division the amendment was rejected by fifty-two to twenty-nine, and the recommendation was then agreed to.

The Council having transacted other business, adjourned soon after 7 o'clock.

COMPETITIONS.

LAYING-OUT LAND, WELLINGTON.—The following is the result of the competition for laying-out for building purposes lands near Wellington, Salop, the property of Lord Forester:—1st, Messrs. Mawson & Gibson, Wenderholme, Windermere. 2nd, Messrs. Reece & Griffiths, 32, Hamilton-street, Birkenhead. 3rd, Mr. Thomas Reid, C.E., Wellington, Salop. 4th, Mr. J. H. Holland, 237, Abbey Dale-road, Sheffield.

INFIRMARY, NEWPORT.—The directors of the Newport and Monmouthshire Infirmary have just received the award of Mr. N. G. Pennington, architect, of London, upon the designs for the new infirmary buildings which it is proposed to erect at Newport. There were thirty-four plans sent in, and it is found that the winner of the first premium—viz., of 100*l.*—is Mr. Richard J. Lovell, of 46, Queen Victoria-street, London; and the second premium—viz., 50*l.*—Mr. J. T. Harnett Harrison, of Central-buildings, North John-street, Liverpool.

WORKMEN'S DWELLINGS, SUNDERLAND.—The competition for workmen's dwellings, Silver-street, Sunderland, has been decided as follows:—First premium, design, Messrs. Martin B. Perry & R. Angell, Garrick House, York-buildings, Adelphi, London, W.C.; second, Messrs. Jacob & Brand, 34 and 36, Gresham-street, London, E.C.; third, Messrs. Houston & Houston, 13, Furoval's Inn, London, E.C.

CEMETERY BUILDINGS, DOUGLAS, ISLE OF MAN.—In an open competition instituted by the Town Council for their new cemetery buildings, &c., the designs sent in by Messrs. H. A. Mearns, F.R.I.B.A., and C. Sydney Ingham, of Liverpool, Manchester, and Southampton, have been awarded the first premium, while the second has gone to Messrs. Kay & Lucas, of Eastfield.

SCHOOL, MONTROSE.—A new school is in course of erection at North Links, Montrose. The plans are by Mr. McKenzie, architect, Aberdeen.

Illustrations.

ILLUSTRATIONS OF BRISTOL ARCHITECTURE.

THE illustrations in the plates are of various buildings in Bristol, most of which are mentioned in the leading article in this issue; but we may here summarise the buildings and the names of the architects, which are as follows:—

The Capital and Counties' Bank (Mr. Milverton Drake); the Granary on Welsh Back, the Colston Girls' School, and the Free Library in Trinity-road, all by Mr. Gough (if we remember right the granary, built a good many years ago, should be credited to the then firm of Messrs. Ponton & Gough); the Assize Courts (Mr. Pope); the Clifton College Buildings (Mr. C. F. Hanson); the completed portion of the Roman Catholic Pro-Cathedral, by the same architect; the Greenbank Board Schools, by Mr. Bligh Bond; Lloyd's Bank Buildings, by Mr. Bruce Gingell; the Bristol Technical Schools, exterior and interior, by Mr. E. C. Robins; the St. George's Technical Schools, by Mr. Bligh Bond; the Medical Schools, by the same architect; the exterior and entrance lobby of the offices of Messrs. Lysaght & Co., by Mr. Milverton Drake; and the new Bristol Docks Office, by Mr. Gough.

APPLICATIONS UNDER THE 1894 LONDON BUILDING ACT.

THE under-mentioned applications under the London Building Act, 1894, have been considered by the Building Act Committee of the London County Council, and the following decisions have been arrived at. Those applications which have been agreed to are granted on certain conditions:—

Lines of Frontage.

Chelsea.—That consent be given to the erection of an iron and glass shelter in front of Hans-place Hotel, Hans-encressent, on the further application of Messrs. Read and Macdonald, on behalf of the Hans-place Hotel Company.

Strand.—That consent be given to the erection of an iron and glass covered way at the new entrance to the Alhambra, No. 23, Charing Cross-road, on the application of Mr. W. M. Bruton on behalf of the Alhambra Company.

Marylebone, East.—That consent be given to the erection of a porch in front of No. 19, Langham-street, Portland-place, on the application of Mr. C. H. Worley on behalf of Mr. W. R. Stevens.

St. George, Hannover-square.—That consent be given to the erection of a portico and balcony in front of No. 2, Great Stanhope-street, on the application of Messrs. Matthews, Rogers, & Co.

Bristol.—That consent be given to the erection of an iron and glass shelter in front of Avondale Hall, Landor-road, Stockwell, on the application of Mr. W. G. R. Sprague on behalf of Mr. Sims.

Dulwich.—That consent be given to the erection of projecting shop-fronts upon part of the forecourts of Nos. 2, 3, 4, and 5, Derwent-terrace, Grove-vale, East Dulwich, on the application of Messrs. T. & C. Bowyer on behalf of Mr. G. H. Judd and M. J. G. Evans.

Greenwich.—That consent be given to the erection of two houses with shops on the north side of Woolwich-road, between Denford-street and Glenforth-street, on the application of Mr. D. G. Forlock.

Greenwich.—That consent be given to the erection of an overhanging lamp in front of the "Bugle Horn" public-house, Charlton-road, Charlton, on the application of Mr. R. McPherson.

Hammersmith.—That consent be given to the erection of a temporary wood and iron office on part of the forecourt of No. 57, Fulham Palace-road, on the application of the Vestry of Hammersmith.

Hampstead.—That consent be given to the erection of a porch in front of Wycheombe, No. 99, Haverstock Hill, on the application of Mr. R. Groom on behalf of Mr. R. Bellamy.

Hampstead.—That consent be given to the erection of seven houses with shops on the east side of Edgware-road, with the flank of the westernmost house to abut upon Skardu-road, on the application of Mr. J. Phoenix on behalf of Messrs. Bridge & Neal.

Kensington, South.—That consent be given to the erection of an iron and glass covered way upon part of the forecourt of No. 62, Bedford-gardens, on the application of Messrs. J. Barker & Co., Limited, on behalf of Miss Williams.

Lewisham.—That consent be given to the erection of a one-story shop in front of No. 122, Rushey-green, Catford on the application of Mr. H. Hopton on behalf of Mr. Watts.

Limehouse.—That consent of the Council be given to the erection of an open iron footbridge across High-street, Wapping, to connect Sharp's wharf with Messrs. Beresford & Co.'s warehouses opposite, on their application.

Marylebone, East.—That the application of Mr. T. Murgatroyd for an extension of the perimeter within which the erection of a two-story addition, No. 47, York-terrace, Regent's Park, was required to be commenced, be granted.

St. George, Hannover-square.—That consent be given to the erection of an oriel window at No. 2, Park-street, to abut upon Reeve's-mews, on the application of Mr. M. E. Collins.

Strand.—That consent be given to the erection of an iron and glass covered way in front of Prince's Restaurant, Piccadilly, on the application of Messrs. J. T. Wimperis & Arber, on behalf of Prince's Restaurant, Limited.

Westminster (Detached).—That consent be given to the erection of three projecting oriel windows with columns and pediments to a new building, the south side of Knightsbridge, between William-street and Seville-street, on the application of Mr. E. L. Florence, on behalf of Messrs. Woolfe Bros.

Strand.—That consent be given to the erection of a shelter in front of the Vaudeville Theatre, No. 4 Strand, St. Martin-in-the-Fields, on the further application of Messrs. Hampton & Sons on behalf of Messrs. A. & S. Gatti.

Clapham.—That consent be not given to the erection of a house with shop on the east side of Weh road, with the flank of such building abutting upon Mallinson-road, and to the erection of a house, with shop, in the latter road, on the further application of Mr. H. Branch on behalf of Messrs. J. Nicks & Co.

Kensington, South.—That consent be not given to the erection and construction of an open iron shed for storing timber in a yard on the south side of Fimbroke-yard, Earl's Court, adjoining the Kensington Vestry, upon the application of Messrs. J. Barker & Co., Limited.

Marylebone, West.—That consent be not given to the erection of a block of residential flats on the site of No. 47, Abbey-road, St. John's Wood, on application of Messrs. Metcalf & Greig.

Wandsworth.—That consent be not given to the erection of one-story shops in front of Nos. 208 & 210, Merton-road, on the application of Mr. J. Howard on behalf of Mr. C. Hoyer and Mr. Foden.

Westminster.—That consent be not given to the erection of one-story shops on the forecourts of Nos. 95, 96A, 96B, 98, 100, 102, 104, and 106, Victoria-street, on the further application of Mr. F. Powell on behalf of Mr. C. Fruen.

Width of Way.

Kennington.—That consent be given to the erection of additions at the rear of the "Wheatstaple" public-house, No. 126, South Lambeth-road, at the prescribed distance from the centre of Wheatstaple-lane, on the application of Mr. W. M. Bruton on behalf of Mr. G. R. Sheath.

Stepney.—That consent be given to the erection of a church training college on the north side of Steel's-lane on a portion of the site of Nos. 3, 386, 388, 390, and 392, Commercial-road, at the prescribed distance from the centre of Steel's-lane, on the application of Messrs. Young Hall on behalf of the Society for Promoting Christian Knowledge.

Westminster.—That consent be given to the erection of a block of buildings on the north side of Douglas-street, between Hide-place 1, Chapter-street, on the site of Nos. 26, 28, and Douglas-street, and No. 46, Chapter-street, on the application of Messrs. Boehmer & Gibbs on behalf of Mr. F. Colwill.

Hackney, North.—That consent be given to the retention of a building erected by Mr. S. Smith at the rear of No. 66, High-street, Kingsland, at the prescribed distance from the centre of road or way leading out of Ridley-road.

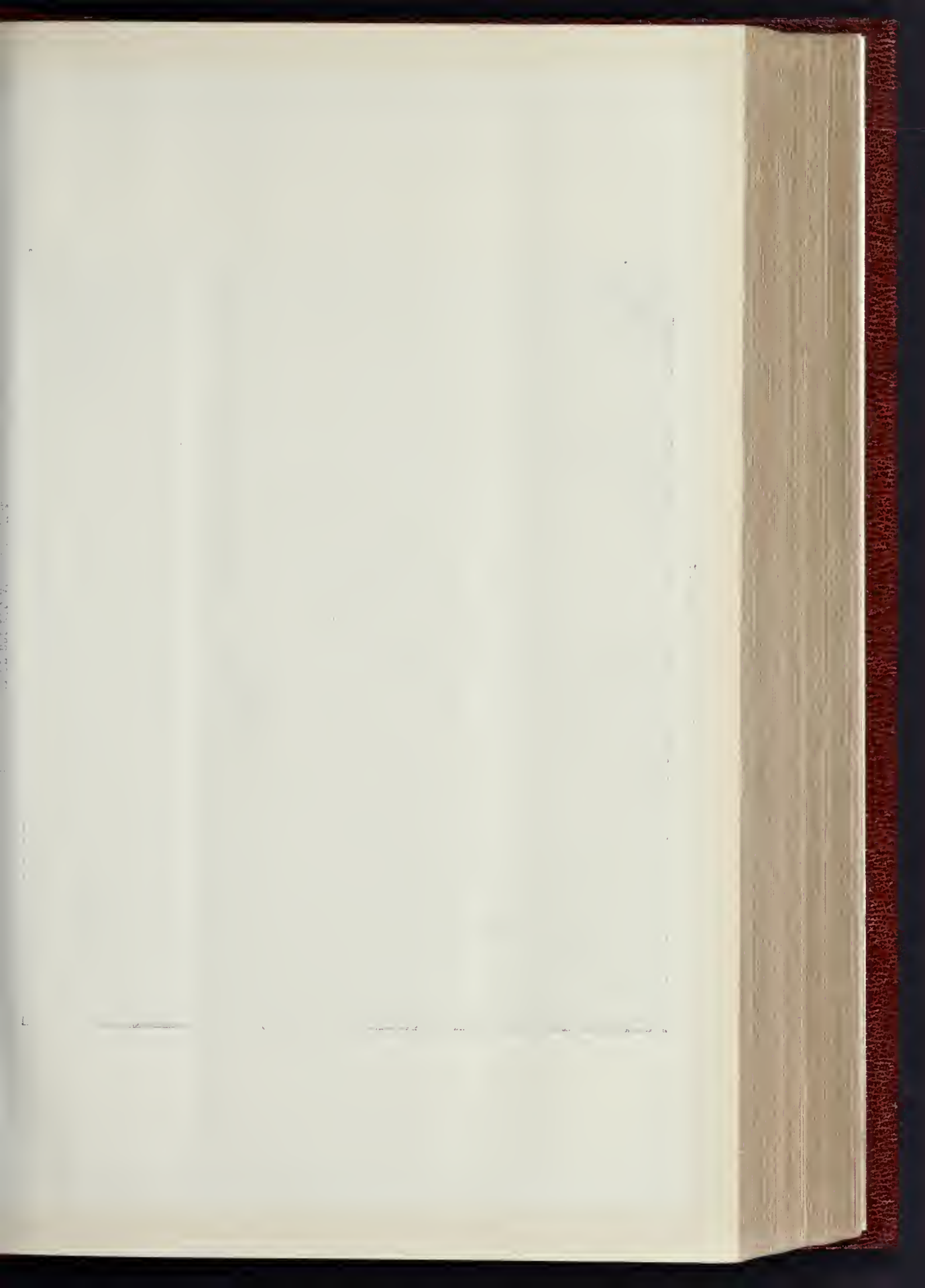
Greenwich.—That consent be not given to the construction and erection of iron sheds at Durck canal wharf, River-bank, New Charlton, near Anchor and Hope-lane, on the application of Mr. J. R. Land on behalf of Messrs. Wood Brothers.

Southwark, West.—That consent be not given to the erection of an addition to the Evelina Hospital, Lombard-street, Southwark Bridge-road, St. George's-Martyr, on the application of Mr. T. Harris on behalf of Baron Ferdinand de Rothschild; as such addition beyond the line of the adjacent buildings shown upon the plan is considered objectionable, and having regard to the extreme narrowness of Lombard-street, and the intended height of the new building (which, it appears, would exceed that of the building formerly upon the site) it is deemed inexpedient to permit the erection of the addition as proposed.

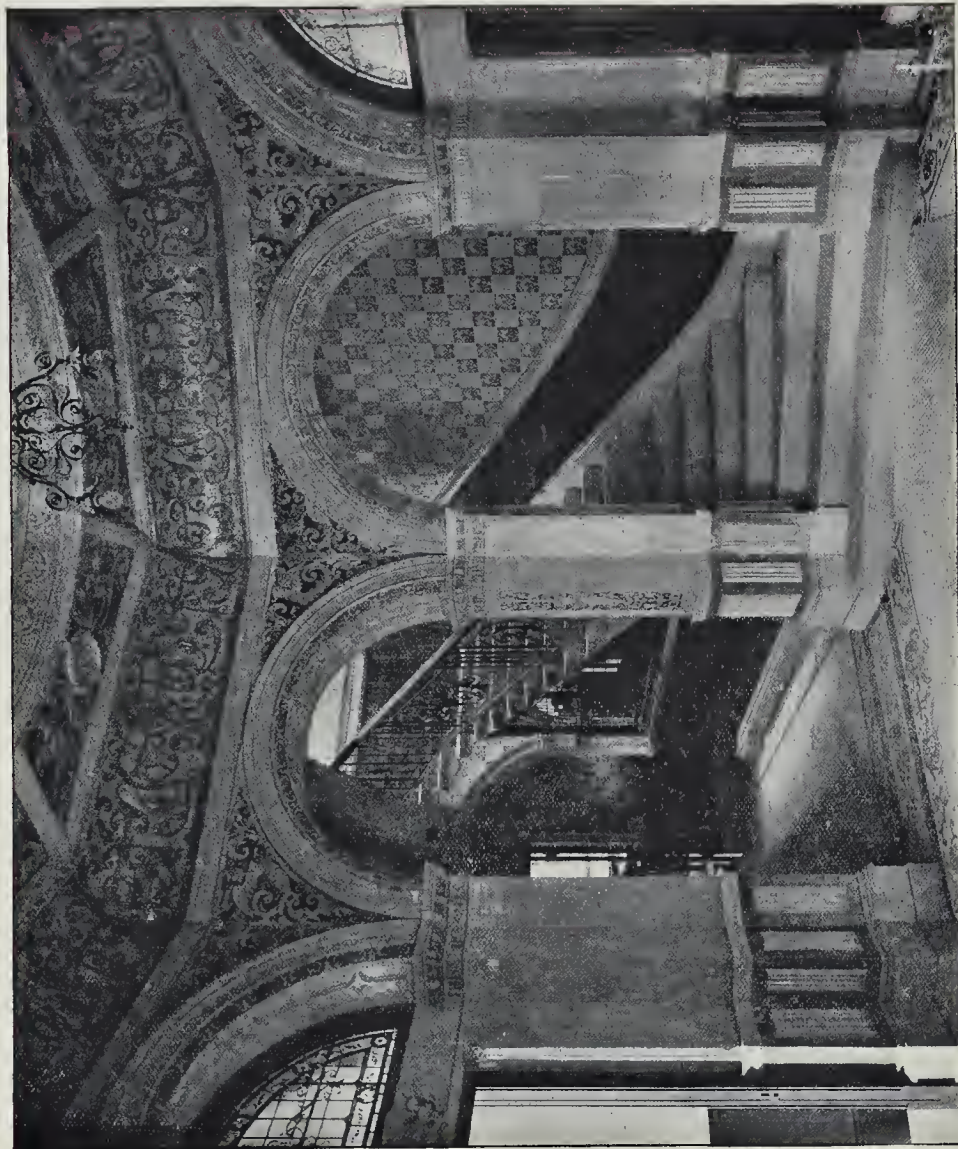
Open Space About Buildings.

Hammersmith.—That the Council do, in exercise of its powers under Section 41 (1) (b) of the London Building Act, 1894, allow a modification of the provisions of that section with regard to open spaces about buildings, so far as relates to the proposed erection of No. 50, Bolingbroke-road, and Richmond Villa and Bolingbroke Villa on the west side of Richmond-road, at the corner of Bolingbroke-road, with an irregular space at the rear of each of the three houses, on the application of Mr. H. Stevens, on behalf of Mr. G. Elyatt.

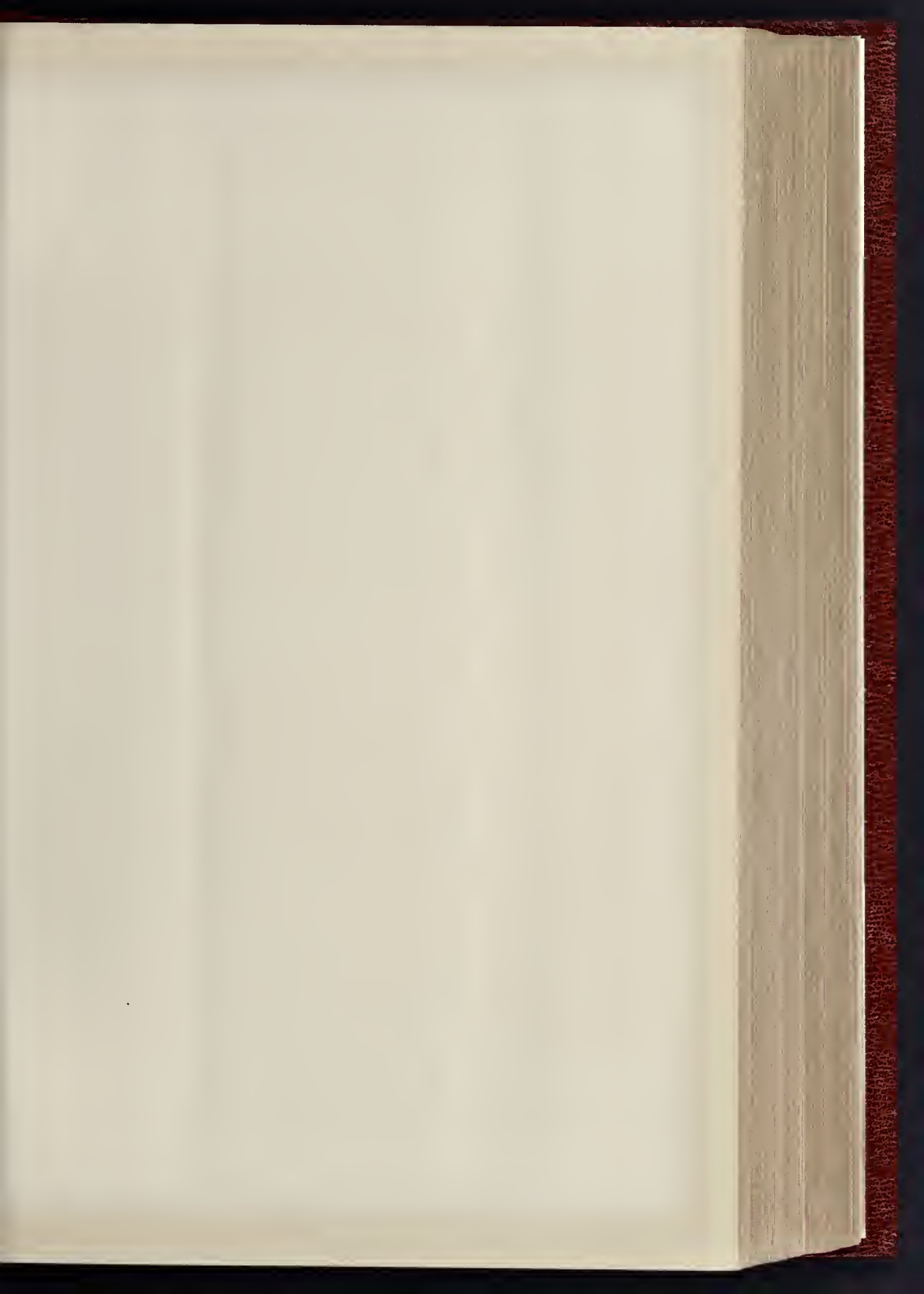
Clapham.—That the Council, in the exercise of its powers under Section 41 of the London Building



THE BUILDER, JANUARY 30, 1897.



ILLUSTRATIONS OF BRISTOL ARCHITECTURE.





CLIFTON COLLEGE.

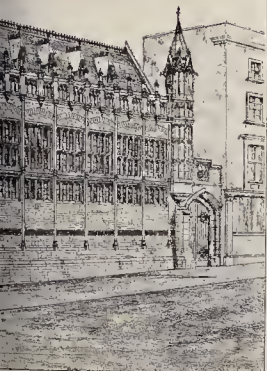


GREENBANK BOARD SCHOOLS.



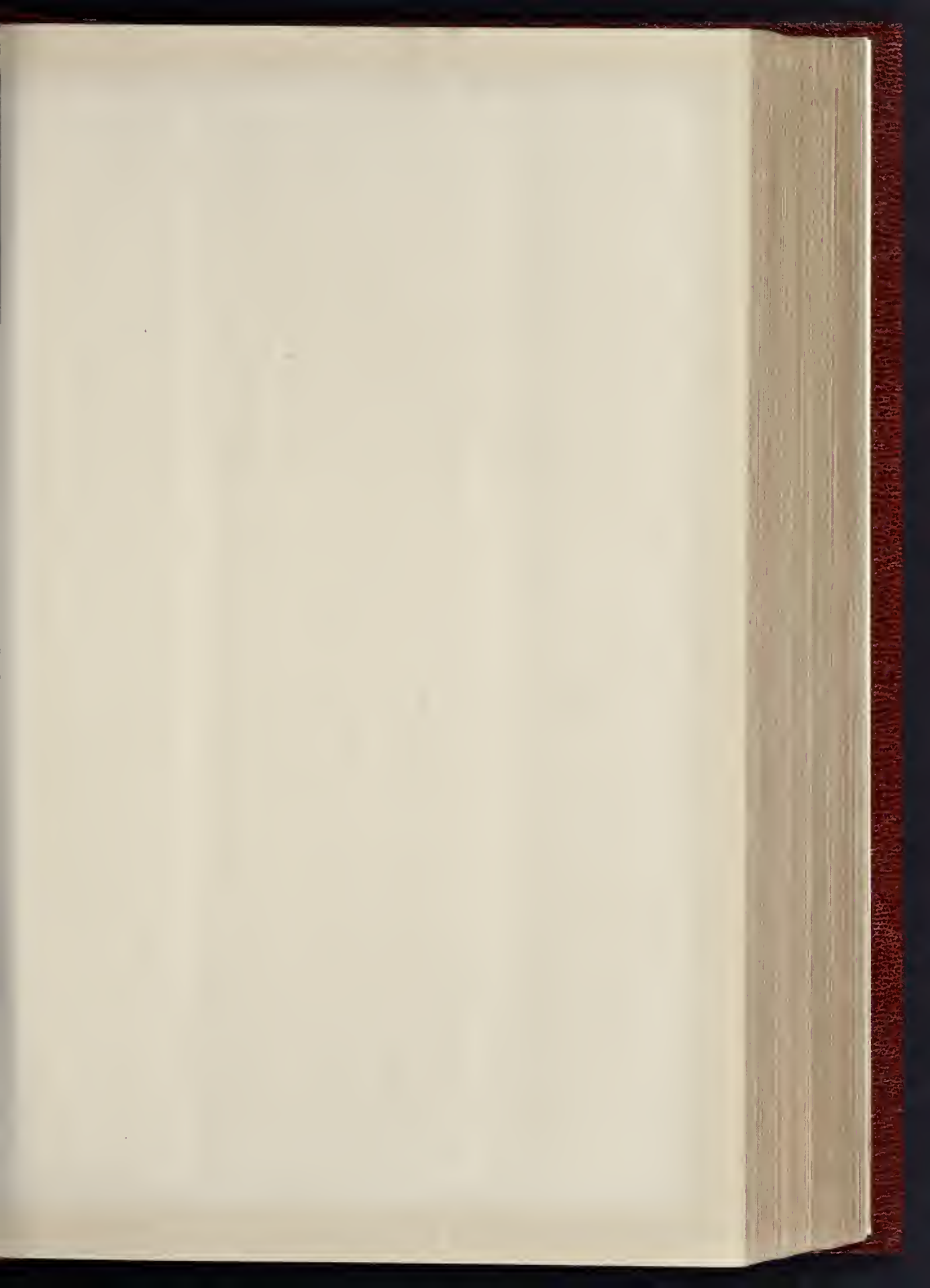


ROMAN CATHOLIC PRO-CATHEDRAL.

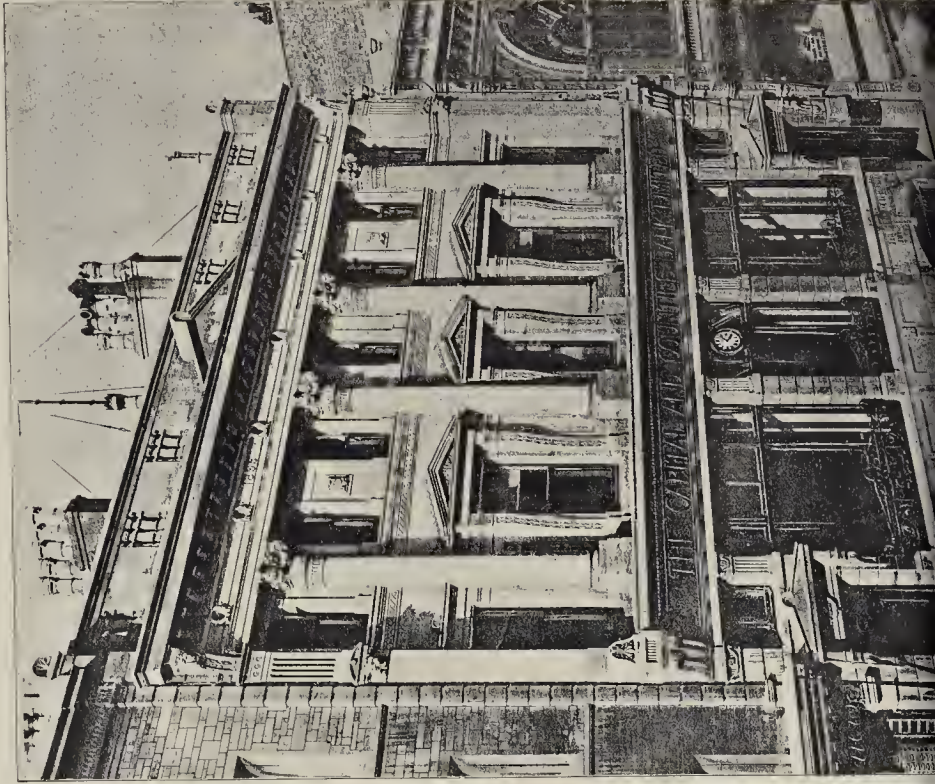


LLOYDS' BANK BUILDINGS.

INK-PHOTO SPRAGUE & CO. 4 & 5 EAST HARDING STREET FETTER LANE, E.C.



THE BUILDER, JANUARY 30, 1897.



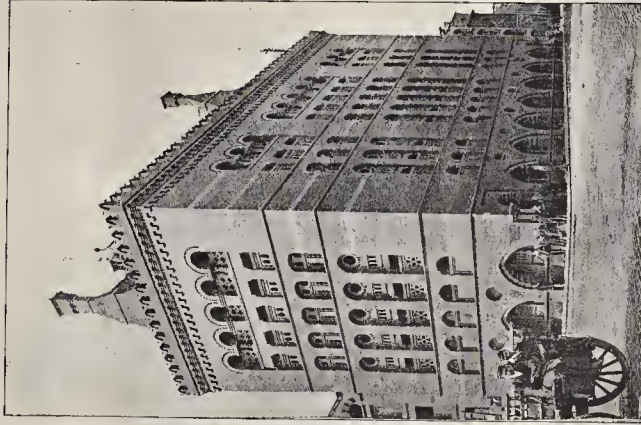


CLARE STREET.

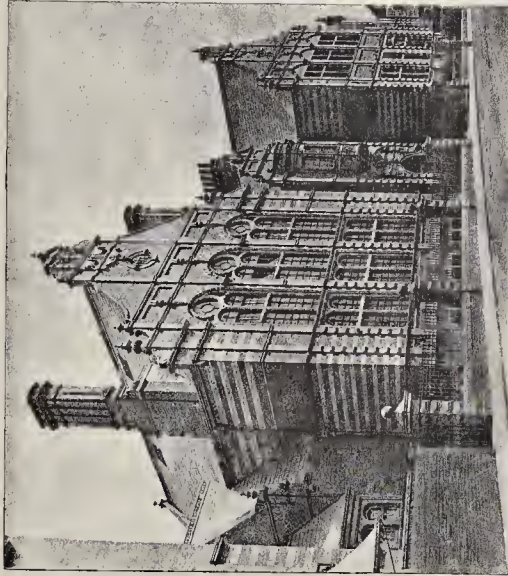


BALDWIN STREET.

THE CAPITAL AND COUNTIES BANK, LIMITED.



GRANARY: WELSH BACK.



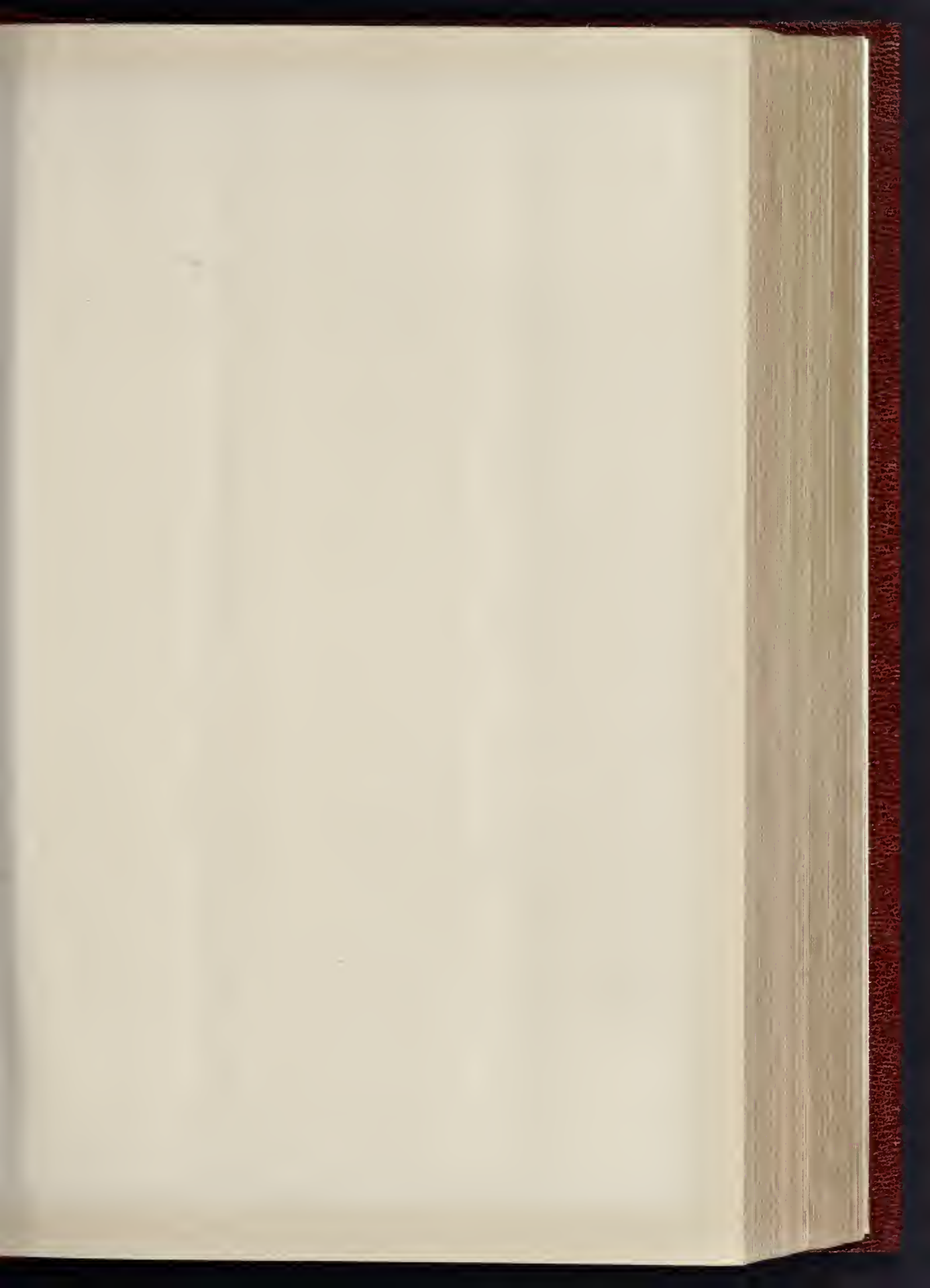
COLSTON GIRLS' SCHOOL.

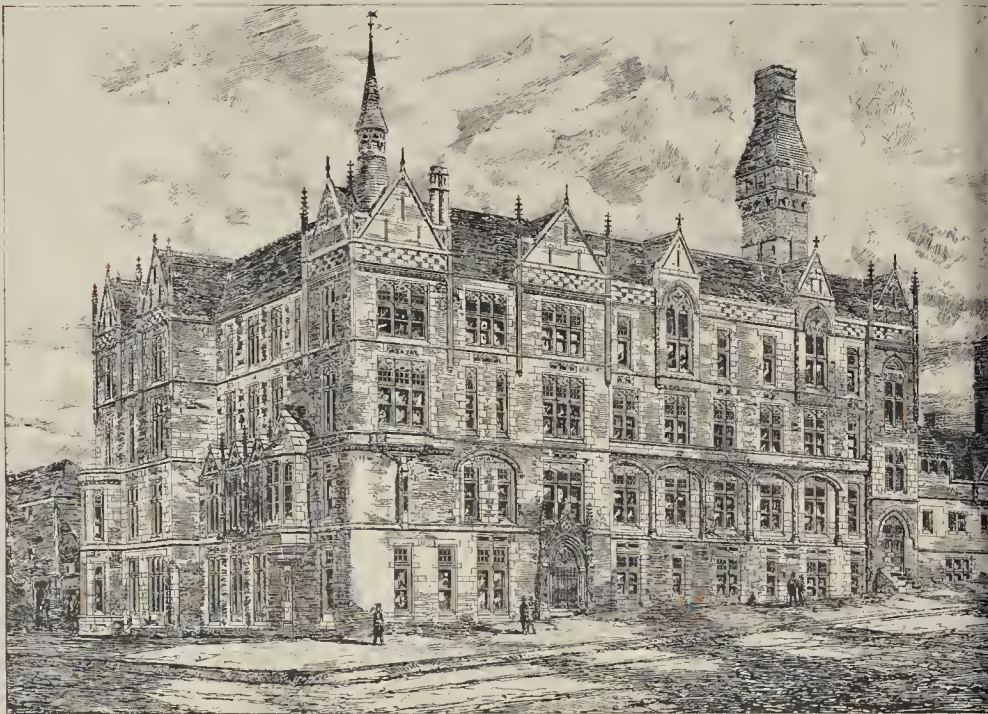


FREE LIBRARY: TRINITY ROAD.

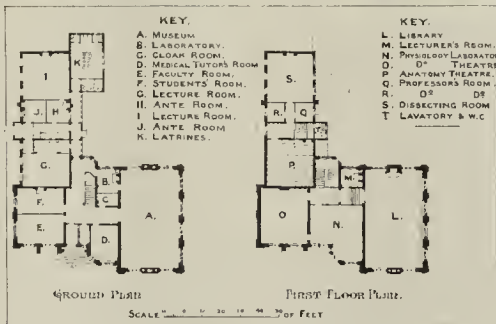
ENG. PHOTO. SPINAUS & CO. 18, EAST HANNOVER STREET, LONDON, E.C.

ILLUSTRATIONS OF BRISTOL ARCHITECTURE.





TECHNICAL SCHOOLS: EXTERIOR.



MEDICAL SCHOOLS.





ST. GEORGE'S TECHNICAL SCHOOLS.



SCHOOLS: INTERIOR.



BUSINESS PREMISES: CLARE STREET.



ILLUSTRATIONS OF BRISTOL ARCHITECTURE

1. EXTERIOR OF MESSRS. LYSAGHT'S OFFICES.
2. DOCK OFFICES, QUEEN SQUARE.

Act, 1849, do not permit the erection of a two-story dwelling-house upon a portion of the garden at the rear of No. 70, Temperley-road, to abut upon the west side of Balamy-road, without a space at the rear, on the application of Mr. A. E. Willbourn, on behalf of Mr. G. Collins.

St. George, Hanover-square.—That sanction be not given to such deviations from the plans, certified by the District Surveyor under Sections 13 and 43 of the London Building Act, 1894, of the space previously occupied by buildings at Nos. 141 and 142, New Bond-street, and premises at the rear fronting upon Bloomfield-place, as would permit of the erection of new buildings upon that site, on the further application of Mr. F. W. Foster on behalf of Mr. A. Coombs.

Whitechapel.—That consent be not given to the erection of two additional stories to the one-story offices at the rear of No. 279, Whitechapel-road, on the application of Mr. M. J. Kind on behalf of Messrs. C. Webster, Limited.

Line of Fronts and Width of Way.

Newington, West.—That consent be given to the erection of twelve houses on the north side of South-place, and of two houses on the east side of Dodding-grove, Kennington-park, on the application of Messrs. Briant & Son on behalf of Mr. A. F. De Laune.

Southwark, West.—That consent be given to the erection of a coal-shed in the playground of Pooock-street schools, to abut upon Fria-street, on the application of Mr. T. J. Biley on behalf of the School Board for London.

St. Pancras North.—That consent be not given to the erection of three blocks of residential flats on the west side of Highgate-road, between Greenwood-place and Carker's-lane, on the further application of Mr. W. T. Read.

Formation of Streets.

Dulwich.—That an order be sealed and issued to Mr. E. J. Strevens sanctioning the formation or laying out for carriage traffic of a street 40 ft. wide, to lead out of the north-west side of Lordship-lane into Blackwater-street, on his further application to the Council, on behalf of the Right Rev. Lord Abbott Snow. That the name Bassano-street be approved for the new street.

Woolwich.—That an order be sealed and issued to Mr. A. B. Bryceson, sanctioning the formation or laying out of a street for carriage traffic, to lead out of Riverdale-road, Plumstead Common, on his application to the Council on behalf of Mr. H. F. Driver and Mr. T. Driver. That the name Viewland-street be approved for the new street.

Clapham.—That an order be sealed and issued to Mr. C. J. Bentley, sanctioning the formation or laying out of a street 40 ft. wide, for carriage traffic, to lead out of the south side of Nightingale-lane into Temperley-road, Wandsworth, on his application to the Council. That the name Blandfields-street be approved for the new street.

Leatham.—That an order be sealed and issued to Messrs. Eastman Brothers, sanctioning the formation or laying out of a street 40 ft. wide, for carriage traffic, to lead out of Mayow-road into Perry-ridge, Sydenham, on their application to the Council. That the name Queenswood-road be approved for the new street.

Wandsworth.—That an order be sealed and issued to Mr. J. R. Sadlier, sanctioning the formation or laying out of a street, 40 ft. wide, for carriage traffic, to lead out of Pathfield-road into Greyhound-lane, Streatham, on his application to the Council. That the name Pathfield-road (in continuation) be approved for the new street.

Clapham.—That an order be sealed and issued to Mr. W. N. Dunn, refusing to sanction the formation or laying out for carriage traffic of new streets, 40 ft. wide, to lead out of the south side of Broomwood-road, Clapham Common, West Side, on his application to the Council on behalf of Mr. T. Ingram.

Hampstead.—That an order be sealed and issued to Mr. W. Sanders, refusing to sanction the formation or laying out of a street, 42 ft. wide, for carriage traffic, to lead out of Haverstock-hill into Lawn-road, on his further application to the Council on behalf of Mr. J. Sanders.

Artisans' Dwellings.

Hammersmith.—That the Council do, in the exercise of its powers under Section 42 of the London Building Act, 1894, disapprove and refuse to sanction the plans delivered by Mr. E. Sage on behalf of Mr. W. Moss, for the construction of three blocks of buildings upon the west side of Queen-street, one similar block at the rear to abut upon Church-lane, otherwise Sussex-place, and two other blocks adjoining the latter block, but not to abut upon a street, such buildings to be inhabited by persons of the working class; and, further, that the consent of the Council be not given to the erection of the four first-mentioned blocks of buildings to the line and in the position shown on the said plans.

Deviation from Certified Plans.

St. George, Hanover-square.—That sanction be given to certain deviations from the plans certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of the "Blue Posts" public-house,

No. 6, Bennett-street, at the corner of Arlington-street, Piccadilly, on the application of Messrs. Eadie & Meyers, on behalf of Messrs. W. H. Chapman.

Means of Escape at Top of High Buildings.

St. George, Hanover-square.—That the Council, in the exercise of its powers under Section 63 of the London Building Act, 1894, do grant a certificate in respect of the means of escape, in case of fire, proposed to be provided for the persons dwelling or employed in the fourth, fifth, and sixth floors of the new Claridge's Hotel, Brook-street, on the application of Mr. C. W. Stephens, on behalf of the Hotel Company.

Construction and Conversion of Building.

Space at Rear, &c.

Westminster.—That the Council, in the exercise of its powers under the London Building Act, 1894, do not approve of, permit, or allow the construction of a riding-shed in the yard at the rear of No. 81, Page-street, the erection of two blocks of loose-boxes, the adaptation as loose-boxes of two old buildings without open spaces at the rear, and the conversion into a dwelling-house without an open space at the rear of a portion of a workshop in the said yard, on the application of Mr. W. Brass, on behalf of Mr. J. S. Brown.

Cubical Extent.

Bermondsey.—That subject to the provisions of Section 76 of the London Building Act, 1894, consent be given to the erection of two additional stories to a drying shed at "The Grange" tannery, Spa-road, together exceeding in extent 250,000 but not 450,000 cubic feet, and to be used only for the purpose of the trade of a tanner, on the further application of Messrs. G. Elkington & Son, on behalf of Mr. W. Whitmore.

Correspondence.

To the Editor of THE BUILDER.

PETERBOROUGH CATHEDRAL.

SIR,—As, in your searching criticisms of "the preliminary specification" for repairing Peterborough in the last two numbers of the *Builder*, you question the value of some of the signatories' names, on a charge both of youth and inexperience, and also cliquism, will you allow me to correct my position in respect of the latter charge, and to state briefly what I think you will admit justifies my name appearing on the list of those who "have not examined the west front of Peterborough Cathedral from the scaffolding."

I have not the honour to belong to either of the societies by whom "the specification" is issued, and had it occurred to me that you would make division of the list of names into sheep and goats, as represented by "memorialists" and Institute men, I should have hastened to sign my name with the distinguishing brand of "A.R.I.B.A."

In respect to the former charge, it is now ten years ago since I had an experience in restoration which it is not the fortune of many architects to enjoy, namely, to act as resident clerk of works during the twelve months occupied in extensive repairs to an Oxford college. This work, which was at St. John's College, was done under the able direction of Mr. J. J. Stevenson, whose name you single out as representing the Institute among the signatories to "the specification." The condition of affairs in this college, although in a much smaller scale, resembled in many particulars those at Peterborough, but in an aggravated form resulting from the use of that picturesque but deplorably bad Headington stone, so universally adopted in Oxford for building during the seventeenth century. Almost exactly the same means that are recommended in "the specification" for Peterborough were adopted wherever it was possible and advisable in order to save the facing stones at St. John's. And, notwithstanding the precarious state of these stones, it was found possible to burrow out the rotten wall core from behind and replace with sound bricks in cement, sometimes for 30 ft. to 40 ft. at a stretch, where the facing stones were only from 2½ in. to 3 in. thick.

The eight or nine years' lapse of time since the work at St. John's was finished has so far justified the methods adopted for this particular building, and, with an extension of the same principles and means and precautions proportioned to the greater weights and size of the building, such as "the specification" suggests for Peterborough, I am convinced the same results could be obtained. No stone can possibly be worse for structural purposes than the charming, though treacherous, Headington stone, yet if these things can be done in Oxford, why not also in Peterborough? F. W. TROUP.

* * * We have already fully given the reasons "why not," for which we refer Mr. Troup to the two last numbers of the *Builder*. That such a method could be employed under some circumstances we never questioned. Mr. Troup seems to think that, without having examined the state of Peterborough, he is a better judge than Mr. Pearson and Mr. Thompson, who have examined it, and

who have ten times his experience. That attitude is characteristic of the whole movement.—ED.

RE ST. DAVID'S CHURCH, EXETER, COMPETITION.

SIR,—As there has been so much misrepresentation upon this matter, I think it may be interesting to know that the Building Committee have adhered to the award of the assessor, Mr. James Brooks, despite the strong attempt made by others to override it. He placed Mr. W. D. Caröe's design first, and a tender having been accepted for it last week, the objectors on the score of cost were silenced. Mr. Brooks having awarded the second place to my design, Dr. it was on Friday last decided that the second premium of £501. should be paid accordingly.

HARBOTTLE REED,
12, Castle-street, Exeter.
January 20, 1897.

The Student's Column.

SPECIFICATIONS.—V.
SLATER.

THE chief points in which specifications of this trade vary, and as to which the student should be careful, are the difference of custom in Welsh and Westmoreland slate supply and the selection of ridges. The production of Welsh slates being far greater than that of Westmoreland, it is customary to sell Welsh slates sorted to sizes, countess, duchess, &c., but Westmoreland slates are more usually supplied in mixed sizes. If the architect, therefore, wishes the slating laid in diminishing courses from eaves to ridge, it must be specially mentioned in respect of Welsh slates, and, under ordinary circumstances, adds to the price, whereas the converse is the case with Westmoreland slates, with which diminishing courses may be taken as the normal method of supplying and laying.

Slate is a material which does not lend itself kindly to the formation of ridges and hips, still less of valleys, and although we shall give an example of specifying such, it is more general nowadays to use tile or lead for these parts of the construction. With this explanation we may proceed.

Roofs.—Cover the roofs with best Bangor blue slates, "countess" size of approved colour and quality laid to 3 in. lap on 1½ in. by 1 in. sawn battens and nailed with two penny copper nails to each slate.

(If Westmoreland slates are to be used, say) Cover the roofs with Tilberthwaite (or other quarry) green slates, of approved colour and quality, laid in diminishing courses from eaves to ridge with 3 in. lap on 1½ in. rough boarding (or battens) and McNeil & Co.'s (or other maker) patent bituminous inodorous felt (or Willesden paper, 2-ply). The slating to be nailed with two 1½ in. compo. nails to each slate.

(Whichever slate is used, add also.) All eaves and verges to have double course, hips and ridges to be cut close.

Ridges.—Cover the ridges with 2½ in. rubbed slate bird's-mouthed roll and 6 in. by ½ in. sawn slate wings, all bedded and jointed in oil cement, and secured with brass screws.

(Or, in the alternative) Cover the ridges with red tile ridges, No. in list, p.c.

per foot, set and pointed in cement. (If green ridges—glazed or unglazed—are desired, it is well to say that they are to be purposely made by Carter & Co., of Poole, Dorset, or other maker at p.c. price of per foot, free on rail.)

Hips (These may be covered with slate roll and wings, in similar manner to that described for ridges, or with ridge tiles, but are more generally at the present time finished with close-cut slating and secret gutter, which may be thus described).—The hips to have the slating cut close to mitre line, with 5-lb. lead secret gutter 18 in. wide under same (or with 5-lb. lead soakers, 10 in. by 18 in., laid to bond in with courses of slating. Or a lead roll and wings may be used, but whatever is adopted should certainly be described under the heading of slater, even though it may be plumbers' work).

Hip Finials.—Provide and fix at apex of hips, hedded and jointed in cement, red terra-cotta hip finials, as No. in the list of the Rowland's Castle Brick and Tile Company, p.c. each. (If the hip finials are to be in lead, mention it here.)

Valleys (Say whether the valleys are to be formed with soakers or with lead valley gutter, and describe).—The slating to be cut in true line to valleys with in. between edges of slating.

Verges.—The verges to be pointed (or set) in cement.

Stone Slates.—Cover the roofs with Horsham Collyweston, Stonesfield, or Forest of Dean stone slates 13 in. thick of approved quality, laid in diminishing courses from eaves to ridge, bedded in mortar and torched on the underside, each slate to have two oak pins hung over 2½ in. by 1½ in. battens (sometimes lifting is employed and sometimes the slates are simply bedded) to 3-in. lap. The ridges to be bird's-mouthed plain ridges of stone (a freestone of durable character, sometimes Box ground or Doulting), 6 in. by 6 in. set, and jointed in blue lias lime mortar (not cement).

SLATE MASON.

Cisterns.—(The use of slate cisterns is almost obsolete, but we give an example). The slate cistern in roof of scullery to be 6 ft. by 4 ft. and 3 ft. deep internal dimensions, with sides 1 in. thick and bottom 1½ in. thick, all in sawn Valenta slate slabs, put together with rebated and grooved joints in red lead and oil cement, the grooved slabs pointed externally with weathered cement filletting. Put around same two sets of wrought-iron straps, 1½ in. by ½ in., forged and screwed at ends with nuts and washers.

Sinks.—(These would be similarly described, but, of course, with smaller dimensions and thicknesses).

Shelves.—Fit up in larder two tiers of shelving, 9 in. wide at sides and 12 in. wide at end. The shelves to be inch rubbed Valenta slate slabs, with rubbed and rounded edges, and rounded corners to 4 in. radius, and to be in one length each (or two, &c., if allowed), cut and pinned into walls 2 in. deep in cement. The shelves to be supported on wrought-iron brackets *p.c.* each plugged and screwed to walls, and secured to shelves with brass screws let in and bedded with oil cement (or mastic). (Or slate cantilevers can be used, which specify thus). The shelves to be supported on 1½ in. rubbed (or sawn) diminished cantilevers, rounded on edge and at end, and to be the full width of shelving, 3 in. deep, and cut and primed ¼ in. into wall in cement.

Urinals.—Form the urinals shown on plan with hacks of ½ in. sawn Valenta slate slabs, bedded in mastic cement (or Portland), and secured with bronze cramps, cut and pinned into brickwork. The divisions to be of ¾ in. slabs grooved to backs, and secured with bronze (or brass) tuning-fork cramps 10 in. long, cut and pinned into wall, and screwed to slate with brass screws, nuts, and washers. Channel to be of 6 in. by 3 in. sawn slate dishd to current, and set in cement flush with asphalt paving.

(The above are sufficient examples of the method of specifying for slate mason's work, any other special items being treated in a similar way.)

If enamelled slate is to be used, it is advisable to select a manufacturer in whom the architect can place confidence, and specify that make of goods at a *p.c.* price, inasmuch as the durability of the enamel depends entirely on the care taken in the manufacture and the quality of the workmanship is very difficult to determine in the completed article without damaging it.

TILER.

Roofs.—Cover the roofs with hard, well-burnt, approved red tiles of local manufacture (or Broseley, Bridgewater, or other desired kind), entirely free from fire cracks and all other defects, laid to a 3½ in. gauge, with two short cast-iron tile pins to each, and bedded in hay or 1½ in. by 1 in. deal battens, with proper tile and a half where required at edges to prevent the use of closers. (This is the old-fashioned tiler's way of laying tiles, and has the approval of experience and of many good judges; but tiling is now often laid by bricklayers, and these craftsmen cannot get on without mortar, so, as an alternative, one may specify instead: The tiles to have their lower edges bedded in a small quantity of lime and hair and to be torched on the underside. (Some architects bed their tiles wholly in mortar, but this method is more likely to hold the wet and keep the roof damp. Again, tiles are sometimes nailed, sometimes hung over the battens with nibs formed on the tiles, and even, though rarely at the present day, hung with wood pegs. This is a matter for the discretion or fancy of the architect. The specification should state which method is to be followed). All eaves and verges to have double courses, and to be pointed in cement. (This last stipulation is open to question.)

Ridges.—Cover all ridges with half-round ridge tiles set and pointed in cement (or specify a special make and pattern if desired).

Hips and Valleys.—Lay all valleys and cover all hips with special valley and hip tiles to course and bond with roof tiling. (These are only kept in stock for mitres of roofs of the same pitch. If roofs of different pitch intersect at valleys or hips, the tiles would have to be purpose made. These tiles cannot, of course, be properly used where there is any curve in the slope of roof tiling even if it be only the tilting of lower courses.)

Hip Finials.—(Specify as indicated under the heading of slater.)

Filletting.—(If this is to be used instead of flashings specify). At junction of tile roofs with vertical face of brickwork put stout cement filletting with nails and twine to hold same.

Vertical Tiling.—Cover the cheeks of dormers with vertical tiling of similar description to that used on roofs, nailed to 1½ in. rough boarding with two compo nails to each tile, the courses to range with the courses of roof-tiling. (Describe whether the junction of vertical and roof-tiling is to have secret gutter or soakers). The tiles to be cut close at junction of vertical and sloping faces. (If the whole of the upper story is tile hung describe the way in which it is to be done, whether nailed to battens, plugged to wall, nailed to joints of brickwork, usually on edge, or bedded in lime and hair mortar).

With both slate and tile-roofing the final clause should be—

Completion.—Clean out gutters, replace any cracked or broken tiles (or slates), make good any defective pointing or filletting, and leave the roofs clean, perfect, and weather-tight at completion.

GENERAL BUILDING NEWS.

BOARD SCHOOL, BOOTLE.—A special meeting of the Bootle School Board was held on the 20th inst. at the Public Offices, and the object of the meeting was to select a plan for the new Grey-street school. Mr. Smith proposed for adoption the following recommendation of the Building and Finance Committee:—"That, subject to the consent of the Education Department and to a contract being entered into by the architect for the carrying out of the scheme in accordance with the conditions enumerated in the memorandum issued to competitive architects, the plan for the Grey-street school set in under the *nom de plume* of 'Left-hand Light' be adopted, and that the architect whose *nom de plume* is, he, and he is hereby appointed architect of the school upon the usual conditions." Mr. Francis seconded the adoption of the recommendation, which was carried unanimously. The cost of the new school, which will accommodate about 1,100 children, is estimated to be 7,297. The architect called in by the board to advise upon the plans was Mr. Paul Ogden, of Manchester. Fifteen sets of plans were sent in, and the successful architect was Mr. Cox (Cox & Marnon), Liverpool.

CLONFORT CATHEDRAL.—During the last twelve months a considerable amount of work in connexion with the restoration of Clonfort Cathedral has been carried out by Mr. A. P. Sharp, builder, Dublin, in accordance with the plans prepared by Mr. J. F. Fuller. The chancel has been thoroughly repaired, as well as the belfry-tower, the buttresses, and the roof. The sacristy has been successfully preserved without altering the ancient character of the structure. Other necessary work has been accomplished. A thorough system of drainage has been carried out around the entire building. Messrs. Craven, Dunnill, & Co., of Shropshire, have laid down tiles in the chancel, specially made for the situation. A new heating apparatus, supplied by Messrs. W. K. Fayle & Co., of Parsonstown, has been placed in the chancel, and a carved oak communion table, specially designed by Mr. Fuller, is being made for presentation to the cathedral. Clonfort Cathedral was originally founded by St. Brendan, in the year 558, thirty-nine years before St. Augustine landed in England. The present doorway, of Hiberno-Romanesque architecture, dates from the year 1166. The east window is nearly a thousand years old. The cathedral is small, but very beautiful in many respects. It is now used as the parish church. The south transept is in ruins and roofless. The north transept is completely gone. About 1,000, it is necessary to complete the work of repair. Canon McLarny, Rector of Clonfort, Banagher, King's Co., will be glad to receive help in this undertaking.

FREE LIBRARY, CARDIFF.—An inquiry has been held at the Town Hall, Cardiff, by Mr. E. H. Bioknell, on behalf of the Local Government Board, with reference to an application made by the Cardiff County Council for power to borrow 2,000, for the erection of a branch Free Library in the Docks district. The proposed building is to be erected from plans prepared by Mr. W. H. Washwood Cople, architect, of Cardiff, on the site of two cottages in George-street and near the centre of the shipping community.

RENOVATION OF HAMILTON PARISH CHURCH, LANARKSHIRE.—The Parish Church of Hamilton, which has been closed since the beginning of October for renovation and the introduction of an organ, was

reopened on the 17th inst. The work of renovating and redecorating has been carried out under the direction of Mr. A. Cullen, architect. The organ, which has been placed in the Duke's Aisle, has been erected by Messrs. Ingram & Co., Edinburgh and Hereford.

SCHOOL OF ART BUILDINGS, GLASGOW.—Messrs. Honeyman & Keppie, Glasgow, were the successful architects for the new school of art buildings in Renfrew-street, immediately behind the Skating Palace.

FREE METHODIST CHAPEL, PUDSEY.—Contracts amounting to between 6,000, and 7,000, for the erection of a new Free Methodist Chapel in Lowtown, Pudsey, have now been signed. The following are the contractors, viz.:—Mr. William Hutton, Fulneck, mason; Messrs. Appleyard Bros., Bramley, joiners; Mr. F. Thompson, Farsley, slater; Messrs. J. Laycock & Son, Stanningley, plasterers; and Mr. A. Higginbotham, Idle, plumber and painter. The chapel will be erected from the designs of Mr. W. H. Dinley, of Chorley, accepted in competition.

WESLEYAN SCHOOL, PUDSEY.—Miss Nora J. Mason recently opened a new school which has just been erected by the Wesleyans at Valley-road, Pudsey. The school contains a tea-room in the basement, a schoolroom on the first floor capable of seating 450 persons, and six large and two small class-rooms, the architects being Messrs. Hodgson & Farrar, Pudsey. The cost is 1,200.

BAPTIST SCHOOL, BRAMLEY.—The new Sunday-school just erected by the congregation of Zion Baptist Chapel, Bramley, was opened recently. The building, which has been designed by Mr. W. A. Hobson, architect, of Leeds, is a two-storied building, faced with stone. On the ground floor is a meeting-room, with accommodation for 300 people, with eight class-rooms communicating. Staircases give access to the upper floor, which contains an assembly hall, with seating accommodation for 500 people, two class-rooms, and two reading-rooms, and a tower stage against there are two more class-rooms. The principal contractors were Mr. W. W. Haley and Messrs. J. Trickett & Sons, and the clerk of works was Mr. E. Webster Tate. The building has cost about 2,500.

CHURCH OF ST. PATRICK, TRIM, CO. MEATH.—The main building of the new church of St. Patrick, Trim, is now nearly completed, and the tower is far advanced. Mr. Hague is the architect of the new church, and Mr. Nolan the contractor.

HOSPITAL, BEDFORD.—At a special meeting of the Governors of the Bedford County Hospital recently, it was decided to accept the estimate of Messrs. Kerridge & Shaw, of Cambridge, for the building of the new County Hospital, the cost of which will be about 33,000. Mr. H. Percy Adams is the architect for the new buildings.

RESTORATION OF PARIS CHURCH, IRTHINGTON.—The parish church at Irthington, which has been closed for some time for alterations and repairs, has been reopened. The alterations and additions have been designed so as to harmonise in style with the existing structure. The chief addition externally is the new vestry on the south side of the chancel, and below it is the heating chamber. The vestry has been placed so as not to interfere with the low side window of the chancel or with the old Norman doorway, and care has also been taken not to damage the old Roman walling of the chancel, whilst the windows have been made to match those of the chancel. Inside, the walls have been cleaned and discoloured where stained, and a mosaic pavement has been laid in its natural colour. The whole of the old-fashioned seats and square pews have been replaced by new seats of modern design, made of Dantzic oak, and an oak dado has been fixed all round the church. New pitch-pine flooring has been provided throughout, and a system of drainage introduced. The mason work has been done by Mr. Robert Mark; the joiner work and carpentering by Mr. William Edger, Brampton; the oak work by Mr. J. Heywood, Manchester; painting, Messrs. Atkinson & Elliott, Brampton; plumbers' work, Mr. W. Anderson, Carlisle; and the heating apparatus has been fixed by Mr. Corbett, Carlisle. Mr. J. F. H. Harrison had charge of the works. The architect engaged for the work was Mr. T. Taylor Scott, of Carlisle.

TURKISH BATHS, DONCASTER.—Turkish baths have been erected at Doncaster, situate on the Station road. The architect was Mr. T. G. Edwards, of Sheffield; the contractor, Mr. W. Anelay, of Doncaster. The heating and ventilation works have been carried out by Messrs. Bradford & Co., of London, and Manchester. The floors are of marble mosaic, the walls and ceilings are faced with white-glazed bricks.

TECHNICAL INSTITUTE, BRADFORD-ON-AVON.—A building for the purposes of a technical institute for Bradford-on-Avon has just been completed in Junction-road. The total cost is about 3,900. The frontage is 75 ft. to Junction-road, with a depth of 45 ft. From the centre of the hall a wide staircase extends to the first floor, stairs beneath communicating with the heating chamber and store rooms. On the left of the hall is the women's department, fitted with a suitable range for cooking, with a scullery and store room adjoining. On the first floor is a chemical laboratory 30 ft. by 20 ft., and the lecture theatre, 30 ft. by 15 ft., is also on the first floor, in

the centre of the building and adjoining the chemical laboratory, provision being made by specially ventilated fume closets for carrying off the gases emitted from chemical experiments. There is also on the first floor a large room, 40 ft. by 20 ft., to be used for the teaching of drawing, building construction, and other technical subjects. The cooling room and lecture theatre are to be fitted with raised galleries for the convenience of the students, and special arrangements are made for efficient ventilation and heating. The architect was Mr. T. B. Silcock, of Bath.

CHURCH EXTENSION, LEICESTER.—The foundation stones of the churches of St. Stephen, North Evington, and St. Michael and All Angels, Knighton Fields, were laid at Leicester recently. The new church of St. Stephen will be situated at the corner of East Park-road and St. Saviour's-road. According to the original scheme it was proposed to provide the following accommodation:—Nave 640, chancel 40, parish room 300; but this was abandoned, and the present scheme, which will cost a little over £2,000, was resolved upon. This will comprise a church affording accommodation to about 300 persons, and this is the portion of the scheme which is now in course of erection. Eventually the building will be doubled in size, the added portion comprising chancel, parish room, vestry, &c. At present only the body of the church is to be built, and this will have no nave or transepts, but will be a plain red brick Gothic building, with one wide spire. The architect is Mr. Stockdale Harrison, who Mr. T. R. Tebbutt is the builder, and Mr. William Mathew the clerk of the works. The church of St. Michael and All Angels at Knighton Fields will be built of brick, will accommodate about 560 people, and will cost about 4,500l. The architects are Messrs. Everard & Pick.

SCHOOLS, HOLLOWAY.—The opening of the Woodstock-road Schools, Holloway, took place recently. The architects were Messrs. Mitchell & Butler, whose design was selected by the Board after a limited competition amongst twelve architects. Messrs. Kirk & Randall were the builders, and the contract sum was £23,521. The school is built in three separate and distinct departments. 575 infants are accommodated on the ground floor, 418 girls on the first floor, and 416 boys on the second or top floor, being a total accommodation of 1,435 children. The central hall system has been adopted, each department having a large hall, with short corridors at each end connecting the various class-rooms with the hall. Each department has two entrances direct to its own playground. Each of the upper floors has two stone staircases, so that half the number of children enter on each side of the hall. Each department has lavatories and cloakrooms, and the teachers are provided with rooms for their own use. In addition to the ordinary school and class rooms there is a manual instruction room and a cookery schoolroom provided in a separate block of buildings, to which latter is also attached the caretaker's house. Each playground has a covered playshed. The school is built of picked stock bricks with red brick facings. A great deal of white glazed brickwork has been employed internally, the whole of the corridors, cloakrooms, lavatories, and staircases being lined with the same. All the school and class rooms have open fireplaces. In addition there is a complete system of hot-water heating by Messrs. Winton Smith, Gray & Co., for corridors, cloakrooms, and halls, with ventilating radiators at the most suitable positions.

NEW POLICE-COURT, SHEFFIELD.—At a cost of between 17,000l. and 18,000l., Sheffield has been provided with additional police-court accommodation. The preparation of the plans for the new court, which was opened on the 13th inst., was entrusted to Messrs. Flockton, Gibbs, & Flockton, architects, of Sheffield. In size the new court is about the same as in which the Stipendiary sits. There is a large corridor for witnesses-in-waiting, a room for the use of solicitors, and another where they can consult their clients. All these rooms are on the ground floor, and are approached from the end of the hall of the old building. Additional offices have been provided for the Stipendiary and the Magistrate's Clerk, and a room of about the same proportions as the grand jury room has been placed at the disposal of the Stipendiary. The magistrates' entrance from Waingate has also been enlarged, and there is now an entrance hall and improved staircase. Under the court there are twenty lock-up cells, and a couple of large cells for prisoners awaiting trial. A covered van-way passing under the court from Waingate to Castle-green, and a room for prisoners being removed from cell to prison-van in private. The caretaker's house is in Waingate. The building is to be heated by hot-water pipes fixed in the basement, the hot air to be mixed with cold air to the required temperature, and driven by a fan into the court and other rooms. The foul air will be drawn out by another fan. The contracts were let to Messrs. James Fidler, of Ackington, mason and bricklayer; J. H. Lillaker, joiner; Corrie & Sons, plumbers; Chadwick & Sons, plasterers and plasterers; Kenton & Co., who supplied the heating apparatus; Longden & Co., who provided the wrought-iron gates and grills.

BUILDING IN MANCHESTER.—The extraordinary activity of all branches of the building trade in Manchester during the past year cannot be paralleled by

any more recent reference than one to the years 1876 and 1877, when many of the suburbs round the city may be said to have had their birth. In the city several very large structures have been completed and others begun, while a considerable quantity of rebuilding of warehouses, offices, and shops has been in progress. In offices of all descriptions, the hydraulic lift, now readily worked by the public high-pressure supply, bids fair to become universal, and an immense amount of alteration to make room for it has been carried on. Iron and glass continue to supplant heavier materials, especially in the building of shops. The attempts to give elegance as well as individuality to the designs of shop fronts have become very numerous, but it may be noted that local contractors have lagged behind the times in this special department, Birmingham and London firms being generally employed to do work of this kind of the best class. In the suburbs, the designs even of the cheapest classes of cottage property show in many cases considerable improvement upon the styles that have been too long in vogue. Thousands of new houses have sprung up, built to let at rents usually ranging from 5s. 6d. to 7s. 6d. per week, and the rule has been for them to be taken considerably before completion by bodies of tenants newly immigrated to the town. There has been practically no desertion of older property of this class, which remains fully tenanted. As may be imagined, labour has been abundant all the year, at hardening rates. Bricklayers have been better paid, and plasterers, whose numbers are, by the rules of their Society, strictly limited, have often been in urgent request. The demand for such favourable materials as Ruabon bricks has not slackened, in spite of the production of large quantities of imitations by makers of various shale bricks in Accrington and Burnley. There is every appearance of continued prosperity throughout the building industries in Manchester. The demand for house accommodation shows no sign of abatement, and in the city some enormous contracts are about to be given out.—*Manchester Guardian*.

SCHOOLS, CHADWELL.—The new school buildings erected by the Hford School Board at Chadwell were opened recently. Mr. C. J. Dawson, the architect, stated that the site of the buildings contained a little more than half an acre. The building was designed as a mixed school for girls and boys, on the classroom and central hall principle. There were four classrooms for sixty children each, two for fifty each, and the central hall would accommodate forty children, or 330 children in all. The total cost of the buildings was 2,764l.

PROPOSED NEW LIBERAL CLUB, FARSLEY.—It is proposed to erect at Farsley new premises for the Liberal Club. Mr. W. O. Gill, architect, has prepared plans.

FEVER HOSPITAL, KILWINNING, Ayrshire.—The new District Fever Hospital at Kilwinning has now been opened. It is situated a little to the east of the town, opposite the cemetery, and was erected from plans by Mr. John Armour, jun., of Irvine. There are two principal blocks, the hospital proper and the administrative building, also a mortuary, laundry, &c. The hospital is divided into five wards, with accommodation for thirty beds. The administrative block contains five bedrooms, also a matron's and doctor's room, and a kitchen.

SCHOOL, PENARTH.—The new County Intermediate Schools at Penarth, which have been erected at a cost of about 8,000l., were opened on the 20th inst. The schools have been built to the plans of Mr. H. Snell, architect. They accommodate 120 boys and 80 girls, and include a lecture theatre, provision for the teaching of music, specially-designed rooms for drawing, painting, and architectural studies, and a series of class-rooms, in the one wing for girls, and on the other side for boys.

PREMISES, PERTH.—A new block of buildings is in course of erection at the corner of New Scott-street and South-street, Perth, for Baillie Wright, proprietor of the *Perthshire Courier*. The buildings, which are to be of three stories and attics, will have the ground area occupied by shops, with extensive cellars in basement. The upper floors are to be occupied by offices, printing works, and dwelling-houses, with stores, &c. The buildings are to be built of stone, with polished face and dressing, from Pelonaie Quarries, Bannockburn, and will have two façades of 60 ft. and 54 ft. respectively to New Scott-street and South-street. The roofs will be covered with slates from Port-Dinorwic Quarries. The contractors for the whole works are:—Mason and brick work, Alexander Beveridge, Perth; carpenter and joiner, Thomas D. Falconer, Perth; plaster and cement work, Daniel Campbell, Bridgend; slater, James Buchan, Perth; glazing, Edward M'Conocher, Perth; iron and steel contract, George Baillie, Perth. The plans, &c., have been executed by ex-Baillie Smart, architect, Perth.

ENLARGEMENT OF STANNINGLEY LIBERAL CLUB.—The work of enlarging Stanningley Liberal Club has now been practically completed. By the enlargement a new lecture hall, capable of accommodating about 400 persons, with the usual lavatory arrangements, has been added to the club on a level with the ground floor, the entrance to the hall being in a direct line with the front or main street entrance to the club. Under the hall provision has been made for three slipper baths, a committee-room,

and store-room. The old lecture hall has been converted into premises for the caretaker, and the rooms in the basement formerly occupied by the caretaker will in future be utilised for heating purposes, &c. A new stone staircase has been erected from the ground floor of the club to the billiard-room, and other improvements have been effected. The enlargement, &c., has been carried out from designs prepared by Messrs. Hodgson & Farrar, architects, Paisley and Bradford.

BRITISH SCHOOL, CHIPPING NORTON.—New British Schools were opened recently at Chipping Norton. The plans were prepared by Mr. J. H. Gibbons, of Birmingham, the contractor being Mr. S. Lewis, of Chipping Norton.

RENOVATION OF KNOX FREE CHURCH, PERTH.—For some time improvements and alterations have been in progress in connexion with the Knox Free Church, South-street. The work of renovation has now been completed. A new church hall and offices have been erected at the back of the church, and the old hall razed to the ground. The hall is 28 ft. square. The cost of the improvements will be about 1,200l. Mr. Alexander Beveridge was builder, and the architect was Mr. A. G. Chalmers.

CO-OPERATIVE STORE, ROWHEDGE, ESSEX.—The Colchester and East Essex Co-operative Society have just opened a new store at Rowhedge. The new store is situated in Regent-street, opposite of the new Hall, and consists of a provision shop, with hutch's shop at the side, storage accommodation at the rear, and on the upper story an assembly-room and a reading-room approached by a separate staircase at the side of the building. The architect was Mr. C. E. Butcher, of Colchester, and the builder Mr. R. Beaumont, of Lexden.

ALTERATIONS AT STOKE GIFFORD CHURCH, NEAR BRISTOL.—On the 23rd inst. the ancient church of Stoke Gifford was reopened. The church has undergone various alterations, carried out after the designs of the architect, Mr. Lingen Barker, of London.

SANITARY AND ENGINEERING NEWS.

SEWERAGE AND SEWAGE DISPOSAL, STAMFORDHAM.—The Castle Ward Rural District Council have adopted the scheme of main sewerage and sewage disposal for Stamfordham and Hawkwell, prepared by Mr. D. Balfour, M.Inst.C.E., of Newcastle-on-Tyne, and which will prevent the pollution of the river Pont, complained of by the County Council.

THE BLACKWALL TUNNEL.—At the meeting of the London County Council on Tuesday it was stated that the Blackwall Tunnel would be opened by the Prince of Wales in May next. The sewer works on both sides of the river, the fireproof fence at and approach road to Ordnance-wharf, East Greenwich, the river-wall at Northumberland-wharf, the "cut and cover" operations on the south side of the Thames, and the cast-iron lining of the tunnel are completed. The glazed brick lining of No. 4 shaft is finished, and about one-half of that of No. 1 shaft is executed. From the "cut and cover" on the north shore to No. 1 shaft, the concrete lining to the cast-iron skin of the tunnel is formed nearly up to the road level, and from No. 1 to No. 2 shaft the lining is built up two feet above the road level; from No. 2 to No. 3 shaft it is completed, and from the last-named point to No. 4 shaft about two-thirds of it are executed. A length of about 200 ft. of the tile facing in the tunnel, between shafts No. 2 and 3, is done. At the Poplar end of the tunnel, out of a total distance of 436 ft. of "cut and cover," a length of 427 ft. is completed. All the concrete foundations for the open approach roads on both sides of the river are finished. On the north side of the river the granite pitched carriageway, granite kerb and channel and York paved footpaths, are laid for a length of 1,100 ft.; while on the south shore the granite pitching, the York flagging, and the granite kerb and channel, are put down for lengths of 230 ft., 600 ft., and 1,200 ft. respectively. The progress made with the entrance-houses to the tunnel has been very slow on both sides of the river, owing to the non-delivery of stone from the quarries, but the material is now coming in more rapidly. The house on the north side is built to an average height of 24 ft., and that on the south shore to an altitude of about 17 ft. The concrete foundations for the boiler-house and for the chimney shaft connected with the electric light station are finished, and the well from which it is proposed to obtain water for condensing purposes is sunk to its full depth. Out of the total contract sum of 879,047l., including Messrs. Pearson's contract for works to the approach roads, it is estimated that the operations up to date have cost 748,437l., which is an increase of 12,385l. for the month.

STAINED GLASS AND DECORATION.

WINDOW, WRENTHAM CHURCH, SUFFOLK.—The dedication of a stained glass window took place recently at the Parish Church, Wrentham. The window has been inserted on the north side of the church, in memory of the late Mrs. Waterworth, and the work was carried out by Mr. L. J. Watts, of Colchester.

FOREIGN.

FRANCE.—M. Loviot has just been elected President of the Société des Architectes Diplômés du Gouvernement, in place of M. A. Chancel.—The new pavilion of the Luxembourg Museum, built on the site of the old terrace, is now quite finished. It consists of a gallery reserved for drawings and engravings, and two halls, one containing the Callebotte collection, and the other paintings of foreign schools.—The Académie des Beaux-Arts has elected as their Vice-President for the coming year M. Fénélet, the sculptor, in place of M. E. Barrias, who has resigned.—The Municipal Council has just voted a sum of money for the restoration of the celebrated carillon of the church of Saint Germain l'Auxerrois; it is in the tower close by the church.—There is a question of commissioning the sculptor, M. Paul Dubois, Director of the Ecole des Beaux-Arts, to make the statue of Pasteur, which is to be erected in Paris in the environs of the Luxembourg gardens.—The Decoration Committee of the Hôtel de Ville have just chosen the following artists, who will compete for the decoration of the ceiling of the Municipal Council's Library in the Hôtel de Ville: MM. Baschet, Carrière, Raphaël Collin, Elliot, Lerolle, and Fréjavé.—Two new bridges are to be built at Saint Denis, one over the Meuse, and one over the Canal des Grands Moulins.—The Société des Architectes de la Seine Inférieure have elected M. Barthélemy, who is a Rouen architect, as their Hon. President, and M. Gonnault, also a Rouen architect, as President. M. Bernard de Compiègne has been elected President of the Société des Architectes de l'Oise, and M. Regnault has been elected President of the Société des Architectes de Rennes.—The jury on the open competition for the building of the Hôtel de la Caisse d'Épargne at Pont à Mousson, have awarded the first prize to M. Toussaint Emile, of Nancy, the second to M. Callay, of Pont à Mousson, and the third prize to M. Lauternier, of Nancy, and the fourth prize to M. Humbert, of Nancy.—It is announced that M. Chartran is painting the portrait of Mr. McKinley, the President of the United States, for the Carnegie Gallery at Pittsburgh.—Part of the old Château of Portzic, near Brest, dating from the sixteenth century, has been destroyed by fire; it is a favourite haunt of tourists.—The Superior of the Benedictine Convent of Chantelle has just sold to the Louvre Museum three beautiful statues in stone, dating from the fifteenth century, and which were discovered in the excavations. These statues appear to have belonged to the chapel of the old Château of Chantelle.—The International Exhibition of Fine Arts has just been inaugurated at Monte Carlo, it has been well arranged by Georges de Dramard, the artist, and contains paintings by MM. Gérôme, Detaille, Ziem, Kroybet, Henner, J. Lefebvre, Sisley, Thaulow, and François Flameng.—The death is announced, at the age of sixty-eight, of M. Etienne Journoud, architect, at Lyons. He was a pupil of Dupasquier and Bresson. He began by being architect at Bellej, and for nearly forty years he superintended the erection of numbers of civil and religious buildings.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—The Val de Travers Asphalt Paving Company have removed from their former address in Palmerston-street, to the Bishopsgate-street, the Hamilton House, Bishopsgate-street Without, E.C.—Owing to arrangements entered into with the executors of the late Mr. Robson, the firm hitherto known as "Novell & Robson," stone merchants, Warwick-road, Kensington, will henceforth carry on its business at the same address, under the style of "B. Novell & Co."

OLDHAM BUILDERS' ASSOCIATION.—The eighth annual dinner of the members of the Oldham and District Builders' Association was held recently at the King's Arms Hotel, Yorkshire-street, Oldham. Mr. W. Cunliffe, the President of the Lancashire Builders' Federation, proposed the toast of the "Oldham and Master Builders' Association and the Master Builders' Federation of Lancashire," and said that he hoped the coming year would be a flourishing one for the Oldham builders. With reference to the Lancashire Builders' Federation, it was, he might say, as yet in its infancy. They as masters had to meet organised forces, and singly they had no chance of winning in the long run, but standing shoulder to shoulder they could meet them properly, and state their case effectively when tyranny was attempted. There were one or two things which the men would put forward if the masters were weak, but he maintained, for instance, that masters had a right to obtain their materials wherever they liked, and at what rate they liked. There was the question of limitation of the number of apprentices, as to which he maintained that reliable men were even now not too plentiful, and that by the limitation of apprentices they would gradually have fewer men to meet an increased demand. It would then become a matter of dictating such terms that they would not be able to afford. There was a great scope for the Federation in questions which could not be dealt with locally, and which were for the general good of the trade of building, questions directed at the

extinction of the term "jerry-builder," which was a gross libel on the average builder.—Mr. Smethurst, President of the Oldham Association, in responding, said that during the past year, in respect to its magnitude, the building trade had been fairly good, but, he was afraid, not very profitable, an inconsistent state of things which he might explain by saying that whilst prices had remained somewhat stationary, the cost of labour especially had been increasing by slow stages, giving in the total an enhanced cost of production, which would have to be met by an increase of prices before the trade could be called profitable. The relations between the masters and men during the year had been fairly amicable, and with the exception of one matter the year had passed without any serious trouble. He had always been of the opinion that to proceed to an industrial war was a mistake, if not merely a crime, and he also believed that the combination of the men was a good thing, for all if rightly used, and that their claim for fair working conditions was just, and would be to the injury of nobody. But he believed that the bricklayers, though they secured their point for the moment, took up a false position in claiming foremen in charge of jobs—who really represented the masters on the work—should be members of their Association. There had been a very complete organisation of the men in the various branches going on recently, and he did not complain of that, but he wanted to point out that unless the masters were equally well organised they would have unfair conditions and proposals foisted upon them. The secretary (Mr. E. Stephenson), read his eighth annual report, after which Mr. J. C. Varley submitted the toast of "The Guests." The toast was duly acknowledged.

SALE OF HISTORIC BUILDINGS AT COVENTRY.—That well-known property in Earl-street, Coventry, the Palace-yard, has been purchased by Alderman Singer and other gentlemen, and is believed to be destined ultimately to be converted to some public object. The site, which is partially covered by quaint old timbered buildings, comprises about a 800 square yards. It has been the hostelry of several Royal visitors, particularly in the seventeenth century. In September, 1687, James II. was entertained there by Richard Hopkins, a citizen. In December, 1688, Princess Ann of Denmark lodged there. In 1689 Mr. Hopkins was elected a member for the city, and in the following year Prince George of Denmark was his guest. The buildings have of recent years been used as builder's premises, and as offices and warehouses. They adjoin the Technical Institute, and front the site of the proposed new municipal buildings.—*Leicester Post*.

ENGINEERING APPOINTMENT.—The compromise scheme brought forward by the Water Committee on the subject of the engineering in connexion with the Little Don Valley Water Works stipulated for the appointment of an experienced civil engineer to reside in the Little Don Valley, or at Sheffield, and devote the whole of his time to the work, and to be responsible for the designing and construction of the Langsett Reservoir, at a salary of 1,200l. to 1,500l. per annum, Mr. E. M. Eaton to be consulting engineer at 500l. per annum, with 250l. additional as consulting engineer for the existing works and for distribution. This scheme having been accepted by the Council the resident appointment resolution. A large number of applications were considered at the meeting of the Water Committee on the 20th inst. The number was reduced to six, whose claims will be further investigated at a future meeting.—*Sheffield Telegraph*.

FONT, ST. FRANCIS' CHURCH, CARDIFF.—A service to consecrate a new font was held at St. Francis' Church, East Moors, Cardiff, recently. The bowl of the font is of Portland stone, in one piece, with carved lip and scrolls, and rests upon green Irish marble columns, having moulded Portland stone capitals and bases, the whole standing upon two massive stone steps. The cover is of polished oak. The bowl is lined with lead and furnished with a drain. The font has been erected by Messrs. A. J. Howell & Co., from the designs of Mr. H. H. Turner (of Messrs. Habershon & Fawcaker, architects).

AN ANCIENT CHURCH BURNED.—The church of SS. Mary and Lawrence, at Bolsover, Derbyshire, was destroyed by fire on the 24th inst. Within the chapel—and this is the only portion of the building saved, it is stated—are two costly monuments, one to Sir Charles Cavendish, who died in 1677, and to his lady, and another to the memory of Henry Cavendish, Duke of Newcastle. Every single particle of the church, with the exception of the skeleton walls, which are almost entirely burnt beyond repair, has been destroyed.

THE BUILDERS' MERCHANTS' ASSOCIATION OF LONDON.—The third annual dinner of this Association, preceded by the annual general meeting, over which the President for 1896 (Mr. W. Sankey) presided, was held at the Midland Grand Hotel, St. Pancras, on the 21st inst. At the dinner there were forty members and guests present. Mr. Clement Braby, President for 1897 (who presided), having proposed the health of the Queen and the Royal Family, the toast of the late President, Mr. W. Sankey, of Hammersmith, was given by Mr. E. H. Sankey, of the President's Club, who proposed and that of "The President for 1896" was proposed

& Marten, Stratford. Mr. Braby, in replying, said the very fact of the Association existing, and of these annual dinners being held, giving the merchants an opportunity of meeting in good fellowship, had done, and was still doing, a great deal to further the interests of the trade generally. The next toast was that of "The Builders' Merchants' Association and kindred Associations," coupled with the names of Messrs. Hughes & Wragge, which was proposed by Mr. Dobson (of Messrs. Godson & Dobson). Mr. Wragge (of Messrs. Eastwood & Co.) replied on behalf of himself and the kindred associations. Having referred to the Brickmasters' Association, and the newly-formed Lime Merchants' Association, he said that he was entirely in sympathy with the Builders' Merchants' Association, because it had been the means of his becoming acquainted with many merchants whom he only knew before by reputation. Mr. Hughes responded for the Builders' Merchants' Association. Following this toast was that of "The Visitors," proposed by Colonel Sankey, who said that he was certain the Builders' Merchants' Association would succeed if only these existed combined in honesty of purpose amongst the members. Mr. Joseph Cook (of Messrs. Freund & Co.) responded for the visitors.

DIARY, &c., FOR 1897.—Messrs. B. Finch & Co., Limited, sanitary engineers, of Lambeth, have sent us a copy of their "Architects and Surveyors' Diary for 1897," which is a useful and well-arranged work containing information likely to be of use to the profession.—The Patent Victoria Stone Company, Limited, Kingsland-road, have issued a folding blotting-pad, which will be found useful. It is issued in commemoration of the sixtieth year of the Queen's reign.—Messrs. P. S. Brownlie & Co., of the Crown Fireclay Works, Glasgow, have issued a date-indicating card which shows illustrations of their enamelled goods.

CAPITAL AND LABOUR.

PLUMBERS' STRIKE, LEIGH.—The members of the Leigh branch of the United Association of Operative Plumbers being met recently and decided there was no reply had been received from some of the employers to the men's request for an advance in wages from 8d. to 9d. per hour, to come out on strike. Accordingly a number of the men have come out, but one or two leading firms succeeded the advance.

LEGAL.

THE CLAIM AGAINST THE ST. PANCRAS GUARDIANS.

MR. EDWARD RIDDLEY, Q.C., the Official Referee on the 22nd inst. resumed the hearing of this claim brought by the trustees of the creditors of Mr. Wm. Brooks against the Guardians of St. Pancras, and which was continued *de die in diem*. It will be remembered that the plaintiffs, who are builders, merchants, sue as trustees of creditors of Mr. Wm. Brooks, of Folkestone, builder, against the Guardians of the Poor of St. Pancras and their architects, Messrs. A. & C. Harston, for a balance of 24,262l., or alternately 24,262l. alleged to be due on a contract for the completion of the St. Pancras Workhouse. The plaintiffs' case was that some years ago the Guardians resolved to reconstruct the workhouse in King's-road, and appointed Messrs. Harston as their architects. The contract for the work was first taken by Messrs. Kirk & Randall, of Woodwich, but was afterwards taken by a firm requested to be relieved of further work under the contract. Fresh tenders were invited for the unfinished work, and that of Mr. Wm. Brooks was accepted for 50,867l. The work was to occupy fifteen months from May 1892, but delays arose, and in November, 1894, the work was stopped. Messrs. Drew-Beak, Peaks, & Co., of Queen Victoria-street, who supplied the ironwork; Mr. H. Tolpitt, of Folkestone, who supplied the timber; and Mr. J. Brown, of Cannon-street, who supplied bricks sued on behalf of creditors for the balance alleged to be due to Mr. Brooks. The net cost of the work executed was stated to be on the first claim 65,479l., plus ten per cent. profit, 6,547l., making 72,026l., of which 47,864l. had been received under various architects' certificates, leaving a balance of 24,262l. In the alternative claim the net cost of the work executed was estimated at 65,479l. as before, but the 10 per cent. profit was reckoned on the contract price of 50,867l., which was some 24,262l. The plaintiffs alleged that Brooks was hindered from continuing the work by the action of Mr. George Poole, the clerk of the works, who interfered without sufficient cause, and condemned materials supplied wholesale. It was also further alleged that the architects were seldom on the works, and that the interference of the clerk of the works caused needlessly a net loss of Mr. Brooks of 2,525l. in addition to 2,537l. the value of the materials left by Messrs. Kirk & Randall, and not permitted to be used. The defendants generally denied the charges against the clerk of the work and alleged that Brooks had not carried out his undertaking to complete the work left unfinished by Kirk & Randall. The Guardians further relied

the Public Authorities Protection Act, 1893, as being a defence, inasmuch as the matters referred to in the action occurred more than six months before the action was brought. The defendants, Messrs. Harston, pleaded that they were not liable, and said that they had received no complaints from Poole with respect to the manner in which the works were being carried out by Mr. Brooks. Reports of the former proceedings have appeared in the issues of the *Builder* for November 21 and 28, December 5, and the 23rd inst.

Mr. Reginald Bray and Mr. A. A. Hudson appeared as counsel for the plaintiffs; Mr. English Harston and Mr. W. Moyses for the Guardians; and Mr. MacIntyre and Mr. R. W. Turner for Messrs. Harston.

Mr. Harrison, in resuming his speech on behalf of the defendants, the St. Pancras Guardians, said that if the learned Referee came to the conclusion that the old contract had gone, then he would have to ascertain upon what terms the Trustees continued to carry on the work. It was most material to determine that. He thought, however, when the learned Referee came to look at the facts and conduct of the parties, that all through, from beginning to end, he would come to the conclusion that they had acted on the supposition that the old contract was binding upon them. From first to last they had always asked for certificates. When the Trustees took over the contract they did not suggest for a moment that the contract was at an end. On the contrary, the whole contract went on on the basis that the Trustees should carry out and complete the work on the terms of the contract. The learned counsel referred to a letter written by Mr. Brown and addressed to Mr. Harston on April 25, 1893, in which he said, "The creditors are desirous of completing the contract if they can see their way to do so," as evidence of what was in the minds of the Trustees at that time. Mr. Brown, in his evidence, said that they had studied the bills of quantities, and went through the whole matter with a view of considering whether or not they should go on and complete the contract. The matter, however, did not rest there. It was provided in the old contract that 20 per cent. retention money should be kept back, and the Trustees approached the Guardians and suggested that they should vary that particular term of the contract so that they should be enabled to draw within a smaller margin, and the Guardians met that suggestion made on behalf of the creditors, and did make a concession to them, and to which they (the creditors) had assented in grateful terms.

That showed that all parties were acting on the terms contained in the contract, otherwise there would have been no object in their going to ask the Guardians to allow them to draw within the 20 per cent. margin. They therefore professed to be doing work on the terms contained in the contract. It did not, however, rest even there. Mr. Brown had in his evidence said that he regretted not having appealed to Mr. Harston more often, as he might have got the work done quicker. What was the meaning of that? The contract provided for an appeal to Mr. Harston, and Mr. Brown was actually saying now that he was extremely sorry that he did not act on the powers of the contract. The whole basis of the arrangement and transactions between the parties was on the footing of the contract.

Mr. Brown went on to affirm in the strongest possible way that the work was done under the terms of that written document. He had examined the quantities, and had wanted to see what monies were becoming due, and what the position was. There was a question as to what the value of the work to be executed was, and to see how much money was in the hands of the Guardians, and what was outstanding, and what would go to the creditors out of the retention money. Take, for instance, Mr. Drew-Bear's evidence. The columns were rejected under and pursuant to the terms and powers of the contract. Then, as late as 1894, when the question of the handrail arose, it was the strongest proof that all parties at that date were acting on the terms contained in the contract. What was done in 1894 about the handrail? That was work which was supposed to be condemned under the powers in the contract. Mr. Poole was said to have behaved very unreasonably and improperly in condemning that, and Mr. Harston was called on the scene, and afterwards the Guardians. Did anybody suggest that that meeting was beside the mark and that Harston and Poole had no power to reject? On the contrary, the Guardians went out of their way and refused to back up Mr. Harston, and said that they would not insist on the full terms of the contract being enforced. The learned counsel submitted that that again showed that the contract was binding upon the plaintiffs. The whole struggle between the parties had been in enforcing the provisions of the contract. The whole of the work, he submitted, had been done under the terms of the contract, and on those terms alone. If the learned Referee came to the conclusion that the terms on which the work was to be executed were to be found in the contract they therefore arrived at the same result as if the contract had not, in fact, been set aside. For those reasons it was quite clear that the plaintiffs could not sue on *quantum meruit* at all. Of course, if there was any damage caused owing to the delay in giving possession of the site that would have to be

made good to the contractor. It was, however, a monstrous thing to attempt to make the ratepayers in 1896 pay for the default of the ratepayers in 1892. He only mentioned that for the purpose of showing how important it was that a contractor should not acquiesce in decisions, and say nothing about them at the time to the persons who were responsible—if there was any responsibility—and then come down upon somebody who was a totally different person.

At the close of Mr. Harrison's speech, the learned Referee said that he should object to hear Mr. MacIntyre until he had heard the evidence for the Guardians.

Mr. MacIntyre protested against this course, and said that the most convenient course would be for him to put forward what his case was on behalf of the architects.

Mr. Harrison remarked that he was placed in a somewhat difficult position by that arrangement. He did not know what evidence to call for the Guardians. Mr. Harston was the man whom the learned Referee had been asking for over and over again, and both his learned friend (Mr. MacIntyre) and himself both wished to put him in the box at the earliest possible opportunity. Mr. Harston was himself desirous of going into the box to give an explanation on all the various matters which had arisen. He (the learned counsel) was not going to discuss whether he was his witness or his learned friend's.

Mr. MacIntyre: You will hear me on the point whether there is any case for me to answer.

The learned Referee: No, I think not; you must deal with this case in a reasonable manner. Your first point, Mr. Harrison, was that Mr. Harston was an arbitrator—and I think you dealt with that up to a certain point in a proper manner—and as arbitrator no action could be brought against him. I cannot accept any other speech before the evidence is called for by the Guardians.

Mr. MacIntyre: I desire to say that the plaintiffs have made out no case against Messrs. Harston.

The learned Referee: I must hear Mr. Harston before I decide that.

Mr. MacIntyre: But will not you hear me on that point? I submit that there is no case against Mr. Harston, and I ask for your ruling on that.

The learned Referee: I must hear the evidence first. I am not going to hear two speeches now, and I will not do it.

Mr. Harrison: I have not got possession of Mr. Harston's proof.

The learned Referee: Well, you have taken up the cudgels for Mr. Harston, and which you were obliged to do in order to protect the Guardians.

Mr. Harrison replied that he had submitted that the Guardians were not responsible for the acts of Mr. Harston.

Mr. MacIntyre remarked that the course proposed by the learned Referee was very inconvenient, as Mr. Harston would have to be called twice. He did not intend to call his evidence before addressing the learned Referee, and therefore Mr. Harston would have to be called again.

The learned Referee said that he should take the course he had suggested. He was perfectly regular in doing so, and that was what he was going to do. If the evidence was called for the Guardians he should know what to do.

After some further discussion, it was arranged between Mr. Harrison and Mr. MacIntyre to call Mr. Poole first.

George Poole, clerk of the works, was the first witness called for the Board of Guardians. He said that he had been fifty years engaged in the building trade, the last twenty of which he had acted as clerk of works under Messrs. Harston. He was now in the service of the St. Pancras Guardians. He had heard the evidence given by the witness Fearon in the case. He had not spoken disrespectfully of Messrs. Drew-Bear & Co., when he heard that they were going to take the ironwork. Drew-Bear & Co. knew what was required, and they could do good work if they liked. They had done a large job for Messrs. Harston before, and knew their style of work. It was not true that witness had said to Fearon that he always made a practice of condemning the first parcel of goods received, for by that plan he got people to send better. Witness was clerk of works during the whole time that Kirk & Randall held the contract. He believed that two of the men afterwards employed by Brooks were there then—Gosby and Robinson. On June 1 or 2, 1892, Mr. Millward, the clerk to the Guardians, sent for witness to his office, respecting the erection of temporary buildings. Witness was directed to show Brooks and Fearon the ground plan, and to explain the way to conduct the job. At that time Brooks's tender had not been accepted. This was done in a friendly way at the office of Messrs. Harston. There were always from the beginning more men put on the job than were required. The job was flooded with men—country workmen. There was much waste in wages. He never saw such a rough and ragged lot. Witness tried in every way to assist the contractors to get possession of parts of the building to be pulled down. He in no way interfered with the clearing of the site, but they could not get at the particular point they wanted to work at. It was absolutely false that he told Fearon not to get on the hoarding. It was a huge job, five acres of ground being en-

closed, and they did not want all the hoarding at that time. It was totally untrue that the first lot of Thames ballast was condemned on July 14, 1892. His diary for that date said, "A quantity of satisfactory Bricks came this day." On February 14, 1893, Brooks certainly came up about a complaint witness made, and it was untrue to say that these complaints began in July, 1892. There was not a new brick put into the foundations anywhere. Witness never objected to old bricks being put into the foundations, but he did complain of too many bats. The diary produced showed that. He did not say the bricks were too soft, and not cleaned sufficiently. He merely cautioned the contractor, as his diary, produced, showed. The diary showed that he did say that the bricks used in the foundations were not cleaned sufficiently; they had left the old mortar on them. He said to Fearon, "w-o-l-e bricks have to be used," but he did not mean to enforce it.

The learned Referee: What did you mean?—I mean, whole bricks, and not bats.

Mr. Moyses: And the contract says whole bricks.

The learned Referee said the clerk of the works had no business to say such a thing and not enforce it.

Mr. Moyses read the clause of the specification relating to the use of whole bricks under the heading of old material: "Such of the old bricks as are sound, whole, and approved by the architects may be cleared, stacked, and re-used."

The Witness: As long as it was anything in fairness I was pleased to let it go. But I did it by way of caution.

Examination continued: It was not true that in a 14-in. Flemish bond wall witness insisted on every bat being cut out of a whole new brick. He had heard Franks's evidence, and it was decidedly untrue. A man of witness's experience would not do such a thing. It would be the trick of a dunce and a donkey, too.

The learned Referee: Franks was a very good witness.

Examination continued: He insisted on having a man put into the trench whilst the foundations were being laid to level up each barrow load of concrete when it came in. He had it rammed, but not packed back—a different thing altogether. As to Fearon's complaint that he could not get the specification until August 1, 1892, he could only say that there was the specification in witness's office for them to see. They did not want the specification at all then. Witness was doing all the work for them at that time with regard to taking out quantities, and assisting them in every way and shape. He was doing that out of kindness. Witness was answerable for the specification, and they did not want it at the time.

Fearon did say before August 1 that he had not then got the specification. Witness procured it, and deposited it at Brooks's office soon afterwards. He (witness) had to vary the depth of the foundations in C Block, but no one could give the levels until they had excavated the old work. At that time they were on friendly terms, and witness helped them all he could. They got possession of part of the old block on August 22, but although the middle part of it was kept up, Brooks could have begun on the ends if he had liked. There was nothing to prevent Brooks getting on in his work. Until he heard Fearon giving evidence in court, he never heard of the delay. The contractor kept part of the block left up in use for his own stores, and so saved money. When the blue Staffordshire bricks came on the job witness did complain that they were too sandy and asked for them to be removed. He never condemned to him had no power of condemnation. The two blue bricks produced were not fit for facings. Witness also complained that the copings were sent in before the bricks that had to go underneath. He remembered sending away red facing bricks on August 30 as "very unsatisfactory."

His diary would show this. He called the general foreman's attention to this. Witness went, at his own expense, and in his own time, down to Slough to get a look at the bricks in Nash's fields, but he never spoke to a soul there. He afterwards wrote to Mr. Harston telling him of those bricks, and when Fearon came on the ground he said, "I think you will find some bricks on the ground down there that will about do." This report to Mr. Harston was openly set down in his diary. Witness had to cross off a good many facing bricks, but it was untrue that he crossed and slashed them off in a temper. He did not think he lost his temper once in the whole affair. He had a great deal to contend with. With regard to the ironwork, Mr. Harston passed a girder that witness objected to, and it was probable that witness might have said that would have to come out, because the thing was being done in defiance. Fearon told him that the girders were sent back, and witness remarked that such action was premature. The girders were brought back a day or two afterwards. They were badly made things. Mr. Harston considered them of inferior make but did not consider the quality of the iron objectionable. He did not see Mr. Drew-Bear.

Mr. Moyses said that no prudent man would allow himself to be seeing the manufacturers who continually came to justify their own goods. The

clerk of the works had only to deal with the contractors and the contractors' men.

Examination continued: Fearon told witness that Drew-Bear had said that one girder should not have been sent. The joist which was objected to as not of fair weight was very light—something like 15 percent.—and witness asked that they should not be built in until he had heard from Mr. Harston. (Letter produced from Mr. Harston to Brooks.) "Those (girders) which you have delivered have joists of different sections, mostly light, and the weight is made up by a heavier top plate." Fearon promised a proper weighted joist, and saw Drew-Bear. They put up the light girder after all in defiance. Witness was in a responsible position, and when people defied him it made him speak out a little bit strongly. Witness was sixty-six years of age. Amongst a few of the large contracts he had acted as clerk of the works for were the Natural History Museum and the Imbecile School at Darenth. That was a 100,000l. job. He had also been engaged at the Limehouse Town Hall (a 10,000l. job), the Chelsea Workhouse (a 6,000l. job), at Kensington on a 15,000l. job, the Bethnal Green school (45,000l. job). He had also for some time been in the service of the Great Northern Railway Company. With reference to the ordering of bricks at Slough, the witness said that he did not see Mr. Nash nor anybody belonging to him. Witness did not, as Fearon said, select a malm pavilion in there. He never saw such a thing. It was not true that the foreman Brown was made ill by his treatment of him. He considered Brown a good foreman, and had he been allowed to do it as he should have been, he would have done capital work, but he was not allowed to do so. He remembered Mr. A. E. Brown coming to see him. It was his suggestion that Mr. Brown should be called to see the bricks that he objected to. Mr. Brown came and Mr. Fearon said he could say that the bricks were not up to what they should have been. It was really kindness to Mr. Brooks in this way, that he explained to Mr. Fearon that he thought it better to see Mr. Brown upon the matter, and get him, if possible, to send a better class of bricks, so as to save any further friction. It was not true to say that he flew into a towering rage and refused to listen to any explanation. He did not fly into a temper and go and cross off all the brickwork. It was impossible; he could not do it. He allowed the contractor every latitude, and gave him every assistance so that he should get new bricks. He had never rejected any bricks as good as the sample produced by Smeed, Dean, & Co. Fearon had carted from time to time bricks off the grounds which the witness would have allowed to be used. Large quantities of these old bricks were carted away, and witness drew Mr. Harston's attention to it. The bricks that were being carted away had never been rejected or ever complained about; they were too good. He made this complaint to Mr. Harston in the presence of Fearon. Witness's diary showed that he complained of the unsatisfactory way the concrete was being mixed with too much broken bricks and too little sandy ballast and not being half turned over or rammed. Witness could not condemn any material.

To reply to the learned Referee he said that he had not the slightest doubt that he did say to Mr. Brown, junior, in reference to the red brick work, that he would take good care that the bricks were cut out and a good many more besides.

The learned Referee: What do you mean by saying such a thing and then telling us that it means nothing? That is what troubles me in this case. He goes about making those random statements, and then he says, "I will have some of those bricks cut out."

Mr. Moyses: Those that he had marked.
The Witness: Those I had marked.
The learned Referee: Then you say that is not condemnation?
Mr. Moyses: No.
The learned Referee: You tell the builder so. Is he to suppose that the clerk of the works does not mean what he says when he makes these random statements? He had to act upon them.

Examination continued: He considered that the bricks he had marked were not good enough. He marked the bricks because he objected to them. If Fearon had said that he should leave them in until Mr. Harston came, there was nothing to prevent him doing so. To have marked the bricks in the way the plaintiffs' witnesses had suggested he would have wanted about half a dozen people walking after him with pencils. With reference to the Thames sand the witness never heard where it came from. He never rejected any. He could not help sand rejected there was not a barrow load to his knowledge sent back. Thames sand now was pretty well all coal rubbish.

The learned Referee: There was not any coal in the samples produced, nor have I heard it suggested. Examination continued: His diary showed that on October 12, 1892, he complained to the general foreman as to the sand being very salty, and showed him by test that it was so.

The learned Referee: I thought you said that you never rejected any sand at all about five minutes ago.
Mr. Moyses: That is not rejecting it. The clerk of the works has no power to reject. His power is to condemn.

The learned Referee: It is a pity he did not do that at the time.

Mr. Moyses: Surely he has a right to tell them not to use it.

The learned Referee: I do not know.

Mr. Moyses: That is clearly so. It is in the contract.

Examination continued: The entry in his diary for the next day showed that in consequence of the using of the salty sand being continued he was compelled to give the foreman a written notice to stop the further use until Mr. Harston's judgment could be taken on the matter. Fearon promised to order sand from a firm at Ware. Witness did tell them that they might use Mossop sand left on the job by Kirk & Randall. With reference to the columns, the witness said that he had never told Fearon that he wanted an engine-fitted joint. He wanted a fair honest bit of work done, which he expected to be done, and which he should expect to be done now. He did not alter his position at all. Witness believed he had told Gosby at the end of 1892 that, though the architects had passed those girders, he never would. He should stick by that now. It was not true that certain coke breeze lints condemned in June, 1893, had been put to the wrong height by drawings given either by him or Mr. Harston. There were no drawings, but there were general instructions. Fearon appealed to Mr. Harston, who supported witness. The lints had been up some months. Any ordinary person would have measured the doorways before putting up the brickwork. Witness rejected six columns on the ground that the brackets were out of plumb. As his diary would show, the foreman was impatient about it. The witness was taken great deal to heart by his diary as to the rejection of the columns and girders, and as to the interviews Mr. Drew-Bear and Fearon had with Mr. Harston on the point.

Examined as to the question which arose over the rods, the witness stated that he had had a lot to do with Messrs. Drew-Bear & Co., and that he did not put himself to the trouble he should otherwise have done, knowing they were honourable people, as he thought now. The last time he was in a law court was for Mr. Drew-Bear as his witness. He (witness) admitted that he objected to the holes in certain bars, to receive the rods in plaster-work, being too large, and Messrs. Drew-Bear had to have a special punch made to meet his requirements.

The learned Referee: Mr. Drew-Bear says the same thing.

Examination continued: Witness never insisted on the holes being so small that the bars which had to go through the holes had to be hammered in. The proper difference between the diameter of the rod and of the hole was one-sixteenth of an inch in his opinion. He insisted on the rods being in one length. There was no difficulty about that. Kirk & Randall got the same thing, and they put them all right. He had never approved of any plans submitted to him by the ironfounders. As to the iron handrail in Block A, witness denied that he ever saw it before it was put up. Had he done so, he would have objected to it at once. When he saw it he pointed out that the section was all wrong. It was not an oval section. It was untrue to say that they had been six weeks at work upon it before he examined it. It was an absolute falsehood altogether. As to the drain traps, the witness stated that he did insist on Amphill's, or similar, being used, as the specification demanded. He could not alter the specification. As to the landing stone supplied by the witness Armitage, the witness said that he objected to laminated stone on the ground that all laminated stone would flake. All except one piece of the laminated stone was taken away, and that was a very good example of how laminated stone would wear. That piece was the top step of the hall of the B Block. They deceived witness in putting in this piece. He never said anything to anybody about having the slates drilled. He had only condemned four chimney-pots. When he saw them they were on the ground, with the exception of one. That one was on Block, and the reason he objected to it was because it was faulty, and it was taken down. He had only objected to one chimney-pot after it was fixed. He did not remember a sample of glazed bricks being sent from Cliffs. He had never told Fearon that he must go to Ruabon, although he had told him before that they had had bricks from Ruabon. It was not true that the glazed bricks were constantly being rejected on account of colour. The galvanised tanks which had been spoken of came on the job pretty nearly all together. It was during a dense fog, on January 4, 1893. He saw them on the works before they were hoisted into position. The tanks were so badly unloaded and clambered with sand and other materials that he could not inspect them. He meant that he could not get at them to see them at all. He could see the outside but not the inside. He made objection to one which was being hoisted at the time. The first chance he had had of examining it was when they were hoisting it.

The learned Referee said that the point made was that these tanks were there for months.

Mr. Moyses said that before the tank in question was being hoisted Poole had had no chance of looking inside it.

The learned Referee: There is no dispute about this. They had been there for months.

Mr. Moyses: Yes, that may be so, but we had no opportunity of inspecting them.

The learned Referee: What does it matter whether the clerk of the works had had an opportunity to inspect them or not. There they had been for months. I suppose they had got rusty in the open air, had they not?

Mr. Moyses: Yes, but the specification provides for the protection of all materials by temporary sheds.

Examination continued: If the tanks had been properly galvanised in the first instance and properly taken care of the rust would not have occurred.

The learned Referee (to the witness): Do you say they came from the work rusty?—No, I did not see them then.

Mr. Moyses: We never have said that.

Examination continued: It was not true that he caused one of the tanks to be filled with water, and then turned over and emptied, and that then he condemned it on the ground of its being strained by its being emptied. He had advised its being filled as it was the best way to test it.

He remembered the boarding to the roof of the coach-house under the slates. Some boards were put up which had to come down again. They had used some boards which had been used before for boarding. The boards were at a place where they were exposed to view. They put up some which were all right, and then they added some which were objected to. It was not right to say that everything had to come down. Only that used for boarding was objected to. There might have been three or four squares. In November, 1892, he remembered a lot of sashes and frames coming which had been used.

Mr. Moyses: Is it true that when those sashes and frames were unloaded you immediately got out a blue pencil and began slashing at them, and said that you would not have those things used?—No.

Did you ever make use of any expression of that sort?—I did not use that word.

Examination continued: Gosby was rather insulting, and he ordered his men to put the things in the stores without giving witness any opportunity of properly seeing them. He marked eleven, so far as his memory went. He could not mark any more as Gosby ordered the men to take them in. There was necessarily delay and interference to the contractor by the sub-contractors, but he did not think there was any undue delay. There was a little hindrance with the machinery for the laundry. It was not true that there was no provision for the heating stoves going through the roof.

Is it true that you were all through the work of this contract constantly interfering with the workmen?—No; I was always very friendly with the workmen.

Is it true that instead of going to the foreman or manager you went to the workmen themselves and interfered with them?—No.

Examination continued: He had never pushed a piece of brickwork down—at least, to his knowledge.

It is said that you pulled the bricks up, and threw them down. Is that true?—No.

Did a bricklayer, when you were doing that, say to you, "Leave it alone, Mr. Poole. I am paid for putting it up. If you want it altered I will speak to the foreman?"—No; I know nothing about it.

Examination continued: He had never shifted a man from point to point on the different buildings.

Is it said that you hunted a man down for three days, and that his position on the works was so intolerable that he went for his money and left?—I am not aware of it.

Mr. Bray said that he did not suggest that Mr. Poole was very fleet of foot.

The learned Referee said that one had a difficulty in keeping the ludicrous side of the case out of his mind. He himself felt that the case was exceedingly ludicrous. When they found a man saying first one thing and then another, one did not know whether to believe him or not. It was very difficult to say what weight should be given to a man who gave evidence like the witness.

Cross-examined by Mr. Bray: Do I understand you that you cannot trust your memory much except where you have got the entries in your diary?—I prefer having the diary before me. My memory is not so good as it used to be. I consider this (the diary) is my evidence.

As I understand you, your diary was made up day by day?—Yes; I cannot say every day. I kept notes and then made these entries.

You kept notes from day to day and then wrote it (the diary) up at the end of the week?—No; everything was written up every two days.

Is this entry in the diary "I came to this office about 11 a.m. on Saturday last. I had then finished writing my last week's report." The witness was understood to say that that was correct.

The learned Referee pointed out to the witness that he was contradicting himself.—The witness remarked that everything was faithfully written.

Cross-examination continued: It was part of Mr. Harston's system that he (witness) should keep a diary. He sent his diary to Mr. Harston every week. The object was to show exactly what took

place. He kept very few copies of letters he wrote, with the exception of those he sent to Mr. Brooks. He did not keep copies of his letters to Mr. Harston. So far from obstructing Mr. Brooks and Mr. Fearon in the work, he did all he could to assist them.

Now as regards the materials. Did you do all you could to pass all materials reasonably good?—I did conscientiously.

Can you tell us how it was that Mr. Brooks made that accusation against you in February which you record in your diary?—I cannot account for it at all.

You cannot account for Brown telling us that his life was a misery?—No, I cannot.

That you were a very nice gentleman outside the work; but inside his life was a misery?—No, I cannot.

Cross-examination continued: There was a good deal of good material which was not looked after properly—knocked about and chipped. The materials on the whole, were about the average of what contractors supplied. There was always some difficulty with materials—always sure to be. The number of complaints as to the materials was nothing unusual to him—they were about the fair average.

I think you will admit that your diary is full of complaints?—Well, no, it is not full of complaints—only the ordinary complaints.

The learned Referee: There are not many days without them. Scarcely an entry has been read without complaints.

Mr. Bray: Now, you have told us that Messrs. Drew-Bear & Co. are most respectable people and a well-known firm?—Yes.

What sort of material did they supply?—They supplied about the average of materials; some good and some not so good.

About the same as merchants usually do?—Well, it would be an awkward job to say that. I cannot say that exactly.

Cross-examination continued: The timber merchants supplying the timber were all good people, but the timber was not good. He supposed that the reason the people sent such a lot of bad material on the job was that they were bought for cheapness.

Mr. Bray: Give us an instance. Where have they bought too cheap?—What was the price?

You say that you know they were bought too cheap?—I said probably.

Then you do not know anything about it?—Yes, that is the best way.

The learned Referee: Just explain what you mean. You do not seem to know anything about the prices. What do you mean?—I said probably. I do not know what he gave for them, I know what I should give.

The learned Referee: Of course, if it were true they scamped the job in that way, you would make out a good case against them?—I do not know what prices they gave for the materials.

Cross-examination continued: He should say that Fearon wished or was party to scamping the work.

Mr. Bray: Now you say that he had too many men on the job. That does not look like scamping, does it?—No.

You and the Guardians were continually complaining of the slow progress, were you not?—Not continually.

Very often?—From time to time. I cannot say the number of times.

Was not that a reason why Fearon should put as many men on as possible?—The men wanted more looking after.

Have you anything to say against the foremen?—No, not particularly.

You have said that they were a rough lot of men?—I only meant the pullers down—the ones that came on first.

Cross-examined as to the girders supplied by Messrs. Drew-Bear & Co., one of which was objected to by witness as being 2 lbs. per foot too light and the other as too heavy, the witness said that he did not know that any margin was allowed as to weight in girders. Of the two girders weighed, each 27 ft. 2 in. long, one was 19 lbs. under, and the other 29 lbs. over weight in the aggregate. Mr. Harston did write saying that the deficiency in that one girder was trifling and not worth notice. Five days afterwards Mr. Harston rejected the girders. He rejected six of the cast iron columns because the brackets were wrong. There were two defects, the first being that the bracket was out of the upright, and secondly, that the bracket was not at right angles to the cap. Some of them were as much as an inch out of the upright. He did not say that their being out of the upright diminished the strength. It would affect the look of them, however.

At first Fearon had no one on the works who could take the levels, and on his recommendation Fearon employed from July, 1892, witness's son Alfred, a surveyor, who took the levels for five or six weeks. Then Mr. Harston wanted Alfred Poole for other work, and Fearon engaged another of witness's sons for the work. Alfred Poole was not more competent than witness was to take levels. He had never intended to say that they had never had a competent person to take the levels. He would not swear that he never marked more than one brick at a time. It was absolutely untrue, as George Brown had sworn, that he (witness) got into a temper and

marked the bricks without noticing whether they were good or not. He only once marked the bricks with a carbon; most of them were done with a pencil, and the scratch would remain even though Mr. Harston overruled witness. He had no power of condemnation.

Mr. Bray referred the witness to an entry in his diary in which he recorded that he had told Gosby that all the brick he had marked must be cut out. The witness replied that Mr. Harston had just been on the works and inspected the bricks which had been marked nine months before.

Cross-examination continued: He marked eleven of the sashes and frames with lead pencil, and the men planed the marks out so that witness could not trace them; that was a little bit of deception that he was subject to all along. There had been no material friction with Kirk & Randall—perhaps a little more than usual. Witness could not get on with their foreman. The sample of picked stock brick produced in court and referred to previously was cut out of the workhouse in witness's presence as a specimen of very common work, very poor facings, some being of very poor colour, and not equal to the needs of modern workhouses. The specimen was made from bricks from Nash's, of Slough. A great part of the work done by Fearon was very much better than that. He and Mr. Harston were present when this was selected one day last week, and they also selected the defective pieces of timber also produced, after examining all the roofs. As a whole the brick-work at St. Pancras was a very fair job. There was no difference between Brooks' and Kirk & Randall's work.

The witness was next cross-examined as to the difficulty in the supply of bricks, and was confronted with an entry in his diary of October 15, 1892. "The difficulty in getting a satisfactory facing brick may partly arise from Fearon omitting to send a competent person to explain the quality of brick required," and was asked to explain it having regard to the fact that he knew that Fearon had been down to Eastwood's himself. The witness said that he did not consider Fearon to be a competent judge at that time. He (Fearon) had learnt a great deal since then. He agreed with the witness called for by the plaintiffs that if a hard stock brick was wanted, it could not possess a good colour; the softer brick was the most expensive. This only referred to the Essex bricks.

The witness was cross-examined as to the complaints concerning the sand and the rods through the floors. He said that the latter were specified to be either in one length, or, if in two lengths, to lap in the middle, with an extra hole. He would not admit that when Brooks had purchased a stock of short rods and proposed to lap them, he compelled him to use long rods—he advised him to use long ones for the contractors' own benefit. Fearon did take out the short lapped ones and put in long lengths instead in "C" block, at witness's request, as a letter (produced) from witness to Fearon in November, 1892, showed.

In answer to the learned Referee, the witness said that he asked Fearon to do this, but he expected it to be complied with.

Cross-examination continued: At that time the walls were up to 5 ft. above the second floor level, and those rods were in the first floor, and certainly there was great difficulty in getting the long rods in. The coke breeze lintels were put in according to his directions, and some months afterwards he insisted on lowering them 8 in. He did not know that two were not lowered, and were still to be seen.

Cross-examined as to the flooring, the witness said that Mr. Young and Mr. Corderoy, the surveyors, inspected the materials left on the ground by Kirk & Randall, and decided what were to be taken over by the Guardians, and those materials were afterwards purchased by Mr. Brooks. Among those materials was flooring, which was stacked. When Fearon tried to lay it, however, he (witness) objected to it. It was a pure invention to say that he (witness) declared he condemned the stuff when Kirk & Randall brought it on the ground, and he should condemn it again. He had certainly said that the flooring was bought too cheaply. He objected to the old boarding being planed and used for the coach-house roof, although this was specified to be rough boarded and lime-washed. He did not consider that boarding was suitable or clean enough.

Cross-examined as to the York steps, the witness said that he was greatly deceived. One piece of stone was rejected by Mr. Harston, but it was afterwards brought back, faked up by the contractor, and used in the building.

The witness pressed, could not point to any entry in his diary as to the matter, but he remembered calling Mr. Harston's attention to it.

He went with Mr. Armitage to Messrs. Harston's office when the stone was tested by hammering it, but he could not recollect the details, nor was it entered in his diary. He had had great experience in York stone, and knew that plenty of block and unlaminated stone was to be got.

Cross-examination continued: In September, 1892, he told Mr. Thornby, one of the Guardians, that the works were going on fairly well, but that there was some difficulty in getting satisfactory facing bricks owing to the spring of the year being unfavourable to the making and stacking. If it appeared in his diary that on October, 1892, the

contractors were getting on fairly well, it was correct. At that time he had every reason to believe that the contractors were anxious to push on with the work. He could not point to any other entry in his diary excepting that in February, 1893, stating that there were too many men on the works. Witness considered it would assist the contractor if he could get possession of the old A block. He was not aware that on April 20, 1893, complaints were made against him that he had condemned work which had been passed by the architects. Witness was referred to his diary when he stated that he had made a mistake, and did know of it. On January 23, 1894, he was aware that he was accused of obstructing Mr. Fearon in getting on with the work—at least a Mr. Channell told him so.

Re-examined by Mr. English Harrison: It was not a fact that he had obstructed Mr. Fearon. He had simply done his duty in cautioning Brooks from time to time, and he did that when he thought it was necessary. Certain of the Guardians were on the works the days Mr. Bray had put to him in cross-examination. It was his duty to observe the materials supplied. He would not have accepted a suggestion of any particular Guardian as to the way he was to perform his duty. If a Guardian had mentioned it, he (witness) should have wanted to know the reason why. He was on good terms with Mr. Fearon at the beginning of the work. Brooks had asked him to go and pay him a visit at Christmas, 1892. Fearon had visited at his house once, and once only. He thought that Benham (who supplied the laundry fittings) had delayed the contractors a little. With regard to the stone, the witness explained that he had said that if all the stone was as good as that he had hammered he would not object. He was clear that he had not condemned the flooring while it was stored there by Kirk & Randall. The lintels were made according to his drawing, and he wished them altered because he wanted them lower—they were too high, as there was a space between the door frame and the lintel. The whole thing did not fit, and he wanted it lower. Mr. Shallo, recalled, said that eight columns were rejected because the brackets were a little askew, and were recast. (The invoice was produced.)

Mr. Christopher Harston (examined by Mr. English Harrison) said that he was one of the defendants, and an architect and surveyor carrying on business at 15, Leadenhallstreet, in partnership with Mr. Arthur Harston, his brother. He had been in practice about thirty years. The witness mentioned several works upon which he and his brother had been engaged as architects. Among them being the Poplar and Stepney Sick Asylum (50,000l.), Darent Pauper Imbecile School and Asylum (150,000l.), Kensington Union Casual Wards Workhouse additions (35,000l.), Western Fever Hospital, Fulham (150,000l.), Paddington Union Infirmary (50,000l.), Chelsea Workhouse and Infirmary (70,000l.), Gore Farm Convalescent Hospital (22,000l.), St. Pancras Casual Wards (11,000l.), Kensington Casual Wards (5,000l.), East Tottenham Fever Hospital (54,000l.), Jewish Workhouse (56,000l.), and several other camp and other temporary hospitals. His firm had in hand at the present time buildings for the Metropolitan Asylums Board the contracts of which would amount in the aggregate to about 500,000l.

Examined as to the roadway, the witness said there was no truth in the statement of Mr. Fearon that he (Fearon) had complained to him about the entrance at the north end of the works. Fearon had neither consulted him on the matter or complained to him about it.

Fearon made no complaint as to the boarding, nor did witness hear of any difficulty in the matter, except that Brooks left a wall up (in lieu of erecting boarding on its site) which he (witness) considered dangerous, and wrote to him accordingly. He offered no obstacle to the contractor getting possession of portions of the site, and when appealed to on the subject, dealt with the matter immediately. He considered that Fearon could have got on with the work in the laundry block earlier, but he was somewhat impeded.

In answer to the learned Referee, the witness said that he did not point out to Fearon how he could have expedited this section, as Fearon never took any notice of his orders.

Mr. English Harrison said that he supposed Poole would have made any such suggestions.

The learned Referee: Put you, on behalf of the Guardians, have repudiated Poole, and have said that the Board looked to the architect to settle disputes with the builder.

Examination continued: He (witness) always made a point, in coming on the work, to look at the sand, as it was an important item. He had found the sand salty on one or two occasions, and, on another, had said that too fine a quality was being used. He objected to the salty sand, but did not order it to be removed from the site; he allowed it to be used between the damp course levels. As to the fine sand, he permitted it to be used with coarser stuff, as it could do no harm if used slowly with better sand. At a later date witness observed old material—brick rubbish and old lime—concealed under the sand, and spoke to the foreman about it. He declared that he knew nothing about it. He (witness) wrote a letter (which was produced), say-

COMPETITION, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITION.

Table with 4 columns: Nature of Work, By whom Advertised, Preliminary, Designs to be delivered. Includes 'New Town Hall' by Enniskillen Corp.

CONTRACTS—Continued.

Table with 4 columns: Nature of Work or Materials, By whom Required, Forms of Tender, to be supplied by, Tenders to be delivered. Includes 'Drainage Works', 'Works and Materials', 'Isolation Hospital', etc.

CONTRACTS.

Table with 4 columns: Nature of Work or Materials, By whom Required, Forms of Tender, to be supplied by, Tenders to be delivered. Includes 'Sewering Chapel-Ft. Blakenhall', 'Kerbing, Flagging, & Hall Gate', etc.

PUBLIC APPOINTMENTS.

Table with 4 columns: Nature of Appointment, By whom Advertised, Salary, Applications to be in. Includes 'Starkeeper', 'Engineer Fitter', etc.

Those marked with an asterisk (*) are advertised in this Number. Competition, p. iv. Contracts, pp. iv, vi, viii, & xix. Public Appointments, p. xvi.

ing that he regarded it as a species of fraud, and, if it occurred again, he should take strong measures. Witness did not know the foreman's name.

Mr. Hudson objected to this evidence as being unexpected.

The learned Referee said that he saw no importance in the evidence if it represented an isolated instance; if it were an habitual practice it was proof that the work was scamped.

Examination continued. Sand might look all right, but still might be impregnated with salt, a fact which must be tried by tasting. Below-bridge sand varied much from mud to gravel in which bits of coal had fallen, and therefore he (witness) specified above-bridge or pit sand. The process of washing below-bridge sand had improved lately, but witness did not think it removed all the salt. He rejected two out of eight basement columns on September 8, 1892. All were rough and poor castings, and two exceptionally bad. In October a foreman said that the contractor had himself sent back the columns.

The witness said that he looked at the columns said to have been rejected by the contractor, and found that the capitals of the brackets were askew and the columns were rough. On October 21 he (witness) rejected other columns for similar defects. Drew Bear saw witness about the columns, but witness would not recognise him, as he was only a sub-contractor; but he added that if the contractor wished for his decision he would give it. He (witness) ridiculed the suggestion that the brackets should be screwed on, for they were needed to add strength, and they might as well be glued on as merely screwed. It was material that the brackets should have been cast with the capital. He (witness) would have been only too delighted if he could have passed the columns on the site, and he decided the matter to the best of his judgment and in the discharge of his duty. On November 24 he inspected two "B 2" girders and found them with unequal joists. Witness received a communication from Poole as to the weight of the girders and finding them short weight. The top plates did not increase the strength so much as if the weight had been at the bottom. The girders in question had to support three stories and the weight of the roof. One of the girders was 3 per cent. short, but the margin the witness allowed was about 2 per cent. everywhere. Witness wrote to Poole that the deficiency was trifling, and did not matter. Witness endeavoured, therefore, to exercise his authority in a conscientious manner. He had never told Fearon, as that witness had said,

that he should always uphold the clerk of the works.

He never had any complaints or appeals from the contractor as to the extra work alleged to have been done to the rods. With reference to the York landings, witness said that he objected to one piece as beddy, or laminated, and said that some other position must be found for it. Afterwards he rejected three more, and also one, a long step—the top step in the hall, the principal place in the whole building. Afterwards Poole objected to a York landing, but upon examining a sample with Armitage and Poole he (witness) passed it. York stone could be got free from lamination.

In answer to the learned Referee, the witness stated he found that laminated stone decayed when used inside a building. He objected to all laminated stone, and in the present case had specified that it should not be introduced. Armitage had already supplied other landings with slight laminations.

The learned Referee reminded the witness that he had specified distinctly there were to be no laminations, and yet he now discriminated.

The witness was then examined as to the bricks, and said that he had had no communication with Nash, of Slough, about the job in question, but he had not used his bricks for twenty years. Fearon told him that he could only get, with difficulty, satisfactory bricks, and witness replied by giving the names of Nash, Wright, and Ogle as makers of bricks of the sort he wanted. Nash sent some bricks which were not good enough. Witness always described the brick he required in writing a specification, because the names of bricks differed in various yards. It was not impossible to comply with his specification. The red bricks were more chipped than those of Brown's usually were, but otherwise they were of good quality.

Examined as to the timber, the witness said that it was generally inferior in character. He had always endeavoured to exercise his authority in a conscientious manner.

The hearing of the case was then further adjourned till March 1.

MEETINGS.

FRIDAY, JANUARY 29.

Institution of Civil Engineers.—Students' Meeting.—Mr. S. Henry Barradough on "An Experimental Investigation of the Efficiency of a Pelton Water-wheel." 8 p.m.

SATURDAY, JANUARY 30.

London and Provincial Builders' Foremen's Association. (Memorial Hall, Farringdon-road, E.C.)—January Quarterly Meeting. 7.30 p.m. St. Paul's Ecclesiological Society.—Annual Meeting, to be held at the Chapter House. 2.30 p.m.

SUNDAY, JANUARY 31.

Sunday Lecture Society.—Mr. C. W. Kimmins, M.A., D.Sc., on "Ancient and Modern Views of Fire," with experiments and illustrations. 4 p.m.

MONDAY, FEBRUARY 1.

Royal Institute of British Architects.—The seventh General Meeting (Ordinary). (1) To announce the name of the person the Council propose to submit to Her Majesty the Royal College of Surgeons in connection with the Royal College of Surgeons, 1897; (2) To read (under the management of the Art Standing Committee) a paper on "The Sculptor's Architecture of the Renaissance," by Mr. Alfred Gilbert, R.A. 8 p.m.

Royal Academy of Arts.—Third Lecture on "The Advancement of Architecture, Chiefly in Relation to Gothic Architecture," by Professor Aldrich. 8 p.m. Society of Arts (Lecture).—Mr. William Burton, F.C.S., on "Material and Design in Pottery," III. 8 p.m.

Society of Engineers.—(1) The President for the past year, Mr. Samuel Herbert Cox, will present the Premiums awarded for Papers read during the year; (2) The President for the year 1897, Mr. George Maxwell Lawford, will deliver his "Inaugural Address." 7.30 p.m.

Liverpool Architectural Society.—Mr. F. I. Thomas on "Art Out of Doors." Illustrated by sixty illuminated views. 6 p.m.

TUESDAY, FEBRUARY 2.

Institution of Civil Engineers.—(1) Paper to be further discussed: "The Diversion of the Periyar," by Colonel J. Pennington, C.S.I., R.E. (2) Time permitting Mr. H. F. Donaldson on "Cold Storage at the London and India Docks." 8 p.m.

Institution of Junior Engineers (Westminster Palace Hotel)—First Lecture of Course of Six on "Dynamo Design, Construction, and Working," by Mr. F. A. Nixon. 8 p.m. Leeds and Yorkshire Architectural Society.—Mr. W. H. Bidlake, M.A., on "Two Methods of Architectural Practice and Design." 7.30 p.m.

WEDNESDAY, FEBRUARY 3.

Royal Archaeological Institute.—Mr. George E. Fox, Hon. M.A. Oxon, F.S.A., on "Uriconium." Part II. 4 p.m.

St. Paul's Ecclesiological Society.—Mr. J. T. Micklethwait, F.S.A., on "The Plans of English Churches from the Sixth Century to the middle of the Eleventh." 7.30 p.m.

Society of Arts.—8 p.m. Northern Architectural Association.—Mr. H. Barnes on "Architectural Epidemics." 7.30 p.m.

LONDON.—For the erection of a fire-brigade station at North Woodwich, for the London County Council:—
G. Munday & Sons.....£3,838

LONDON.—For the erection of school buildings, Whalebone lane, Stratford, E., for the West Ham School Board, Mr. Wm. Jacques, architect, 2, Fen-cour, E.C. Quantities by Messrs. P. L. Curtis & Sons:—
Chesnum & Son.....£3,053
Gregat & Son.....24,692
Madison.....18,550

LONDON.—For erection of new mineral water factory, for Messrs. Hill & Chapman, Vauxhall, Camberwell, Mr. F. A. Fowell, architect:—
Peacock Bros.....£6,497
I. Parsons.....5,320
W. Smith.....5,682
H. Berman & Sons.....5,895

LONDON.—For alterations to the "Napier Tavern," Holborn, for Mr. Dickey, proprietor, Mr. C. Reeves, architect, 3, South-square, Gray's Inn:—
T. Cooper.....£277
Curstons & Co.....275
Telk & Co.....247
Powdis.....220
J. P. Groome.....215

LONDON.—For alterations to be accepted for the erection of a dwelling house, Argyle-street, Mr. Wm. Barker, architect, 25, Orchard-street, London:—
John Gaughier & Co., Chamberlain-street, London:—£230

MANCHESTER.—For the rebuilding of the Tivoli Theatre of Varieties (late Folly), Peter-street, Manchester, for the Tivoli, Manchester Limited, Mr. Harry Percival, architect, 29, Burying-house-street, Astleph, London, W.C. Quantities by Mr. W. H. Brayshaw, Rugby-chambers, Bedford-row, W.C.:—
Tomkinson.....£15,000
Wilson & Toff.....14,700
Brown.....14,500
Riddock, Booth & Co.....14,150
Blair.....13,500
Lambie.....12,127

PERTH.—For the construction of an outfall sewer Craigie, for the Police Commissioners, Mr. Robert McKillop, Burgh Surveyor, Quantities by surveyor:—
Pedro Irvine.....£2,209 13 6
John Ker Paton.....2,418 5 10
Michael Kerrigan.....2,268 17 7
Melloy.....2,235 13 4
W. H. Blackburn.....2,138 9 7
G. Mackay & Son.....2,133 9 7

PETERBOROUGH.—For the erection of two houses, Broadway, Mr. Wm. Boyer, architect, 18A, Congate, Peterborough:—
Collins & Barber.....£1,150
J. Wenlock.....1,254
D. Gray.....1,429

PONTYPOOL.—For new shops and offices for the Pontypool Urban District Council, Pontypool, Mon. Mr. R. Williams, architect, Pontypool and London:—
C. H. Hambleton.....£1,624
John Linton.....808
Wm. Bowers.....1,395
G. H. Bailey & Sons.....1,250

PORTSMOUTH.—For electric lighting and engineering work at Infirmary buildings, Milford, for the Forsea Island Union Guardians, Mr. C. W. Breck, architect, Elm Grove-chambers, Southsea:—
Mallett & Co.....£261
T. Scott Anderson.....520
H. F. Joel & Co.....514
Smeaton & Fyfe.....453
Wenham & Waters.....427
Walker & Son.....397
Pearson & Co.....389

PORT TALBOT (Wales).—For the erection of two shops, dwelling-house, stables, &c., Station-street, for Mr. Thos. Nicholas, Messrs. Thomas & James, architects, Port Talbot:—
T. Jenkins.....£2,591
John Davies.....2,385
G. F. Gaen.....2,275

SALT COATS (N.B.).—For re-erecting Quay-street, for the Commissioners of Police, Mr. Jas. Miller, Surveyor,burgh-buildings Saltcoats, Quantities by Mr. James Miller, jun., Burgh surveyor:—
A. & J. Fall.....£201
Wm. Wilson.....200
C. M. Andrew.....255

SLOUGH.—Accepted for painting, decorating, &c., at "The Dolphin," Slough, for Messrs. C. Ashby & Co. Mr. John A. Baker, surveyor:—
J. Deverill.....£170

STOCKPORT.—For the execution of private street works, for the Corporation, Mr. J. Atkinson, C.E., Borough Surveyor, St. Peter's-gate, Stockport:—
Warrington & Pow.....£5,687
P. D. T. D. Hayes.....4,696

SUTTON (Surrey).—For sewerage, &c., Weston-road, for the Urban District Council, Mr. C. Chambers Smith, Surveyor, Public Hall, Sutton, Quantities by Surveyor:—
H. Chaffield.....£1,414
W. Jenner.....368

SWINTON (Lancs.).—For paving, flagging, &c., Market-street, Pendlebury, for the U.D. Urban District Council:—
Robert E. Jones, 142, Liverpool-road, Patricott £368 15 13
James Boardman, 379, Bolton-road, Pendlebury.....£28 15 10

WANSTEAD (Essex).—For the erection of detached villa residence, for Mr. D. R. Percy Allan, Messrs. Baker & Turill, architects, Bingham House, Avonby-street, Strand, W.C.:—
T. Upham & Sons.....£2,445
W. Mundy.....2,259

WESTON-SUPER-MARE.—For paving, kerbing, &c., Ashcombe Park-road, for the Urban District Council, Mr. Hugh Nettleton, Surveyor, Town Hall, Weston-super-Mare:—
G. W. Dyer.....£293
J. Solway.....600

WIMBLEDON.—For additions and alterations to mortuary at cemetery, for the Urban District Council, Mr. C. H. Cooper, engineer, E. P. Bulled & Co.....£270
Hillidge & Sons.....255

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Autobiography and Memoirs of an Art Critic.



THE various works of Philip Gilbert Hamerton cover so much ground in regard to the criticism of Art and Life, and combine so many fine qualities both of literary genius and of artistic insight and

knowledge, that one would be prepared to find the man himself as interesting a study as his books. Indeed, the volume* which is occupied half with his autobiography, brought down to the time of his marriage, and half with the biography of the subsequent period of his life supplied by his widow, is fully as interesting as any book he ever wrote, and the effect of it is to give us the impression of a character more individual and remarkable than one had fully realised from his writings.

A good deal of the autobiography is occupied with subjects of social and personal interest, which it does not come within our province to enlarge upon; it need only be observed here that the narrative of the circumstances of his childhood includes a great deal which is both interesting and pathetic, not least so the portrait of his proud, stern and almost-cruel father, whose principal or only virtue seems to have been his uncompromising honesty and love of truth, and who, with splendid and exceptional physical advantages of appearance and health, brought himself to an early grave by reckless convivial indulgence. Hamerton's mother died a few days after he was born; had she lived possibly a different impress would have been given to his rather wayward though loveable character. Another thing which must strike every reader of the autobiography, which was intended to be published only after his death, is the calm serenity with which he accepts that fact before him. Speaking of his father's funeral, he writes—

"I am the only survivor of that day's ceremony! The little procession has all followed my father into the darkness, descending one by one into graves

separated by great spaces of land and sea. And when this is printed I too shall be asleep in mine."

Similar reflections, always in the spirit of one quite calmly contemplating his own death, recur more than once. An interesting and picturesque element in the book, too, is the account of his marriage with the young French lady who became his wife, and who, an inhabitant of Paris, French in all her social and domestic habits and sympathies, and unable at that time to speak a word of English, was taken straight away to her husband's painting-lodge, as it might be called, on the desolate shore of Loch Awe. That their married life was in the main one of happiness and mutual trust and affection is obvious enough from the biography, but we fancy the young Parisian wife must have had some rather trying days in the early period of her transplantation.

In the autobiography Hamerton observes, "I have been sometimes represented as an unsuccessful painter who took to writing because he had failed as artist. It is, of course, easy to state the matter so, but the exact truth is that a very moderate success in either literature or art would have been equally acceptable to me, so that there has been no other failure in my life than the usual one of not being able to catch two hares at one time." Hamerton's life was not a failure, but it seems nevertheless that the criticism he objected to was really not far from the truth. He was left well off when he came of age, and wished to pursue either literature or painting, because he thought (and wisely) that "a very moderate success in either of these pursuits would be more conducive to happiness than a greater success in some less congenial occupation." But he decided on painting, and went into the study of landscape-painting from nature with an earnestness and determination very unusual, making an encampment in a hut on a Yorkshire moor in order to study foreground and changes of effect with the scene constantly before him; and subsequently settled on the shores of Loch Awe with the same object, of living amid the scenery and studying it continuously. Yet the interesting and characteristic books in which he described his life and experiences in both these quarters formed apparently the only real success which he obtained from the experiment. We never happen to have seen any of his paintings; some few we believe have been exhibited; but he at all events

never obtained a reputation through them, as a painter. In the course of two very interesting letters which he received later in life from Mr. Peter Graham, extracts from which are given in the biography, his correspondent pointed out what he believed to have been Hamerton's real stumbling block, viz.: that he had attempted a special branch of art without having had the requisite broad training in painting generally. In the second letter Mr. Graham wrote:—

"I think it unfortunate that you 'learned painting with a clever landscape-painter.' You probably far excelled him in sympathy with nature, power of observation, and all the gifts especially required for a landscape-painter. What you really needed, study under a figure-painter, or better still at an academy, would have given you. Landscape nature is too complicated to be a good school to acquire the mastery over the mechanical difficulties in art."

This is an admirable piece of advice which we quote the rather as it is worth the attention of all art students. Again, Hamerton acquired a thorough and even exceptional knowledge of the technical processes of etching, and produced what is far away the best and most instructive book on etching in the English language—it is in fact the book *par excellence* on the subject; and yet the only weak points in the book are the one or two etchings of his own introduced among the illustrations. And we get some insight into the reason of this from a passage in the memoir:—

"His main fault, as I thought, was attempting too much finish and effect, and I used to tell him so. He acknowledged that I was right, and when taking up a new plate he used to say playfully—'Now this is going to be a good etching; you don't believe it because you are a little sceptic, but you'll see—I mean not to carry it far.' Then before biting he showed it me with 'Look at it before it is spoilt.' It was rarely spoilt in the biting, but by subsequent work. Many charming proofs I greatly admired. 'Oh! this is only a sketch, you will see the improvement when I have darkened this mass.' Then I begged hard that it should be left as it was, and I was met by arguments that I could not discuss—'the effect was not true so,' 'the lights were too strong,' or 'the darks too heavy,' 'but very little re-touching was necessary,' and it ended in the pretty sketch being destroyed after having been re-varnished and re-bitten two or three times. When it was no longer shown to me, I was aware of its fate."

Hamerton was in fact a kind of victim to a foible which is peculiar to a certain sane class of clever and ardent men, of being taken up with perfecting the means rather than looking to the end to be attained. This

* Philip Gilbert Hamerton, an autobiography, 1834-1838; and a memoir by his wife, 1858-1894. London: Seeley & Co.; 1897.

peculiarity seems to have run through everything he did, except literature, and perhaps he was only saved from it in literature by the absolute necessity that came upon him later in life of producing books that would find a market, and finishing them in time for the publisher's demands; for unfortunately in later life his circumstances were much straitened (partly from causes over which he had no control), and he had to write for a living. Whenever a new picture was projected, there must be a new purchase of painting materials, always far more than were required for the work, to provide against accidents. A special cart or gig was designed and built for taking his painting materials about the country in the most complete assortment. He had a passion for boats and boat building, either with his own hands or under his own direction, but was never satisfied with the last boat, and had hardly finished before an improvement occurred to him to be put in practice in a new one. During the Loch Awe days two workmen were got over to build a larger boat than any before, at a time when the expense could ill be afforded, and when he was in fact very anxious about future means of livelihood, on the plea that it would be an economy in the long run, as the boat would take them and their things about much more conveniently, and save the occasional hire of conveyances or boats for special expeditions. All these things ran away with money without producing any compensating result; and his wife, whose memoir shows a touching combination of unvarying affection for her husband with a clear perception of his little weaknesses and peculiarities, obviously was made very anxious and uneasy by this impractical side of his character. As is sometimes the case, he combined with this continued expenditure on *matériel* which at the moment was not really necessary, an exaggerated passion for perfect order and system in his life. There were prescribed hours for doing this and that, there was a place and a pigeon-hole for everything. An amusing instance of this is given in the anecdote of a friend at the house who asked for a bit of string, and was directed to the pigeon-holes. He easily found the one labelled "String," but the string was too coarse for his purpose. "Look above," said his host. He did, and there saw another pigeon-hole with the label—"String (thin)."

It is curious that the first book which made a real success and got Hamerton's name widely known was one which had little to do with art, the one entitled "The Intellectual Life," and which appears to us to be his weakest book, though there was rather a new idea in it, and it appealed to a larger circle of readers than some of the others. But his really valuable work consists in his art criticism, using the word in its widest sense. His own practice in painting and etching, if it did not make him an artist himself, gave him an acquaintance with the processes and the difficulties of those arts which was most valuable to him as an art-critic. But the most valuable quality of all in his criticism was its entire independence of thought and taste. He was entirely aloof from, or above, any of the current fashions in art-criticism; he took his own view of things, and in several instances may be said to have almost alone spoken the real and sober truth on subjects on which there was a great deal of popular exaggeration on one side

or the other. His "Life of Turner," first issued in the *Portfolio*, was remarkable for its calm and thoughtful judgment of Turner as man and artist; not without enthusiasm, but entirely free from extravagant adulation. He was for some years art critic to the *Saturday Review*, in the days when that publication was something of a power; and the value attached by thoughtful writers and artists to these criticisms is exemplified by a letter written to him by M. Véron, on the appearance of a review of his book "Esthétique," which he evidently immediately supposed could be by no other than Hamerton:—

"On me communique une revue très remarquable de la *Saturday Review* sur mon *Esthétique*. Ce qui distingue cet article c'est une sérieuse connaissance du sujet et une puissance d'analyse des plus rares. Cela ne ressemble en rien à ces généralités vagues et flottantes dont se contentent la plupart des écrivains que fait la critique dans la revue des journaux. . . . Cet homme, je suppose que c'est vous."

The *Portfolio*, which was his own special foundation, set up a higher standard of Art-periodical than had before been seen in England; it is to be regretted that it seems rather to have languished since his death.

Though Hamerton had never attempted the practice of architecture as he did that of painting and etching (we feel quite sure he would have done so had he found time and opportunity), the practical turn of his mind, as evinced in his boat-building work, probably gave him a better insight into the practical side of architecture than is possessed by most non-professional men; and at all events the architectural criticisms and articles which he produced are as remarkable for insight into and sound judgment on the aesthetics of the art as his criticisms on painting. From one passage in the autobiography it appears that he had at an early age a great love for architecture, and that he also experienced that curious feeling as to the unity of the architecture and the music during a church service which affected Viollet-le-Duc at a still earlier age. The passage in which he refers to this is sufficiently noteworthy to quote:—

"We were taken to the services in Doncaster old church, which was destroyed by fire many years afterwards. Though not yet in my teens, I had an intense delight in architecture, and deeply enjoyed the noble old building, one of the finest of its class in England. Our pew was in the west gallery, not far from the organ, and from it we had a good view of the interior. The effect of the music was very strong upon me, as the instrument was a fine one, and I was fully alive to the influence of music and architecture in combination. The two arts go together far better than architecture and painting,* for music seems to make architecture alive, as it rolls along the aisles and under the lofty vaults. I well remember feeling, when some noble anthem was being performed, as if the sculptured heads between the arches added a noble animation to their serenity. Even now, the impression received in those early days still remains in my memory with considerable clearness and fidelity, and I believe that the habit of attending service in such a beautiful church was a powerful stimulus to my inborn passion for architecture."

We are glad to see it stated in the memoir that "it was a pleasure to my husband to see that his articles on the architecture of Paris had been so favourably noticed as to bring requests for contributions from the


* There is a reason for this which Hamerton omits to notice. Music and architecture are both abstract arts, which do not imitate anything; painting is an imitative art, in its basis at least.

Builder and *L'Architecture*." We remember making the request, and Hamerton's modest reply, doubting whether he could have anything "to say that could be of value to the readers of a professional architectural journal though he was willing to comply when he had more time at his disposal—a matter which did not unfortunately arrive.

Only Hamerton's intimate friends, probably, were aware of the great difficulties under which in the latter part of his life he carried on his multifarious work. Naturally of a very sensitive and nervous temperament (at an early period of his life he found it impossible to live in cities, on account of the want of quiet), he had become in his late years painfully affected by noise and rapid movement, a misfortune which came to a climax during a journey from Dover to London, when his cerebral irritation became so painful that he had to leave the train at a roadside station, and remain in the country for some time. For long after this railway travelling was impossible for him, though the endurance of it was gradually attained again by trying short journeys in slow trains until he had a little recovered his balance. By his health in latter years was a constant subject of anxiety, partly no doubt from want of sufficient mental rest among the numerous avocations which he continued to pursue so eagerly. He died at length suddenly and unexpectedly of heart disease.

The autobiography, and still more the memoir, leave one with the feeling that with all the interest of Hamerton's various writings, the most interesting fact of all was Hamerton himself. He was a man eminent the reverse of commonplace; of the highest honour, of the most versatile perceptions and interests, full of the keenest love for and enjoyment of all that was beautiful in nature and art. If he did not accomplish the artistic aspirations with which he set out in life, he at least lived a life full of warm emotions and intellectual enjoyment, he came to be loved and appreciated by the best minds of his country in art and literature, both for his writings and his personal character; and, in spite of troubles from ill health and other causes, such a life cannot be called either an unhappy or an unsuccessful one.

MANCHESTER MAIN DRAINAGE.

RULY the problem of the hour for municipal engineers and authorities is that of sewerage and sewage-disposal, and in no part of the country is a solution of the problem more necessary than in South-east Lancashire. The rivers and brooks of Manchester are literally sewers, while the Ship Canal has been forcibly, but accurately, described as a ditch. The labours of the Mersey and Irwell Joint Committee are, indeed, as arduous and appalling as those of Hercules in the Augean Stables. The sewage from innumerable towns and villages, and their refuse from all manner of manufactories, have been allowed to foul the streams so long, that the offenders had begun to think they had a right to go on fouling them for ever, and now consider themselves hardly used because a vigilant and impartial authority bids them cleanse themselves from the error of their ways. Even great Manchester bows before this authority, and attempts to set its house in order.

A long report on the Manchester Main

rainage Scheme and Works was recently prepared by Mr. T. de Courcy Meade, the "City Surveyor," and presented to the Council. It is largely historical, and shows to one reading between the lines—how difficult it has always been to extort money for sewerage works. Undoubtedly the Arabian method of delay has its advantages; any rate, the dilatory authority saves interest on the deferred expenditure, and profits by the failures of those authorities which are Quixotic enough to make haste to keep their streams pure and their people healthy.

Thirty years ago the prevention of floods in Manchester seems to have been a more pressing problem than the purification of the rivers, and somewhat curious powers were obtained by the Council in 1865 in order to increase the flow of water in the River Medlock. It appears that the riparian owners did very seriously reduce and obstruct the bed of the river, and the Corporation was empowered to execute various works for the improvement of the river, and to recover from the riparian owners two-thirds of the cost. The actual cost of the River Medlock improvements was 30,000*l.*, and of this sum little more than 18,000*l.* was recovered from the Corporation—a salutary lesson to riparian owners in Manchester and elsewhere. The improvements, however, were not sufficient to prevent the recurrence of floods, and in 1874 Mr. J. G. Lynde, the City Surveyor at that time, recommended the construction of a tunnel 20 ft. in diameter for the conveyance of sewage and storm-water; a larger size—namely, 34 ft. wide by 21 ft. high—was subsequently suggested by Mr. Lynde, and adopted by the committee, but on reference to the Council, in December, 1874, the scheme was referred back to the committee "with a view to their reporting a matured scheme, providing not only for the safe passage of the storm-water of the valley of the River Medlock, but also for the complete interception of the drainage of the city." This was the commencement of the Manchester Main Drainage Scheme, or other schemes. Two years later a report by Mr. Lynde and Mr. Bateman (who had been associated with Mr. Lynde in the work) was presented, but the Council was not by any means eager to act upon the report when it had been presented. Two years, at any rate, had been satisfactorily passed without any expenditure except for surveys and plans. Three more years were spent in fruitless negotiations with neighbouring Local Authorities for the purpose of agreeing upon a combined scheme. Meanwhile, Mr. Lynde had resigned, and Mr. John Allison had been appointed in his stead. In 1880

Mr. Allison thought it advisable that the sewerage works of various important towns should be visited, and that year and the next were agreeably spent in visiting Bradford, Leeds, Darlington, Carlisle, and Nottingham. The year 1884 was occupied by a sub-committee in the same manner. Ten years had thus elapsed since the Council, with such a show of sanitary enthusiasm, had snubbed the Committee, and instructed it to prepare a "matured scheme." Neither the Council nor the committee was in any hurry. Sewage schemes take a long time to mature. In 1885 the committee reported the results of the visits to various towns, and received authority "to make further inquiries," and in the following year

Mr. Allison presented a report on the proposed main drainage scheme, together with plans showing some alterations from the original scheme, partly necessitated by a considerable increase in the area of the city. Mr. Bailey-Denton was consulted, and advised some further modifications to be made, and in April, 1887, thirteen years after the Council's memorable resolution, the committee recommended that the modified scheme be carried out at an estimated cost of half a million; and the Council adopted the report. But not until 1889 was the approval of the Local Government Board given to the scheme, or the Rivers Committee instructed to commence the work.

Fifteen years had passed, the rivers becoming filthier every year, and not a yard of main sewer had been laid. The committee had not been unduly or officiously hasty in maturing the scheme. Then the Ship Canal complicated matters, and delays were caused in 1890-93 by the inclusion within the city boundary of numerous out-townships, and more money had to be borrowed in 1894 for the additional sewers.

In February, 1894, Mr. Allison died, and a few months later was succeeded by Mr. Meade.

Then came more alterations, and (in 1895) an overhauling of the sewers which were then in course of construction. This, perhaps, is one of the most interesting and instructive portions of Mr. Meade's report. Sewers were found to have been built of 4½ inch brickwork instead of 9 inch. Bricks had been laid without mortar. Ordinary bricks had been used instead of Staffordshire blue bricks. Bricks had been used instead of stoneware invert-blocks. Thousands of pounds' worth of work had been scamped, and had to be re-executed by the various contractors at their own cost. In one contract for over 2,418 yds. of sewer, no less than 1,413 yds. had to be taken out and reconstructed by the contractor. The underdrains of the filter-beds were found to have been "most improperly constructed, no attention having been paid to either the lines, levels, or specified method of laying," while the concrete effluent carrier had been made with "much less than the specified quantity of cement." The contractor was compelled to re-execute the work, and at length, after "considerable trouble, inconvenience, and seventeen months' delay," the committee obtained just value for its money. It is such disclosures as these which lead men to say hard things of the contract system, and to advocate the execution of work by municipal authorities themselves, without the intervention of a contractor.

The sewage (about 15,000,000 gallons daily) is conveyed to Davyhulme, and there treated with milk of lime and green copperas, from 5 to 10 grains of each per gallon of sewage. Precipitation takes place in eleven tanks, each 300 ft. by 100 ft. by 6 ft., and a small portion of the effluent is passed through land which has been drained and laid out for filtration purposes. Clearly the area of land is utterly inadequate for the quantity of sewage treated. Recently Mr. Meade recommended the construction of an effluent sewer sixteen miles long (to a point in the Mersey Estuary about three miles on the Manchester side of Runcorn), in lieu of attempting to filter the effluent. This proposal was adopted by the Council, but at a

recent meeting an amendment was carried to the effect that the Council is of opinion that the obligations of the Rivers Committee will be fully met, and no public injury will accrue, by the proposed effluent conduit terminating in the river Mersey in or near the township of Thelwall, below Woollaston Weir. This weir is about three miles above Warrington, and is the highest tidal point of the river. Two reasons have weighed with the Council in making this change, the first being the usual economical one, and the second the fear that Warrington would object to the reduction of water in the river which would be occasioned by discharging the important volume of sewage effluent below that town instead of above it, as at present. But has it not occurred to the Council that Warrington may object to an avowedly impure, unfiltered tank-effluent being discharged into the river close to its gates? And will not the Mersey and Irwell Joint Committee have something to say about the matter? In the matter of sludge-disposal, Manchester is about to imitate London and Salford by carrying it out to sea in barges.

It must be gratifying to the inhabitants of Manchester to know that the long-delayed system of sewers is approaching completion, but it must also be disappointing to be compelled to admit that, notwithstanding the advice of expert engineers and chemists, the problem of sewage-disposal is practically as far from satisfactory solution as ever.

NOTES.

THE debate last week in the House of Commons upon the subject of the dispute between Lord Penrhyn and his men was practically useless. It did nothing whatever towards ending the struggle. It was, perhaps, however, not altogether valueless in throwing some light on the working of the Conciliation Act of last Session. It is obvious from the tone of some of the speakers that Government interference will be resented, and it is clear that the Board of Trade will have to be prepared for a good deal of ill-natured criticism when they endeavour to mediate between parties who are not reasonably minded. In the case of the London and North Western Railway, each side in reality welcomed the intervention of the Board; it enabled each party to give up a position which it should not have taken up. But Lord Penrhyn equally clearly resented the Board of Trade taking action; and we are inclined to think that the Department, when they saw how opposed Lord Penrhyn was to their attempts, would have done well not to have pressed the matter further. It is doubtful, also, whether their sensible proposal that a representative of the Board should be present at a meeting between the opposing parties was within the terms of the Conciliation Act. But it was a reasonable and well-meant offer, and should not have been rejected by Lord Penrhyn in the very bad tone in which it was.

THE first Order under the Light Railways Act has been secured by a Railway Company, thus realising the anticipation that the existing lines would be among the first to benefit by the new legislation. The Order is for a single line to connect Basingstoke with Chawton—a village situated about two

miles from Alton; and as it will pass through districts at present five or six miles from any railway station, it should prove of considerable service to the inhabitants. Further southward there are villages in Hampshire—such as Warnford and West Meon, places of importance in Saxon times, but sparsely populated now—which are still eight or nine miles from a station. At the statutory inquiry, held last week at Basingstoke by Lord Jersey's Commission, it was stated that the estimated cost of the proposed line was 66,700*l.*—which works out at about 5,500*l.* a mile. This is a sufficiently heavy figure to cause local bodies to consider well before embarking in similar enterprises, but no higher than was estimated by competent authorities during the debates which preceded the passing of the Act. After all, the working of these lines is, perhaps, likely to prove more successful under the direction of a railway company than if controlled by a body having no previous experience in this direction, and with fewer opportunities for economy in the matter of equipment after the railway has been constructed.

In the last issue of the *Éphéméris Archaologiké* (1896, 1 and 2), M. Tsountas publishes

a monument which, as regards the history of art, is only second in importance to the famous Vaphio cups. The monument in question is a painted stele discovered in one of the tombs recently opened in the lower city of Mycenæ. The stele is covered with a coating of white stucco, on which the paintings are executed in colours, still vivid—yellow, blue, red. The design is in three tiers, of which the topmost one has unfortunately almost disappeared; but enough remains to show that three figures were represented seated on sort of thrones. In the middle tier are five warriors marching. They brandish lances in their right hands, and their bodies are completely protected from neck to knee by huge shields of the pattern seen on the Mycenæ vases published by Furtwängler and Löschke (plate 43). In fact, in pose, dress, and accoutrements the figures of these two designs are closely analogous. On the third are figures of deer. The difference of the shape of shields between those described by Homer and those found on Mycænæan objects is, it will be remembered, one of the chief arguments on which Professor Ridgeway relies in his paper recently published in the *Hellenic Journal* (xvi. i.) under the title "Which People Produced the Objects called Mycænæan?"

THE Société Archéologique of Montmartre is organising what will prove an interesting museum, containing whatever can be collected in relation to Montmartre, its history and its monuments. It is being installed in the new Mairie of the XVIII. Arrondissement, and includes a number of water-colours, engravings, and photographs of picturesque corners of the hill, as well as remains of sculpture and architectural detail, dating even from as far back as the Merovingian epoch; old pottery, jewels and insignia, and a collection of portraits of all illustrious "Montmartroises." This will not only be a collection of great interest in itself, but it is hoped that it may also suggest the formation of similar collections illustrating the history of other ancient quarters of Paris.

The "Union Artistique," Paris.

THE club called the "Union Artistique" has just opened its annual exhibition, which contains some very interesting works. The majority are portraits; among these may be mentioned particularly a head of a young girl by M. Cormon, a portrait of an old man by M. Aimé Morot, a portrait of a cuirassier by M. Carolus Duran, and one of his best works, and a portrait of the Duc de Doudeauville by M. Bonnat, painted with a breadth and vigour of style which is almost overdone. A figure of an artisan, by M. Roll, and a rather mediocre "Nativity" by M. Gervex, are among other works exhibited. In sculpture, two sketches of heads by M. Puech, a pretty statuette by M. R. Verlet, and a Sphynx by M. Hugues, are the only exhibits of special merit.

Fire Risks at Electricity Works.

MUNICIPALITIES which have taken up electric lighting are at present suffering from what they consider a very real grievance, namely, an increase in the fire insurance rates with respect to central station risks. To such an extent have they excited themselves that a special meeting of the Municipal Electrical Association was convened at the Westminster Palace Hotel on Thursday of last week. Councillor Pearson, of Bristol, read a paper in which he advocated that municipalities should become their own insurers; at first in part until a sufficient sum had been laid by, and then they could take the whole risk. This view was pretty generally endorsed by many aldermen present, and the Borough electrical engineers spoke vigorously against the insurance companies. To listen to them, one would think that the companies had made immense profits out of this kind of risk in the past, instead of having been heavy losers. Instead of abusing the insurance companies, would it not have been far better to have invited some representative of the companies, Mr. Heaphy, for example, and consulted with him in a rational manner as to the best ways of reducing fire risks? If the insurance companies will not insure central station risks at 9s. per cent., it is not because of their ignorance of electricity, but because it does not pay them to do so.

French School at Athens.

THE French School of Archaeology at Athens is to celebrate its twentieth birthday this spring. The occasion is to be marked by an international gathering of classical archaeologists. This is to take place from the 25th-28th of April. M. Homolle, the Director of the School, intends at the same time to celebrate the conclusion of the Delphi excavations, which will then be practically complete. It is to be hoped that he will further mark the occasion by publishing at least some of the results of the excavations. Important inscriptions are given to the public with commendable promptness, but two years have now elapsed, and the interesting sculptures of the various "treasuries" are still inaccessible. The German Institute, to facilitate attendance at this French jubilee, has altered the dates of the Peloponnesos and island tours. The Peloponnesos tour is now to be from April 8-23; the island tour from May 5-13.

Art in Glasgow.

"ART IN OUR CITY" is the title of an excellent address, both in a literary and artistic sense, delivered to the Architectural Section

of the Glasgow Philosophical Society by their President, Mr. P. Macgregor Chalmers, and which now reaches us in a pamphlet form. It contains suggestions for the improvement of the city and for the promotion of the effectual study of art in Glasgow which are well worth the attention of its citizens.

At the instance of Mr. E. Belmont House, Newton, a member of the Hampstead Vestry, the Society of Architects agreed a few weeks ago, with the occupier and owner's consent, to affix a memorial tablet upon Belmont House, Rosslyn Hill, formerly inhabited and, it is said, built by Sir Harry Vane, who was taken thence prisoner to the Tower, as Ludlow relates in his "Memoirs." In Vane House, as it was then named, afterwards lived for many years Dr. Butler, Dean of St. Paul's, and author of "The Analogy of Religion," who two years before his death in 1752 was appointed Durham. By his will of that year he directed that the house should be sold. The next tenant, a Mr. Regnier, divided the house into two; a later tenant, a Mr. Pilgrim, gave name to the adjacent Pilgrim's-lane. The premises have since undergone considerable alteration by way of adapting them for the purposes of the Soldiers' Daughters' Home, removed thither about 1860. Bishop Butler fixed in the windows several pieces of old coloured glass, many of them bearing date 1571, and given to him, it is local tradition reports, by the Pope. Some of the glass which is Flemish work, has remained to our own day. It mainly illustrated Scripture subjects. It has been surmised that this similar glass at Oriol College, Oxford, from the same source, or may have been taken thither from Hampstead after Butler's death. A view of the house in its former condition will be found in the *Gentleman's Magazine*, May, 1828.

The exhibition of Madox Brown's works, at the Grafton Galleries, taken in connexion

with the lengthy descriptive comments given in the catalogue, mostly written by the artist himself, forms a rather curious medley of literary and artistic impressions. Madox Brown's remarks on the scene between Leander and Cordelia (20) are admirable, but they are a good deal more interesting than the picture. And this is the kind of discrepancy we seem to find in many other instances. Madox Brown regarded painting from an intellectual and moral point of view, as the illustration or explanation of a historical scene; he took great pains to understand and to express the facts of the scene, but he too often failed to give natural life and action to it in the picture; the facts are all there, in a way, but they do not coalesce into a pictorial whole. In "The Expulsion of the Danes from Manchester" for instance, the Dane turning and shaking his sword at the inhabitants is a mere stage figure, carefully arranged in a suitable attitude; there is no life or reality in him. The elaborate painting called "Work" is a sermon rather than a picture; pages are written about its intention, but it is an absolute failure in a pictorial sense. Madox Brown's real successes, among the works exhibited here, may be said to be the "Christ and Peter" (43), "Cromwell at his Farm" (62), "Wickliffe on his Trial" (31), a picture much better in colour than many

thers; "Juan and Haidee" (48), "The last of England" (64), a truly pathetic though very ugly work; and the "Romco and Juliet" (60), one of the most passionate love-pictures ever painted, and effective in proportion. If Madox Brown could have been content to "let himself go" in that way a little more often, instead of labouring to tell a story and point a moral in every one of his pictures, it would have been better for him and for art. Among the small works in the collection the little landscape entitled "Carrying Corn" (26) should not be passed over; it shows a wonderfully true and powerful effect of light.

The Metropolitan Railway. It is satisfactory to find that the Board of the Metropolitan Railway Company are apparently about to undertake in a systematic manner the general rebuilding of their stations. They state that the work which has been done at Moorgate-street will be continued at Bishopsgate-street. We hope that they will make haste to take in hand one of the more westerly stations. Gower-street and Baker-street stations are wholly inadequate for the traffic, and the badness of the station is made worse by the different lighting. The Directors also mention that they are in communication with the Board of Trade in regard to the ventilation of the line, and will co-operate with the Departmental Committee which is about to be appointed. We have no objection to the company making a virtue of a necessity, but there can be no doubt at all that if the Government had not put pressure in the manner they have done on the company, all that would have been done by the latter would have been the making of one or two more vent-holes in the public streets. Considering that the Metropolitan Railway is now in a better financial position, it would be wise and prudent to take some decisive measures towards the better ventilation and better lighting of the stations, and for the improvement of their rolling stock.

Mr. Gilbert on Architecture. It can hardly be said that Mr. Gilbert's paper, or rather short address, at the Institute of Architects on Monday, was equal to the criticism on the subject. Mr. Gilbert seemed to think that a promise to deliver a paper to the Institute was sufficiently met by a short address, not well prepared, exceedingly vague in substance and expression, and of which the chief recognisable point seemed to be that the best architecture had been produced by sculptors who had undertaken to act as architects, while, conversely, architects who tried to be sculptors had been notable failures. We have heard this of our sculptors before; whether it be true or not, it may be a question whether it comes gracefully from the mouth of a sculptor; and Mr. Gilbert's replies to the speakers in a discussion, though very amusing, were somewhat too much flavoured by an assumption of intellectual superiority which occasionally bordered rather closely on pertinence.

ARTS AND CRAFTS EXHIBITION AT CHESTER.— On the 29th ult. an exhibition, under the auspices of the Chester Guild of Arts and Crafts, was opened in Grosvenor Museum, Chester, by the Duke of Westminster. The exhibition comprises specimens of painting, wood-carving, leather embossing, weaving, embroidery, tapestry work, modelling, and dried crafts.

THE ADVANCEMENT OF ARCHITECTURE* : WITH SOME REMARKS ON THE STUDY OF GOthic.

It is now one hundred and twenty-nine years ago since the Royal Academy of Arts was founded by his Majesty George III. It was founded at the request of Sir W. Chambers, his architect, and in the charter granted by his Majesty, and dated December 10, 1768, it was provided that there shall be "a Professor of Architecture who shall read annually six public lectures, calculated to form the taste of the students, to instruct them in the laws and principles of composition, to point out to them the beauties or faults of celebrated productions, to fit them for an unprejudiced study of books, and for a critical examination of structures."

At that time, the tide of the Italian Renaissance was still flowing, although there were slight signs of reflux in the growing admiration for Gothic. Horace Walpole altered Strawberry Hill in the Gothic taste in 1750, while, in the very year of the Royal Academy's foundation, Milizia published his lives of the architects, in which the works of Palladio were held up as the standard of taste. The Dilettanti Society, in 1762, published the first volume of Stewart's "Antiquities of Athens," and subsequently the "Antiquities of Attica and Ionia," and is, I believe, still publishing works on Greek architecture. At any rate, the researches of Pullan on the Temples of Apollo Smintheus, of Bacchus at Teos, and Minerva Polias at Priene, or one at least, was published in the year 1831.

Wilkins published his "Antiquities of Magna Græcia" in 1807, Inwood the "Erechtheum at Athens" in 1827, Penrose the "Parthenon" in 1847, 1851, 1888. Sir C. Fellows published his works on Lycia, Caria, and Lydia, in 1839-1847; J. Pennethorne "The Geometry and Optics of Ancient Architecture" in 1878, Sir C. Newton and Pullan on the "Discoveries at Halicarnassus, Cnidus, and Branchide" in 1862-3; Cockerell and Donaldson their supplements to Stewart's "Athens" in 1830, and Cockerell his "Temple of Jupiter Paubellenius and Apollo Epicurus" in 1850; and in the same year Falkener published his "Classical Museum," not to speak of foreign publications. I need hardly speak of Hittorff's Restoration of the Temple of Empedocles at Selinus, 1851, nor of Abel Blouet's scientific expedition to the Morea and to Macedonia, 1831-1838.

There is no task more difficult than that of unravelling the causes of certain movements among mankind. And this is even more difficult when it is a purely intellectual movement. We speak of the Renaissance as if it were a change of taste that could be as precisely dated as a revolution or a battle, while it had been led up to for centuries, and we can only be certain of its existence and preponderance long after it had begun. In this case of the Greek movement, one prime factor in it was the enthusiasm of Winckelmann, who began to write on Greek sculpture when he was at Dresden, and afterwards published his history of ancient art about the middle of the last century, and he found sympathisers who had come to much the same conclusions before he wrote. From attention being called to the perfection of Greek architecture in 1762 and subsequently, a wave of Greek taste swept over most of the countries of Europe. The Elgin marbles were purchased by the British Government, and placed in the British Museum in 1816; even children who saw them were struck by the beauty of the Panathenaic frieze, and doubtless this revelation of beauty to the public prolonged the call for imitation Greek architecture.

The admiration, however, of Gothic increased in England partly owing to Sir Walter Scott's novels, and partly to the efforts of such men as John Britton, Rickman, the second Pugin; and to the enthusiasm of the Ecclesiastical and other societies. This admiration became so prevalent as to strongly influence public opinion, so that in 1840 it was determined that the Gothic style should be adopted in the new Houses of Parliament. Even before this, the very champions of Classic architecture were so affected by the increasing admiration for Gothic that the great Wilkins himself dabbled in it, and Sir James Pennethorne and Professor Donaldson tried their hands at it. Decimus Burton, once a well-known Classic architect, who persisted in his creed was so far forgotten that, when

* Being the first Royal Academy Lecture on Architecture this session. Delivered on the 29th ult. by Professor Aitchison, A.R.A.

he died a few years ago, his name and works were almost unknown.

A passion for the study of Gothic spread largely in society; antiquaries, clergymen, undergraduates, heads of houses, and other amateurs; architects, as well, employed their spare time and holidays in making notes on Gothic buildings in England and abroad, measured and drew out the mouldings of different dates, and a few of the more learned endeavoured to solve the mysteries of Gothic construction. In 1841 Professor Willis read an admirable paper at the Royal Institute of British Architects, called "The Construction of the Vaults of the Middle Ages," really a treatise on Gothic stone-cutting, greatly admired abroad, and still studied by architects in this country; while the Gothic flame was still burning, fanned by Mr. Ruskin. In 1854-68 was published by that Cuvier of Gothic architecture, Viollet-le-Duc, his "Dictionary of Architecture," now of world-wide celebrity, which may be said to have completed the Gothic conquest. Casts of figures and foliage from the Gothic cathedrals and churches were collected at the Architectural Museum, and masons were encouraged to copy them; while during the professorships of Scott and Street at the Royal Academy Gothic was pronounced to be the only true architecture in the world; and that eccentric genius, W. Burges, was never tired of advocating its universal adoption. Casts of Gothic figures and foliage were collected at the South Kensington Museum and even at the Royal Academy. There was a long struggle between those who were getting their living by paraphrasing Classic and Renaissance buildings and by those paraphrasing Gothic buildings; bard words were bandied about, and "Pagan" and "Papist" were affixed by their opponents to the rival practitioners. A truce was at length concluded, and a practitioner was allowed to paraphrase Classic, or Gothic, or both, without having an offensive epithet bestowed on him. Students were allowed to compete for prizes at the Royal Academy, and at the Royal Institute of British Architects, in either style, much to the disgust of those brought up in the belief that Renaissance was the only admissible style.

Owing to the large increase of travelling, the publication of architectural works, and the multiplication of photographs, the desire for novelty, and the absence of any proper teaching, all phases of architecture from Greek days downwards, if we except the Egyptian Hall and Angelo's School of Arms, were in turn adopted. This produced two results. The first was this: that the public looked on architects as persons keeping an architectural costumer's shop, at which colourable imitations of every past style could be procured. The public still believes that Gothic has a stronger ecclesiastical flavour than any other style, and that Renaissance is more adapted for municipal buildings; so it has a Gothic architect for its churches, and a Renaissance one for its other buildings. Some of the wealthy and some of the eating-house keepers occasionally desire their rooms to form an architectural pattern book, each room being of a different style or phase of a style, a Gothic chapel, a Græco-Roman hall, an Elizabethan dining-room, a Louis XIV. drawing-room, a Louis XV. boudoir, an Early French Renaissance morning-room, a Roman library, and a Moorish smoking-room, with perhaps a Chinese, Indian, and Japanese room thrown in. The other result was that thinking men interested in architecture began to ask themselves what architecture was, beyond designing habitations or shelters for men and animals, factories for making goods, warehouses for storing them, and shops for selling them; why the buildings of certain countries, and at certain epochs, had always been admired; why the shapes and details of buildings at successive epochs were so different from one another; and why at so brilliant a period as this of the nineteenth century, when men's minds are so active and so restless, nothing but paraphrases of bygone styles were to be met with, even in important buildings. They soon saw that some of the differences in past styles were brought about by the greater number of men's wants, and by the greater complexity of society; that some were owing to an increased knowledge of materials and of their powers, and to advancement in the art of building. A good many thought that when every part of a building exactly answered its purpose, and when every redundancy had been pared away, and each part took its shape according to the work it had to do, an architecture would arise of itself without further trouble, more wonderful, more perfect, and one that caused more exalted emotions than any that the world had seen; but it became

apparent that this was a wrong hypothesis. The wonderful iron structures of our engineers have surpassed all that was done before in the world in a scientific direction, without regard to anything but cheapness and utility; but nearly all their works are unsightly, and many of them are hideous.

It is just possible that if this hypothesis could have been perfectly carried out, it might have given the true solution; for we believe Nature makes her organisms in the best way and with the least possible material, while most of her works are beautiful. But we have not got her materials, her knowledge, nor her skill, and we are not sure, either, that she does not aim at beauty. Still, I think that most of our minor problems point to a solution in this direction; but the major problem seems to me to wholly depend on man, for it is not the purely necessary problems that are alone to be solved, but the proper emotions that should be excited, by the sight of the building. Solemnity, adoration, and thankfulness should be evoked by a temple; majesty by a building for legislation; awe and apprehension by law courts; dignity by buildings for public offices, great officers of State, and magistrates; magnificence in the mansions of merchant princes and great manufacturers; grace and delightfulness in theatres, concert, and fine-art exhibition rooms; comfort and comeliness in the houses for ordinary citizens; while the grimness of a prison should excite repulsion and terror; but beyond these master emotions, we want each part to exhibit the æsthetic cultivation of the day, and show not only the mastery of the architect, but the knowledge, the care, and the skill of the workmen.

The lessons of how these various emotions are to be raised must be learnt from those buildings of former times which show how cognate emotions were excited. The rest depends on the genius of the architect and the cultivation and aspirations of the best of the public.

A perfect architectural monument has much more human interest given it by sculpture and by figure painting than by pure architecture, while fine monumental colouring is another source of delight. Sculpture and figure-painting have for their highest models the most physically perfect human beings. If the figures created by these artists will not harmonise with the architecture, the architect must look to it; for his art is then below that of his brother artists, and the completed monument is patchwork. The serenity of high ideal sculpture or painting will not harmonise with coarse Romanesque nor with tormented Gothic; so you see that it does not depend on the will of the architect to adopt any past style he chooses, but the style is evolved from the necessities of the case. The rude figures of the Solomon Islanders would be as much out of place in the pediment of the Parthenon, as the Panathenaic frieze would be in a Norman cathedral.

I do not address you as persons anxious to get your living, and naturally the best one possible, by the exercise of a respectable calling, but as poets in structure, who not only hope, but desire, that the monuments you erect will call forth admiration and delight in the cultivated, hundreds or thousands of years hence, and who spare no study and no pains to ensure this result. What Milton says of fame is true; it is "That last infirmity of noble mind." If you feel the divine power within you, that will enable you to delight millions yet unborn, you feel that fame is but an unimportant accident. You must, however, not only "scorn delights, and live laborious days," but you must study as the poets have studied, and see how your predecessors learned to evoke the emotions that now delight you.

As I have addressed you as poets in structure, it will not be amiss to see how the poets in words inspired with the divine afflatus, have learned the elements of their art. Take Dante, or Milton, or Tennyson, and see how they studied all the best poetry of the past and of the present, how they mixed among mankind and studied the emotions of those around them, how they translated or paraphrased the poems of other times and of other tongues, to get their hand in and to learn their art. Some of you may object that such transcendental poems as Shakespeare and Burns had but little learning. You may be sure that both of them deplored it, and endeavoured to make up for their deficiencies by learning all they could from ancient story, from ancient poetry, and from contemporary work, and by the constant and piercing observation of the persons and things around them and by repeated efforts, make their works immortal. In our own art we see Brunelleschi, who was to become the great architect of his day, working as a journeyman goldsmith at Rome, so

that he might measure and study the Roman ruins, and obtain from them constructive and æsthetic knowledge. In our own day we have seen Alfred Stevens getting his living by designing grates, tiles, and fire-irons, while he was learning to be a great sculptor, a painter, and something of an architect. Remember that above all things architecture is a structural art, and that all that you can do is to build; by that you must show your knowledge, your skill, and your aspirations, your manners and your morals, and as an architect, by that alone. You can, of course, avoid the study of tactics by getting examples of what has been done before, and keeping well within the old lines, but this is not what the Roman, the Byzantine, or the Gothic architects did; their aim was to outstrip their predecessors. It is not the method our engineers have adopted whose works are the wonder of the world; they learnt as much as was necessary of that part of science that underlies their practical work, and taking iron as their material, have immeasurably surpassed all that was done before them in construction. They never would have done this if they had merely feebly copied the engineering works of the Romans. All the sciences have so far progressed that the knowledge of them amongst the ancients is only mentioned in archaeological treatises. The mechanicians who have perfected the steam engine, invented the locomotive, the spinning jenny, the power loom, and the lace weaver, laugh to scorn the childish machines of the ancients; the artisanists are not contented with balista and catapults; the astronomers are not humble students of the Almagest of Ptolemy, but have discovered that the earth is a small planet revolving round the sun, that the laws of gravity control all the celestial bodies in the visible universe; and have learnt that most of the substances found on earth exist in the sun. Nor do geographers speak much of the knowledge of the earth to be found in Homer and the Pentateuch, or in the works of Strabo, and Pomponius Mela.

In art, however, there is a very different story to tell. The arts may be said to appeal to the emotions through the eye and the ear, and the accumulated knowledge of them does not help us beyond a very limited distance. When accurate modelling has been attained, there is little more to be learnt except how to create ideals that are, in certain respects, more perfect than the average human being. In drawing, when form can be exactly copied, and when that knowledge of perspective, called fore-shortening, is attained, there is but the composition of line and grouping to be added; the rest depends on the imagination of the artist, whether it be to create allegorical figures, or scenes from the past. In colour there is the harmonising and contrasting of the different tints and tones to be attained, and the choice of those most appropriate to the subject of the picture, and the imitation of such subtlety of mixed colouring as is found in the nude human form.

We have no reason to believe that after the Greeks had cultivated gymnastics the human form has improved. Landscape painting may have improved, as the forms and laws of inanimate nature are better known and observed, but we have no reason to believe that the beauty of inanimate nature has increased. Ordinary emotions have become more complex, but this can hardly be the case with the grand ones, such as æsthetic joy, heartrending grief, terror, and despair. Is eloquence, wit, humour, or pathos, more common or more forcible than in the best ages of Greece? I think almost the emotions, being now more complex than of yore, have become more difficult to portray, so that if the modern artists portray them with an effect equal to that attained by the great Classic artists, they must be greater men.

Music is said to have progressed, and if so, it has a merit beyond the other fine arts; but, not being musical, I cannot judge. Some of the musical critics still hold that for evoking religious emotions the Gregorian chants are as yet unsurpassed; so it may be that Aristoxenus is superior to the modern composers as the Classic artists are to those of modern times; supposing that he was a composer as well as a writer on music.* Drowning, Tennyson, and Mr. Swinburne, though they studied the Greek and Latin poets, are not mere humble imitators, but have tried to embody the vicissitudes and emotions

* The modern art of music can hardly be said to have begun till the fifteenth century. Since then it has progressed and developed, and some of its decisions, very much in the same kind of sequence followed by the art of painting two or three centuries earlier. There is nothing exceptional about its position. What was called "music" by the Greeks was a totally distinct thing from the modern art of music as we know it.—Ed.

of the present day in their verse, in the hope that their poems may hold their own in comparison with the masterpieces of the past, if it surpass them. We hope the assertion is no longer true that

"Old poets outsing and outlove us,
And Catullus makes mouths at our speech."

A poet only can give us a chance of testing the truth of this saying; he alone has that accurate knowledge of the value of his own tongue which we all try to attain, and the gift of harmony and rhythm. Few have that intimate knowledge of Greek and Latin that would enable them to judge of the relative excellence of classic poetry. J. D. Swinburne would confer on us an inestimable boon if he would give us in his verse a few translations of the most beautiful passages of the Greek and Latin poets.

It would be amusing, if it were not so melancholy, to see with what a light heart the architectural students treat the master art they follow; every one of whose three or four branches—transcendental, *i.e.*, each one may take a whole life of a man to master, and require genius as well, to enable any one to surpass the ancient masterpieces—I mean planning, construction, proper emotional excellence, a healthfulness; yet after three years passed in an architect's office each student feels himself competent to practise if his friends can get him work. Sir John Soane's retort to a young architect is apposite. The young architect said, "I ought to understand architecture, for I was articled to it for seven years." "The time takes to make a cheese-monger," was the reply.

When I see the long hours and the long years devoted by artists to drawing or modelling human figure and to the study of anatomy, a knowledge that even then he has but the elements of his art, and may want the divine gifts that are required to make an artist, I am almost despair at the prospects of architecture; still there is hope for the future in the fact of architectural students having their eyes opened to their own ignorance, which, through the teaching of the Architectural Association, they are trying to dispel. I was pleased to see a young architect working out models of masonry at the schools of the Associated Guilds in Titchfield street. I am doing my best to dispel from the students' minds the notion that the paraphrases of dead styles, is architecture, that it is more than the means of learning how to express themselves architecturally.

Sketching in perspective is no doubt a charming accomplishment, and the young men of the present day have progressed wonderfully in it; but art, and though it is not without its value as a means of cultivation, still it can never teach the architecture. When I look at the sketch-book of Willars de Honcourt, the French architect of the thirteenth century, I see that he was a man who could sketch but poorly; at whose efforts accomplished draughtsman of the present I would laugh; but Willars could design a cathedral, and see it properly carried out, and he could do so well that he was sent for to Hungary to build one there. The art of sketching is like making a coloured sketch of the painted decoration on the soffit of a vault, useful enough as a memorandum of the excellent effect produced, but affording no information as to how the effect is obtained; to get that information, the student wants a scaffold to see the actual colours used and the methods of using them, to produce the desired effect one or two hundred feet from the eye.

Although Greek architecture is the most perfect the world has yet seen, in which everything was studied with endless labour, and treated with supreme ability, so that a whole building, each part, answers as perfectly to the intention of the architect as the strings of a fiddle respond to the hand of the musician, it is absent without effect in this dull and misty climate; least for the greater part of the year, and the brightest sunshine never produces the rest obtained in its native country. In Greece sunshine plays endless symphonies on it from daylight to dark.

It is doubtful if we can ever again have such complete simplicity, owing to the number of modern wants, and the complexity of modern society; still, let us study it deeply, and take heed the lessons it so strongly enforces, of aiming at simplicity if we hope to attain the sublime. Every architect feels that he could design the Parthenon, if it had not been done before; though in this respect he is absolutely mistaken for to attain elegant simplicity is the most difficult as well as the highest achievement in art. To make architecture simple and expressive

nd lovely when loveliness is wanted, is the aim of most architects, and should be the aim of all; but for the architect to find out how to attain this in his particular work is the greatest difficulty, involving as it does the greatest efforts, as well as supreme genius. In comparing Greek with modern architecture it may be said:—

"We shift and bedeck and bedrape us,
Thou art noble, and nude, and antique."

Some pessimists say we can do nothing but paraphrase until the present civilisation of the world is submerged by a flood of savages; yet surely this is not a necessary consequence. We see that the Romans, when almost effete, when cruelty and corruption seemed hardly able to go farther, managed to develop a style that equalled, if it did not surpass, the best work done in the Gold and Silver Ages of the Empire. This fact alone ought to banish despair. Let us all combine our efforts to set architecture on its feet again, and if we can do this, I think we may be sure that the new phase of architecture that results will be a credit to our age and to our country. We should recollect that we are still, in the main, a courageous, honest, industrious, and enterprising people, and I hope we are also beginning to be a tasteful people, and may hereafter make the boast of "erikles that we love the beautiful." Wealth is the result of the virtues I have enumerated, and we should neither deery nor abuse this wealth, but learn how to use it properly for the instruction and delight of the world and for the honour of our country.

I have touched, in former lectures, on the merits and peculiarities of Greek, Roman, Byzantine, Saracenic, and Romanesque architecture, and I now propose to give you some remarks on Gothic, not as Mr. Ruskin once said, "to put into a storehouse for use, but into a gallery for study." I think it will not be amiss now to show you some masterpieces of Romanesque and Gothic after the Parthenon, for all subsequent architecture is a lineal descendant from the Greek.

I think, nowadays, few will deny that, though Gothic is very far from having attained the perfection of Greek architecture, even if it attained to the dignity of Roman, it has been able to raise emotions of, perhaps, a loftier sort than those raised by any other monuments; it has given us lessons in composition that, at least, are different from those to be learnt from any other architecture, and has shown to what perfection construction in stone may be carried. One of the aesthetic triumphs of late Gothic is the effect produced by pierced work in stone, which is certainly different from anything west of India, and it made another stride in the logic of building. The Greeks, and the Greeks alone, studied how to gain the utmost effect in their buildings from brilliant sunshine in a clear air; every moulding was adapted to that end with a perfection that indicates the most profound study corrected by experience and failure. The Gothic architects had neither the clear air nor the brilliant sunshine; as a rule, the atmosphere in which they built was always more or less misty, and their sunshine, where they had any, was feeble; so they set themselves to work in the most logical way to see how effects might be obtained in the mist by deepening shade, by strongly accentuating the parts that took the light, and by perfecting outlines to be seen against the sky.

That severe restraint that the Greeks imposed upon themselves the Gothic architects were not cultivated enough to practise, even supposing that they were sensible of the matchless beauty of Greek architecture, which is most improbable; for, apart from their professional knowledge and skill, the bulk of them were probably ignorant and uncultivated men. As late as the fourteenth century, the French architects, the Bons, the designers of the Porta della Carta and the Ca d'Oro at Venice, were merely designated as stone cutters (*tagliatori di pietra*). It is scarcely likely that these Gothic architects, who had at their fingers' ends a new development of architecture, who had surpassed the Romans in the height of their buildings, and had nearly equalled them in the spans of their vaults, and were revelling in intricate geometrical forms, should have been captivated by the massiveness and simplicity of Greek architecture. They probably despised the constructive ignorance of the Greeks and their lack of ornamental geometry, and what they looked on as the absence of interesting detail. The Gothic mouldings were, in all probability, the result of the architects' efforts to gain the effects they wanted in their own climate. If you exclude square mouldings, such as the fillet and fascia,

the Greek mouldings were the bead and torus, the quarter round, the ogee, and the hollow, and, in late work, the Cyma recta; each one infinitely varied, as the case required, but rarely departing from the generic form; and in their best Doric work a very few even of this restricted number of mouldings were used: while in Gothic there were hundreds, if not thousands, of mouldings used in a great abbey church or in a cathedral. It was, there, ore, impossible to bestow much time on their elaboration.

I may here say that I use the word Gothic in its common signification, as the laymen's art that sprang up at the end of the Romanesque period of clerical art, about the middle of the twelfth century, which, for easier recollection, we call the art of the thirteenth century, to its extinction in the early part of the seventeenth century.

I may also say that I do not propose to investigate Gothic archaeologically or philosophically, though both sorts of investigations are profoundly interesting. I am going to treat it practically; that is, to see what lessons we may learn from it for present use. Many get their living by being able to copy or paraphrase Gothic, and though the desire of getting one's living is very praiseworthy, it will scarcely help us directly in advancing the art of architecture, which is the one thing to be most earnestly desired and sought after. I hope I may enlist you in this quest, for surely nothing should be more desired by architects than to see architecture again a flourishing and progressive art, expressing all the main characteristics of the wonderful epoch in which we live, and meeting the desires and raising the admiration of the most cultivated people of this epoch.

When the public realises what architecture does for a nation, even for a town, it will be treated with greater respect, and the architects will be more cherished, admired, and honoured, and will thus be stimulated to make greater exertions. It must be borne in mind that it is an obtrusive art. In a town it meets you at every step, and cannot be hid away like a book, a picture, a statue, or a musical instrument. If it be real architecture, and produces the right emotions that the building should excite, it makes that building at once deeply interesting. It proclaims even in an ordinary street the relative dignity and taste, the occupation, or the liking of the owner—that is, supposing he has had it built for himself; while if it be a public building it speaks a higher or more important office, and in both cases causes admiration for the care, thought, and invention bestowed upon it. At the same time it shows the character and condition of the nation at the time it was erected, and is a permanent memorial of the cultivation of the people. No reflective person can see any kind of architectural monument without it giving him a notion of the people at the time it was built; its gables, pediments, domes, spires, towers, lanterns, and pinnacles diversify the sky-line and give interest to it; it tells of an expenditure of wealth and labour, of skill and invention, and gives us a sort of epitome of what the people once admired. It is full of lessons of the most important sort that we can hardly miss, while many buildings fill us with delight from their beauty. We know little of mediæval times, and we should know much less, were it not that mediæval buildings are dotted all over the country. Architectural monuments may be ruined or pulled down, but except in the case of the very small ones they cannot be moved, and if they are beautiful, lovely, sublime or frowning, they attract persons from all parts of the world to see them, or as students to study them, and when at last, in the vicissitudes of ages, the nation that built them becomes insignificant, or is swept away, they still remain as landmarks to show how rich, powerful, scientific, and tasteful it once was. How little should we know of Egypt, of Babylon, or Nineveh, of Mexico and Peru, and how much less should we think of their former power and greatness, if all their colossal buildings had been destroyed. Should not this reflection appeal to the patriotism of nations, and induce them to foster architecture and to honour the architects? and should not the same reflection stimulate the architects to hand down to remote posterity in enduring monuments the greatness and cultivation of their time?

VILLAGE HALL, ST. NICHOLAS, CARDIFF.—A village hall has been erected, at a cost of 1,200l., at St. Nicholas, on the main road to Cowbridge. Built of Duffryn stone, and covered with red Broseley tiles, the building consists of a hall capable of accommodating 250 persons. The architects are Messrs. Lansdowne & Griggs, Newport, and the builders, Messrs. Horton & Co., Chepstow.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

THE SCULPTOR'S ARCHITECTURE OF THE RENAISSANCE.

AN ordinary fortnightly meeting of this Institute was held on Monday last at No. 9, Conduit-street, Regent-street, Mr. Alexander Graham, F.S.A., Vice-President, in the chair.

The Royal Gold Medalist.

The Chairman announced that the Council proposed to recommend that, subject to the sanction of Her Majesty the Queen, the Royal Gold Medal be presented to Mynheer P. J. H. Cuyppers, of Amsterdam, for his executed works as an architect. It was the opinion of the Council that this year the medal might be awarded to a foreign practising architect. Mynheer P. J. H. Cuyppers was the leader amongst architects in Holland, and, as would be seen from a little catalogue of his works, he had been practising for nearly fifty years, his labours having extended to nearly all kinds of architectural work.

The Chairman also announced that a visit would be made on Saturday, the 6th inst. (to-day), to Peterborough Cathedral. The number of the party was limited to thirty, and twenty-one members of the Council and others had already announced their intention of going. In conjunction with this matter, the Council at a recent meeting passed the following resolution:—"That the Council, having fully considered the matter of the restoration of the west front of Peterborough Cathedral, are of opinion that it would be inexpedient for the Institute to take any public action therein."

Mr. Alfred Gilbert, R.A., then read a paper on "The Sculptor's Architecture of the Renaissance."

Mr. Gilbert said that the subject of his address suggested very much, but his remarks were intended as suggestions for inquiry by his hearers. In the days of the great artists of the Renaissance, art was in her re-birth: it was no age of assertion, but of endeavour; it interested, enchanted, and lured them, therefore, to inquiry. Why were they present that evening to discuss the architecture of sculptors of a past age? Surely it was because they recognised in certain works which held them, which puzzled them, the handiwork of a class of individuals who, though cunning with their tools, were yet children in the use of the T square and the set square of modern times. A study of the methods of those men was refreshing, not to say restful, in these days of hurry and materialism. The very title of his address would be a wonder to most, an astonishment to many, and to not a few an anxiety. Sculptor-architect! Architect-sculptor! Where was the difference?—and yet, what a difference existed! Add the magic word "Renaissance," and the query was almost immediately answered. The sculptor-architect at that period was still alive, but the architect-sculptor—his existence was really not a matter for their inquiry. He probably existed despite the fact that his efforts formed less of a phenomenon than those of his brother craftsman. How came this so-called sculptor-architect into existence? At the memorable period which they were considering, despite the desire to create a national architecture, there seemed to have been little attempt on the part of the architect of the period to realise anything beyond a more or less free revival; of imitation or adaptation of classic models examples were not wanting. The sculptors, though imbued with the same spirit, had fewer examples of the finest in their art. The glories of Phidias were unknown to them, but the source from which he drew his inspiration was open to them daily in their studies from nature in all her suggestiveness. The architects were hard at work as students of antiquity, striving to reascend and imitate, while the sculptors were yearning to create—indeed, to give to future generations the true impression of their own lives and time, and not that of a remote age, with which their admiration and not their actual sympathies were in accord. Was it to be wondered at that, under such conditions, the sculptors of the period should long for licence and liberty, and a larger field for their invention, and that they should venture to essay the provision of accompaniments to their own work, and then, greatly fascinated by the vision of possibilities which had been revealed to them in their endeavours in structural art, should carry their ambition still further to attempt the creation of the very forms they had been called upon to decorate? In short, to govern, instead of being governed? This, to his mind, though he put it forward tentatively

and as a suggestion, supplied the origin of the most remarkable phase in the history of the Renaissance. And since the influence of it, spreading as it did through Europe and inspiring such works as were to be found in all the great centres of art, was manifestly so great, he thought that if more attention were given to the study of those productions much good would result, and there would be some hope of the next generation placing themselves, through their works, in the independent position of those artists of the Renaissance whom they admired, and whom they had every inclination merely to imitate. But Art was not imitation, but creation; and, above all, it recognised no specialities. Those were the wares of the pedlars of Art—the purveyors of trifles. That was evidently recognised by the men of the Renaissance, and it was not to be wondered at that in an age of sumptuousness and magnificence, such as was that of the Renaissance, when employment was not lacking and encouragement was intoxicating, that the striving to excel should have become a passion—that the ambition to build palaces should have taken the place of the former tendency to ornament palaces already built? In fact, that the sculptor should have aspired to hind his own art with that of the architect, and place himself above the position of journeyman decorator to a master adapter; and, furthermore, to work on lines founded upon his own conception of the spirit and traditions of the art of his predecessors, strengthened by that intense craving to create for himself. So far, he (the speaker) had endeavoured to trace the possible origin of the existence of the sculptor-architect, and he would now refer to his work. He was not prepared to claim for it a striking pre-eminence when directed simply to the erection of edifices. In examples which they all knew as the productions of sculptors there was undoubted evidence of the hand and mind which had been trained for the practice of the plastic art. It was rather in the treatment of ornament, when combined with purely architectural forms, that he felt inclined to favour the sculptor in his dual capacity. The sculptor had been used, before his usurpation of freedom, to design and execute ornament for building in which he had had no hand, and to his employer his ornament meant so much decoration, while to him it was the expression of an idea. A knowledge of this peculiarity fitted the sculptor for the task he was about to undertake. Another qualification which was his, and which we must not overlook, for the outcome of it was so marked a feature in all the productions of the sculptor-architect of the Renaissance and the period immediately following, was the training he usually received in the art of the goldsmith. To that must, no doubt, be attributed that extraordinary freedom of treatment, that abundance of invention, and that accuracy and delicacy of execution—to say nothing of the sense of colour and light and shade and due appreciation of proportion which characterised their work. With the freedom thus obtained, the knowledge of their particular tasks, and with the fire of their new ambition, no wonder their productions were what they were. In regard to the desirability of young architects and sculptors studying the art of the Renaissance, such a study could not fail to impress upon them the grandest lesson that could be learnt, viz., that it was a duty that every artist owed to himself, his art, and his generation, to endeavour to place himself beyond the reproach of being a mere imitator of masters and styles of a past age. It was the spirit of the age and not the letter which he should accept, and he should worship it and bind himself to the obligations which its mere influence should place upon him to endeavour to pass on to posterity the rich legacy, further enriched by the imprint of his own time and his individual judgment. Art was a very old republic, and to it had been given the grand secret, the elixir of life—that secret which for ever had been denied to man. Art was as young to-day as it was centuries ago. Its existence was a curious mystic one—at once retrospective and progressive. Its every movement forward was a reflection from the mirror of the past. Its life was a constant reflection backwards and forwards in the mirror of ages. Its future was written in the magic word "tradition," and this word, with its mighty significance, would ever remain the "Sesame" of Art's every onward movement. It was the spirit and traditions of Art's great principles which must govern them, that they might grasp the inspiration in their time, and through their own individuality, before they could hope to hand

on, much less to realise, the important legacy that they had from those who sought to be more than mere specialists, journeymen-decorators or master-adaptors. In conclusion Mr. Gilbert said that he had miscalculated his time and had miscalculated his would-be effort. He had counted only upon the hope that what he thought was more than it appeared to be, would inspire them to a discussion, which, as he had already said, would be more faithful than any words of his. He begged the pardon of his hearers for letting them off so easily, and he prayed them to co-operate with him in helping him to make what he thought would have lasted much longer, last long to their profit.

Mr. Alma Tadema, R.A., in proposing a vote of thanks, said that the paper was full of theories of the highest aim, which made him dream of all the beauties of the Renaissance, and all that time of the revival of the antique, without giving him anything positive to say beyond admiration for those beautiful things, in the light of which we were daily feasting, and from which we daily profited in our life. That time that was so fruitful for mankind in every direction, was for Art, of course, an everlasting source of study, and to be brought to admire that which was worth admiring was always a reason for feeling full of gratitude. What the influence of the sculptor-architects and architect-sculptors had been was a thing which he should like to see more developed in the modern practice of building. He should like to see the Arts more clasping hands together, the architect being a little more of a painter and a sculptor, and the painter and the sculptor being a little more of the architect; then they would be more complete; and any effort that was made to direct them in that way they accepted gratefully.

Mr. J. M. Brydon, in seconding the vote of thanks, said that it must be apparent that he had arrived at some progress when it was possible that a discussion of that kind should have been inaugurated in that room, when they remembered that not many years ago the architecture of the Renaissance was treated as something to be scouted, and that anything approaching such a matter as was done in St. Paul's was considered far beneath anything done, say, in the thirteenth and fourteenth centuries. It was not so long since that room re-echoed to the cheers that greeted papers on Gothic architecture, and it indicated progress that they had got to look with a lenient eye on the work that came after it in England. Mr. Gilbert's paper had been very suggestive in many ways; he had told them what a meaning there was if they liked to look under the surface in the workings of that great artistic phase in the period of men's minds that passed over Italy in the days of the Renaissance, and produced works that we all admired. His immediate purpose was to talk of the architect-sculptor; but it was very difficult to draw the line; it was a question whether they were not architect-painters, because more or less they were painters as well as sculptors, and sculptors as well as architects. But there were one or two names that did stand out as sculptor-architects, and one of them was Michelangelo. He was a great painter and a great sculptor, and he was a great architect, although he (the speaker) did not say he was the greatest architect of the Renaissance, and they would find this characteristic in his work, that he looked upon architecture from the sculptor's point of view—naturally the decorative side of it obtained over the constructive side. If they looked to his early work, e.g., the San Lorenzo Library, Florence, or the Chapel of the Medici, they would find that (he was not saying anything derogatory to the sculptor-architect in this) it arose, probably, as Mr. Gilbert had said, from the sculptor having an ambition to create the work he was to decorate. They saw the genesis of that in the staircase of the San Lorenzo Library; if they looked round the walls of the room, the columns that decorated it merely decorated it; they were not constructive in any sense of the word; they were set in recesses in the wall and merely formed objects of decoration; they did not even supply the place of the decorated pilasters so dearly loved by Palladio and some of the later architects, the object of which was to support the entablature. But apart from all that, Michelangelo was a great architect, and one of the things that he did, which redounded to his everlasting credit, was the saving of the facade of the Farnese Palace which he completed at Rome. So far as they could gather from San Gallo's original design, the top was to be completed by a series of pilasters, but he died before the building was finished, and Michelangelo was called in to complete one of the greatest monuments of the very best period of

the Renaissance of the sixteenth century. He designed the magnificent cornice which pulled the building together. If he had never done anything else than that, he thoroughly grasped what was required of him as an architect. Putting that enormous cornice on that building saved it from being a repetition of one story upon another, and from being commonplace. That was the work of the sculptor. They might say it was decorative work, but it was also constructive work, because it was the finish of the whole and the support of the roof to some extent; and therefore Michelangelo there showed himself to be endowed with the attributes of a architect in being able to clothe with beauty a feature that was absolutely utilitarian. Sansovino, again, was an architect who was also a sculptor. He designed the Library of San Marco at Venice, which was a sculptor's facade, against the architect's facade on the other side of the Piazza, which was purely constructive. The Sansovino Library was distinguished above all things by its sculpture, which was, he would not say obtruded, but brought into decorative prominence, which perhaps only a sculptor would have made of such importance. When he had added a small story over the main building of the Library, he did it by enlarging the frieze, and putting very small windows into the frieze, united to each other by a band of sculpture ornament, as had been done to a certain extent at the Carlton Club in Pall Mall. This again was the characteristic of the sculptor, and Sansovino was a sculptor of considerable eminence, though not such a giant as Michelangelo. He (the speaker) hoped we were getting back to the time when sculptors and architects would feel that building was not complete unless they worked together. It seemed to him that the greater future of our English sculpture, and, he thought, of our English architecture, would be found in the decoration of our great public buildings by the sculptor and architect in harmony with each other. He did not agree with Mr. Gilbert that the architects in the age of the Renaissance were all adapters. They were not there to discuss the relative merits of the different architects who contributed to that vast movement, which extended not only to sculpture and painting, but to everything else. There were some greater architects than sculptors; he merely mentioned two, Bramante and Peruzzi, who were peculiarly architects without being sculptors, and carried out the idea of architecture, in the sense of a constructive art, as it ought in the first instance to be, most completely than sculpture.

Mr. Beresford Pite, in supporting the vote of thanks, said that some of them regarded Mr. Gilbert as being in many ways a typical example of the combination of architectural art with that of the sculptor, and they therefore welcomed his presence and assistance in a very special manner. He (the speaker) suggested that architecture and sculpture were in a particular sense in these days in need of each other's ideas. He was afraid that any usefulness in this exchange would not be derived at by the architect trying to combine the sculptor with his work, any more than it would have been if Michelangelo had called in an architect to assist him in the design of St. Peter's. An architect suffered from a complaint that the sculptor did not, and the sculptor suffered from another complaint (he was going to say homely) from which the architect did not suffer and the conjunction of these two complaints might produce a very healthy state of design. An architect was fettered by a large number of facts, by the lines he draws, by tradition from his fathers, by his Orders, by his plan, by a number of constructive circumstances, problems, and difficulties, with which he was bred and which practically became part of the bone of his artistic soul. He could not get free of his traditions, he would have to unlearn everything and start again if he was to think of his problems from the point of view of the sculptor; and in the same way the sculptor suffered from the loss of these restrictions. The sculptor's art was too often merely an effort to create an idea out of nothing; a statue which a maiden was listening to a bird, or that Love was standing in the moonlight. Such ideas were played out; they had had their day, and the public had enjoyed them and the sculptor—though profited by them; but he thought the time had arrived when the introduction of a little architectural vaccination into the arms of the sculptor and the infusion of a little sculptor's blood into the veins of the architect might produce a mongrel sculptor-architect or architect-sculptor of a distinctly strong breed. Mr. Brydon

nd introduced Michelangelo to them as a great architect, though not, perhaps the greatest architect of the Renaissance. He should like very much to ask who was the greatest architect of the Renaissance?

Mr. Statham: Brunelleschi.

Mr. Pite: Could they separate Brunelleschi together from the sculptor's surroundings and training? Could they compare Brunelleschi with Michelangelo? Michelangelo found a singular measure in taking an architect's facts and features and treating them as if he were treating the facts and features of the human figure; he took masses which he found provided for him by the architect and threw them together, not with reference to structure or decoration, but with reference to the sculptor's idea of strength, of vigour of line, of delicacy, and of contrast of light and shade, they would see if they looked at that staircase in the Library of San Lorenzo. He did not believe that it proceeded from the hands of Michelangelo; he believed the man who designed it was Vasari, who put the curved lines in the steps because he fancied, like Hogarth, that there was an esoteric beauty resident in the ogee curved line. There was nothing of that in Michelangelo; he scorned it in his own work as in his architecture. Could not you, as architects, take up with some amount of the sculptor's materials and tools and work in them, and could not they find the same measure in sheer massing of light and shade, in the sheer treatment of the features for their plastic elements rather than their constructive elements? It might sound heretical, but he cited that Vren had a great idea that all the weight was massive force when he piled up the heavy wall around that great dome, and when he formed that delightful colonnade round the dome externally which bore no architectural connection to the Cathedral at all, and when he put it divided into masses its recesses, for the sculptor's reason simply because he liked the contrast, the play of light and shade. Coming down to our own time, we found in the work of Alfred Stevens a wonderful illustration of the fact that another genius took up architectural forms, he was going to say, threw them about. His Wellington Monument was enough to make the stand on end when they looked at that deepening curved pediment springing off the corner of the cornice. It was unconstructive. It is traditional, he admitted, and the beautiful effect he had maintained the tradition, with the effect of giving spring, strength, and virility to design, was marvellous; but he had achieved by a sculptor's process of thought, and not by a constructor's process of thought. But there is even a step further that he (the speaker) thought we could go. Some of the most successful architectural buildings in London had not been erected by architects—he wished we could see they had been erected by sculptors. He thought it would be generally admitted that the best school at Kensington was one of the most successful buildings of our period; there is design, great originality, and very great beauty of detail. Now none of them could say out of an office that design came, or tack it on to any particular school of English tradition. It was evolved quite apart from the Gothic revival and quite apart from the traditional classic school of the time; it came out of the mind of Stevens's studio, and it stood as a wonderful record of a beautiful building in the middle of a number of very architectural and very architectural buildings. In these days, when we have searched antiquity and have worn it out, when we have tried to attain to the secrets of Greece even by the mysterious road of mathematics, and when we have exhausted all that archeology and ecclesiology have provided for us out of the Middle Ages, and have come down to those almost cursed impostures which strip us of ideal architecture and leave only bare brickwork and simple construction, and letting architecture conceal itself to the door-knockers, he thought when a door was opened to us so suggestively as Mr. Gilbert had done that night to the consideration of the higher aims that actuated the great sculptors of the Renaissance we had some little hope left to us that if architects could rise to the occasion and read their studies to the real beauties achieved in these sculptor-architects, we should have a chance before us that we should do well to walk in.

Mr. Statham said he wished to explain why he mentioned Brunelleschi when Mr. Pite appealed to him to name any architect of the period as equal to Michelangelo. He did so because he considered that the very beginning and basis of

being an architect was that a man should know how to build. Now Michelangelo failed in the construction of the dome of St. Peter's, which cracked at the haunches and had to have a chain put round it subsequently to keep it from falling altogether; whereas Brunelleschi knew where such a tie would be necessary in the section of his dome, and put it in from the first; he was therefore a better architect. It had been said that Michelangelo would have gained nothing by having an architect associated with him. He (the speaker) did not agree with that in the least. An architect who knew his business could have taught Michelangelo that there was such a thing as scale in architecture, and that to make a building look colossal it was not the right way to make the details colossal; and secondly, an architect could have taught him how to build a dome so that it would not crack. That, he submitted, counted two points to the architect.

Colonel Prendergast said he was in hopes that he would have been told to what period of the Renaissance Mr. Gilbert's remarks were directed, and he had had an idea that he would have heard explained a matter of great interest, viz., the sculpture-architecture of the Quattrocento period. No one who travelled in Italy and who saw those magnificent and perfectly gem-like works could do otherwise than feel that there was a refinement and knowledge about those men, and there was a culture about them to which at present we had not the key.

Mr. H. L. Florence said that what passed through his mind during Mr. Gilbert's very suggestive address was that there was a certain analogy between architecture and sculpture and poetry and prose in the formation of language—that the one was the other gained from the association of ideas; that as prose was ennobled by the words and frequently the rhythm of poetry, so architecture in the periods to which Mr. Gilbert referred gained certainly by the refining and elevating influence of the sculpture. But one of the two must always be the leader; if it was to be poetry, the poetry must be left to itself, and if it was prose it must be free from the too great licence of poetry. He thought that the same had happened in the history of architecture and sculpture. In the early days the lines of the sculpture and its general ideas and disposition were purely architectural, but in later times the influence of the sculptor upon architecture was more prominent, and, to a great extent, it was a deterioration. He would take Bernini as an example. Bernini was a great artist both in his architecture and in his sculpture, and he was successful in combining them and in imparting new ideas and heretical ideas into both, but he was the commencement of a period that led to great degeneration. His almost immediate successor, Borromini, carried all these to too great an extent; he was not content with the simple lines of leading architecture, but imported into them sculptural and fantastic types, which led to combinations, pediments, curves, and twisting of curves, which had cast a reflection upon that period of architecture ever since. To show the influence of the painter's art upon the architect, they might refer to Sir John Vanburgh. He was an architect of very great merit, but he proceeded upon lines of design more in the way of a painter's combination of masses of light and shade. Blenheim, both in its plan and its combination, showed that very plainly, although it might be taken as lumpy and heavy as an edifice. When it came to be studied there was a great deal of thought both in the plan and the groupings of the various blocks of buildings. At the present day we did not often have such opportunities of bringing into contrast the light and shade; our buildings in modern cities were more frequently in regular masses—we had not the opportunity of projecting vast recesses and carved figures, except in those unhappy corners of streets which occurred so frequently, and a return to a simpler style of architecture, such as was practised by the great architects who had been referred to of the more early period of the Renaissance, would show them all by the study of their works that they had much yet to learn from the architects and sculptors of those days.

Mr. Owen Fleming asked if Mr. Gilbert would look upon the spire of Bow Church as a fine piece of sculpture architecture? It was a beautifully modelled spire, but it had no figures and nothing that one ordinarily associated with sculpture. If that was his view, then Mr. Pite's remarks would almost mark an epoch in the development of the way we looked at buildings from what one might almost call the plastic point of view. Another reflection was whether

we were training the younger members quite in the right direction to look at their buildings from this point of view.

Mr. G. A. T. Middleton said that all the great architectural periods seemed to have been periods when architecture and sculpture had been very closely allied—the great Grecian period, the great Early Gothic period, and the great Italian and Renaissance period. But while in the Italian Renaissance period the sculptors were to a great extent architects, that did not seem to have been the case in the other two great periods. The Parthenon was the work of one architect, embellished by another sculptor—there were two men employed, two minds at work. Was it necessary, therefore, that the building should be designed and embellished by the same hand? So, too, in the Gothic days, were the same men the architects and the sculptors? We did not really know, but it hardly seemed so. In the Renaissance period the sculptors in many instances were architects, but there were also architects who were nothing but architects; others were painters and architects, but not sculptors. Others, like San Gallo, were architects only. Great buildings could be produced by architects only; greater buildings perhaps by architects who worked in combination with sculptors; great buildings also by sculptors who work as architects; but they, as architects, would submit that at least architects were capable of producing the greatest work. One of the greatest modern works in London, the Accountants' Institute, was the work of an architect in combination with a sculptor—two minds at work again.

The Chairman, in putting the vote of thanks to the meeting, said that Mr. Gilbert had opened up what one might call the higher ranges of thought in this matter, and it was for us to apply them in our practice. It was difficult, perhaps, to define what a sculptor-architect was any more than what an architect-sculptor was. In medieval times one could not say where the architect left off and where the sculptor came in. That perhaps was a matter of regret; it would be better if architect and sculptor combined in all cases where their joint artistic efforts could be brought to bear upon any monumental work. It was very seldom indeed that we found a completeness in the work of the architect and sculptor in any building—perhaps not half-a-dozen model buildings in the whole of London were to be found. He might mention the London University, in Burlington-gardens, which, he believed, was erected from beginning to end exactly as it was intended to be, but that was owing to the pertinacity of Sir James Pennethorne, who insisted that the building should be complete. Mr. Brydon made some very interesting remarks with regard to the great man to whom he alluded. Such names as Michelangelo, Sansovino, and others come up to one almost "like recollected music"—they were the standposts to which we cling, and to which all who come after us would cling as their guides in artistic life. What Mr. Brydon said about Sansovino most of them would concur in: that any expert in architecture could tell which was the sculptor's work apart from that of the architect's. Architecture was necessarily a constructive art, and in examining a building we always looked for the constructive art, and he thought that was a matter that sculptors did not always bear in mind—they did not see, from their art point of view, that architecture was essentially an art of construction.

The vote of thanks was then put and carried unanimously.

Mr. Gilbert in reply said, in regard to the Chairman's remarks about the London University, would it not have been better if a second thought had been entertained before those—he was going to call them finials, he would call them statues, (because they were intended for statues), were allowed to stand as continuing columns and do nothing except look ugly? The essence of the training of the sculptor was really more with a view to imbuing him with a sense and a real appreciation of the necessity of the knowledge of structure, but it was in a different form from that of the architect. The construction, the structure of a building, after all was contained in very little, but the structure of the human figure was a complex thing. He should like to contrast the structure of the human figure with that part of the structure in architecture which was known as "thrust" and "compensation of balance"; it really was that. Therefore the sculptor's task was to master structure and construction in that which he was supposed to confine himself to. The making merely of the human figure was no slight task, it was much more complicated in

the methods by which he arrived at his training than were those methods which an architect had to go through to learn his construction. He had, so to speak, a log book, but the sculptor had no good log book; he had nothing set down for him, and he took it that with the painter it was the same. If they built a wall of a certain thickness and a certain height, which had to carry a certain weight, they could work it out, or rather they could have a book in which it was worked out for them. Sculptors could not do that. If they wanted to make a figure stand on its legs they had one principle—plumb. They could make any amount of undulating lines they liked, where the architect had to depend upon his plan for his undulating lines. Sculptors could change their lines; they could begin at the head and go down; the architect must begin below and go up. That was the difference of construction. As to Mr. Pitt's remark that the modern aim of sculptors was to represent the old-fashioned form, that was not so, and the very object of the words he used in his lecture was to advocate the breaking loose from that idea—that the sculptor should not be considered by the architects or by anybody as merely a maker of what the Italians of whom they had heard that night would have called "pupazzi." As for Michelangelo, he (the speaker) purposely left aside the mention of any name. Michelangelo might have made faults, but his great so-called imitator also made them. They were both sculptors—for he claimed for Wren the distinction (he called it a distinction) of being one of the very greatest English prototypes of what he would like to call the sculptor-architect. He was a modeller of things, and he could not say that Wren was second to the great god he had been taught to worship. The matter of scale was better understood by Wren than it was by Michelangelo. Michelangelo in his belfry windows made apertures that St. Paul's might have been expected to be put through. Let them go to St. Paul's and look at that non-constructive, if they liked to call it so, that do-nothing colonnade—but it is beautiful. It might be carrying nothing—Bow Church had things that carried nothing—but it was plastic. There were lots of examples, but there was not a single example he knew of Wren's that was not a pure and simple specimen of what he called the sculptor-architect's work. He was a modeller of things, not a builder of things, not a bricklayer, not a mason, but a great moulder, a great plastic artist, an enormous giant that he had not seen the like of since in England. Here came in the plea that he ventured to set forth—that architects should study sculpture and sculptors should study architecture; then they might get that appreciation of that force which that great man had given us. Stevens's Wellington monument had been alluded to. No one admired him more than he (the speaker) did—not only because he was a contemporary, or because he was a singlehearted workshipper at the shrine of all that was beautiful, but because he was a man who tried to emulate everything that was fine, a man who came at a bad time (like another great man who was lost just before him, and like many men who began their life at that time) on the top of a rotten-crested wave. But they did not see Stevens at his best in the Wellington monument. His greatest effort was in those works which distinguished the sculptor-architects; it was that power of design, of realising an idea in the design—not merely a mass of tracery, "This is an ornament" written underneath, but every line meaning something. He was like the great Bernini, whom they had heard so much abused, who built and made that magnificent baldachino in St. Peter's. Stevens took from Bernini traditions, but he did not copy Bernini because he was essentially Stevens. He had not the slightest intention to convey that building and sculpture should be necessarily the work of one hand—that we knew was an impossibility; but what he wanted to impress was that it would not be at all a bad or an unbeneficial thing for those who were learning to walk in their respective Arts, whether they be builders or whether they be architects, if they would each study the art of the other, that they might know, when they had to build a building, that it was far better to employ a man who was trained as an artist to help the architect to carry out his work than to call in, forsooth, the purveyor who would supply at so much a foot, and through the hands of imported labour that which he could get cheaper, but the interests of the maker of which he could not enlist further than the Saturday night's consideration. Would it not be better that the architect should

learn that it was possible to get the sympathy of his brother artist and treat him as such, and let the sculptor treat the architect as a brother artist and give encouragement to the would-be sculptor-architect to make beautiful things? There were men who might be young in their Art but who were quite as capable as the hired labourer of the purveyor and pedlar of trifles. There were hundreds of youths who could make Gothic statues if they wanted Gothic statues, and could make recumbent bishops if they wanted recumbent bishops, and what he had in his mind was that the architect of to-day did not seek to work with the sculptor, and consequently the sculptor said "*Ennas nocte*"—as he (the speaker) did then to his hearers.

The Chairman announced that the next meeting would be held on the 15th inst., when Mr. H. E. Milner would read a paper on "The Garden in Relation to the House."

The meeting then terminated.

NATIONAL ASSOCIATION OF MASTER BUILDERS OF GREAT BRITAIN.

THE National Association of Master Builders of Great Britain held its thirty-eighth half-yearly meeting at the Old Bull Hotel, Blackburn, on the 26th ult., when representatives were present from London, Liverpool, Birmingham, Bristol, Manchester, Hull, Blackburn, Bolton, Bradford, Huddersfield, Plymouth, Wolverhampton, Southport, Scarborough, Burslem, Leicester, Wigan, &c. Mr. Thos. F. Rider, London, President, was in the chair.

The report for the past half-year was approved and adopted. Mr. C. W. Green, of Liverpool, the Hon. Treasurer, submitted his audited accounts for the half-year, showing the financial position of the Association to be most satisfactory.

The President, in his opening speech, said that though the state of trade generally was good, they had to deplore the ruinous competition which seemed to prevail in all trades throughout the country. It seemed to him that competition up to a point was a very valuable thing, but he objected to "cutting each other's throats." This competition seemed to increase as years went on. He supposed it was one of those matters which would go on, but it was rather a pity that men should follow out a practice which was inimical to them in so many ways. Another thing that they had to consider was the old complaint of the British workman, whose desire seemed to be to give the smallest possible amount of work for the largest amount of wage. The only remedy seemed to be a revival of the old system of payment for piecework. As regarded the question of the Employers' Liability Bill, no doubt this would be of a considerably more stringent character than ever. It seemed probable they would be held liable for accidents of every description, whether caused by negligence or otherwise, and he thought that this liability might be met by joint insurance. If some means could be devised to make a fund to be subscribed to by master and workman, it might solve the problem of Employers' Liability. No further steps had been taken respecting the Plumbers' Registration Bill. The question of arbitration had taken up a great deal of time with many of the Associations. In London they had a clause that in the event of any man being obnoxious, and the employer refusing to discharge him at the wish of the workmen, the matter should be referred to arbitration, and if the masters and workmen could not agree in the choice of an arbitrator the Board of Trade should appoint one. If this way became universal there was no doubt that it would lead to a much more happy state of things, as there must necessarily be more satisfaction in arbitration than in fighting a matter out. The President then spoke at length as to the best form of contract, and stated that the old form, agreed upon more than twenty-five years ago, still continued in use, in face of a new and more elaborate one prepared by the architects, and this principally because, he said, of the unfairness of the Arbitration Clause. Finally, he wished to increase the number of the National Association of Master Builders, and to make it in every sense a "National" Association.

Mr. Bowles (Burslem) and several other members supported the President's remarks with regard to increasing the scope of the Association.

The question of the form of apprenticeship indentures was discussed, and it was decided to leave the matter over until the next meeting, so that members should have an opportunity of further considering the proposed form.

The Secretary read a resolution of the London Central Association as to the scarcity of plasterers.

The President said they had had considerable trouble in London, and one thing had been proved to them, viz., that the supply of plasterers was insufficient. Various ways had been suggested of increasing their numbers. Among the ways were:—1. To increase the number of apprentices. 2. To find a substitute for plastering. 3. To maintain schools of plastering. Several of the members expressed their opinion on the subject and it was decided to refer the matter to a Council.

Mr. T. F. Rider (London), Mr. J. Stevens Jones (Liverpool), and Mr. Ald. W. Holdsworth (Bradford) were re-elected to the positions of President, Senior Vice- and Junior Vice-President, respectively for the ensuing year. Mr. A. Kray (Bristol) was elected Hon. Auditor for the ensuing year. Mr. G. Hardington (Leicester) and Mr. R. G. Jenkin (Plymouth) were elected members of the Council for their respective towns. Mr. C. A. Hayes (Bristol) invited the members of the Association to hold their next half-yearly meeting in his city, which it was unanimously resolved upon to do.

A hearty vote of thanks was accorded to the President for his services in the chair.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, Sir Arthur Arnold, Chairman, presiding.

New Entrance to Richmond Park.—Mr. Bounois, M.P., submitted a petition, which, said, was numerously signed by the Metropolitan ratepayers generally, urging the Council to consider the advantages that would arise from opening up some of the streets leading to Roehampton-gate, Richmond Park, by way of forming a new entrance to the park.

The petition was referred to the Improvement Committee.

Loans.—On the recommendation of the Finance Committee it was agreed to lend the Chad Vestry 7,900*l.* for laying asphalt in King-street, the Battersea Vestry 2,040*l.* for electric light purposes at the vestry offices and town halls; and the Holborn District Board 3,000*l.* towards defraying the cost of their contribution towards Brooke's Market improvement scheme.

Manager of Works.—The General Purposes Committee reported as follows:—

"The Council on December 1st resolved that an advertisement should be issued inviting applications for the position of manager of the Works Department, with the understanding that the appointment is not necessarily a permanent one, and that the salary would be subject to revision in the event of the Council deciding that a limit should be placed on the extent and character of the works to be executed by the Works Department; and that in response thereto 237 applications were received. The applications were in the first place considered by a sub-committee, who, after seeing twenty-two of the candidates, submitted to us the names of five of the candidates. We have ourselves seen these five candidates, and, having weighed their respective merits and qualifications, we now, in accordance with the standing order, submit to the Council the names of the following three, viz.:—1, Mr. Adams; 2, Mr. H. H. Holt; 3, Mr. J. J. W. Brink. The standing order also authorises the Committee to indicate, if it should think fit, the candidate whom it recommends the Council to appoint. We recommend—

"That, subject to his passing satisfactorily a medical examination, Mr. William Adams be appointed Manager of the Works Department at a salary of 1,500*l.* a year, in the understanding that the appointment is not necessarily a permanent one, and that the salary is subject to revision in the event of the Council deciding that a limit should be placed on the extent and character of the works to be executed by the Works Department; and that the appointment be made upon the following conditions:—That the appointment be terminable by three months' notice on either side; that the manager be required to give whole time to the duties of his office, and be not allowed to take any private business; that any fees received by him either as a witness or in any other capacity, and any claim placed on the estate or materials purchased, be paid to the Council; and, further, that on retirement he shall not be entitled and shall not make any claim to any retirement allowance under the Superannuation Act, 1886, and that he shall be subject to the Council's regulations in respect of a superannuation and provident fund."

Colonel Ford moved, and Mr. A. Smith seconded, to refer the matter back for further consideration, but after some discussion the recommendation was agreed to.

Mr. Adams thanked the Council for appointing him to the post, and said that he would spare no effort to make the Works Department a success.

From his experience he had no doubt whatever that a great deal of the Council's work could be done cheaper without a contractor.

Boadicea Statue.—The same committee brought up the following report, the recommendation being agreed to:—

"On December 22 last we brought up a report to the Council on the subject of an offer made by Mr. W. J. Bull, L.C.C., with reference to the Boadicea statue, and the Council adopting our recommendation passed the following resolution:—That the Parliamentary Committee be instructed to take the necessary steps for a clause to be inserted in one of the Council's Bills, empowering the Council to purchase, or contribute towards the cost of purchasing, or otherwise incur expenditure in connexion with the provision and erection of works of art in London." We have now to report that a further letter has been received from Mr. Bull to the effect that the Boadicea Fund Committee are anxious to have the statue erected this year, and that Mr. J. I. Thornycroft, the son of the sculptor, who has offered to present the group to the Council, will give the order at once for the casting of the model, and pay the money as and when required, he relying upon the Council to repay him it and when it obtains Parliamentary powers, or upon further subscriptions being secured, or finally standing to any eventual loss if the Council does not contribute. This is a generous offer on the part of Mr. Thornycroft, but, as in the ordinary course, the necessary power for the Council to contribute cannot be obtained for eighteen months, we think it would be inexpedient for the Council to accept at the present time any liability whatever in the matter. We accordingly recommend:—

"That Mr. Bull be asked to convey to Mr. Thornycroft the thanks of the Council for his offer in connexion with the Boadicea statue group, but at the same time to inform him that the Council is not in a position to contribute towards the cost of casting the model of the group, or to bind itself to bestow even should the Parliamentary power be given for the purpose; and that while the Council will proceed to promote the Bill, it must be understood that any steps which Mr. Thornycroft may like to take in the matter are taken entirely on his own responsibility."

Boundary-street Improvement Scheme.—Paving-work.—The Housing of the Working Classes Committee recommended, and it was agreed, that the work of constructing the temporary roadways referred to in the report in connexion with the Boundary-street scheme be executed by the Council without the intervention of a contractor, and that the plan, specification, and estimate be referred to the Works Committee for that purpose; but that in the event of that Committee not being satisfied of the sufficiency of the estimate, the Housing of the Working Classes Committee be authorised to invite tenders for the work.

Land at the Cattle Market, Islington.—The Parks and Open Spaces Committee recommended that the Council do approve the estimate to be submitted by the Finance Committee, and do contribute one-half of the cost of the acquisition by the Vestry of Islington of two pieces of land, having a total area of about 5½ acres, lying to the south of the Cattle-market, Islington, such contribution not to exceed 8,000*l.*, on condition that the Vestry do acquire the land under the powers of the Metropolitan Market Act, 1896, and do undertake to pay all the costs of the acquisition and to lay out and maintain the land as a place of public recreation; and that it be referred to the solicitor to prepare the necessary undertaking.

Dr. White moved as an amendment to insert the words "as an open space" after "maintain." The amendment was defeated and the Committee's recommendation agreed to.

The Water Question.—The Parliamentary Committee in reference to the Water (Purchase) Bills now before Parliament, reported that they had been engaged in discussing terms of agreement with the authorities outside the County of London, but within the area of the water companies, and had made very considerable progress. The questions remaining to be settled were (with one exception) rather questions of detail than of principle. They now presented two agreements to the Council for acceptance. Both of these had been very thoroughly considered. They were advised, and were of opinion, that these agreements afforded a fair settlement as between the interests of the respective authorities, and were advantageous to the County of London. They therefore recommended:—That the agreement with the County Council of Surrey be approved and sealed, and that, subject to the approval of Parliament, such clauses as may be necessary to give effect thereto be inserted in the Bills relating to the Lambeth and Southwark and Vauxhall Water Companies, and that the clause arranged with the Corporation of Croydon be approved, and, subject to the approval of Parliament, be inserted in the Bill relating to the Lambeth Company."

Dr. White moved to refer the matter back until

the Committee could bring forward agreements with all the outside authorities.

Mr. H. P. Harris seconded the amendment. The Earl of Onslow believed that the effect of the agreements was not fully understood, and doubted if it were desirable to saddle the purchase of the water undertakings with agreements to sell off a very large portion of the rights acquired. How could they decide how much water Surrey should take from the Thames before they knew how much Hertfordshire would require from the Lea? They were dealing with powers they did not possess, which was premature.

Mr. McKinnon Wood, Chairman of the Committee, pointed out that the Council's scheme was to give to the outside authorities rights similar to those claimed for the County of London.

Sir John Lubbock, M.P., said the matter required further consideration, as there were great difficulties in drawing the lines between the various districts.

After some further discussion the amendment was defeated on a show of hands by 36 votes to 35, but on a division it was carried by 53 votes to 51.

Millbank Prison Site.—The Housing of the Working Classes Committee brought up the following report, the recommendations being agreed to:—

"The Council, on December 22 last, approved the plan for the laying out of the roads on the Millbank prison site, and instructed us to take the necessary steps for the execution of the work in accordance with the plan. It now becomes necessary for the Council to decide as to the preparations of the plans of the dwellings to be erected on the site. We estimate that the portion of the site acquired by the Council will accommodate about 4,500 persons. It will be remembered that 1,500 of the persons displaced under the Clare-market scheme have to be accommodated on the Millbank site, and as the scheme will no doubt be confirmed during the present session of Parliament, we are very desirous of being able to offer dwellings to these persons before they are compelled to leave their homes; moreover, the War Office authorities are preparing plans for the buildings they propose to erect on the portion of the site retained by the Government, and are pressing us for the levels of the centre roadway on the site. We have given the matter our careful consideration, and we are of opinion that the most expeditious method of procedure will be for the Council's architect to prepare plans for the erection of blocks to accommodate about 1,200 persons. With regard to the remaining blocks, we think that in view of the important position of the site, the Council would do well to invite designs from outside architects. By adopting this course the Council will obtain the benefit of the experience of architects who have given special attention to this class of building, and will, moreover, have the advantage of the criticisms of its own architect upon such plans. Under the proposed arrangements the Council's architect will at once proceed with the preparation of plans of the dwellings to accommodate a portion of the persons on the site, and we expect that these dwellings will be in course of erection by the time that the competitive designs have been considered. We propose that an advertisement should be issued inviting architects to submit their names as being willing to compete, and that a limited number of those replying to the advertisement should be selected to send in designs. We recommend:—

(a) That the Committee be authorised to instruct the architect to prepare plans of dwellings for the accommodation of about 1,200 persons on the portion of the Millbank prison site acquired by the Council.

(b) That the Committee be authorised to issue an advertisement inviting architects to send in their names as being willing to submit designs for the erection of buildings on the remaining portion of the area; to select a limited number from among such architects, and to invite competitive designs from those so selected."

Churchway, Euston-Road.—The proposal of the Improvements Committee to contribute 3,800*l.* for the improvement of Churchway, Euston-road, was objected to by Mr. McDougall, who moved its rejection. After a discussion there voted, for the rejection 35, against 40. The recommendation was then agreed to.

The Council having transacted other business, adjourned soon after seven o'clock.

COMPETITIONS.

CHURCH TOWER, LISKEARD.—The Liskeard Church Tower Committee have received a report from Mr. E. Sedding, of Plymouth, as to the two best designs for the proposed new tower of the parish church. Twenty-five designs were examined by him, and the plans of Mr. J. Sansom, of Liskeard, and Mr. H. P. Burke Downing, Great College-street, Westminster, S.W., have been respectively awarded the first and second premiums of fifty guineas and twenty-five guineas.

SURVEYORS' INSTITUTION:

STUDENTS' PRELIMINARY EXAMINATION.

Of the candidates who presented themselves at the preliminary examination of this Institution, held concurrently in London, Manchester, and Dublin, on the 20th and 21st ult., the following satisfied the examiners:—C. H. Alderson, Faling; J. W. Armstrong, Blacon, Stratford-on-Avon; W. B. Aubrey, Chelmsford; R. Bartram, Highbury; F. Bate, South Hackney; H. A. Bettger, Kilharn; W. R. Bingham, Hatcham; A. G. Bradshaw, Lancaster; C. J. B. Bridge-water, London; H. C. Brierley, Sledmere; H. W. Brindley, Edgbaston; S. L. Broad, Bournemouth; T. E. Butcher, Chesham; B. C. H. Cannell, Norwich; A. P. Chattell, Chislehurst; G. R. Church, South Hampstead; N. Clark, jun., Pitt Hill, Co. Durham; G. H. Cole, Tonbridge; F. N. Cooke, Leicester; G. H. Cope, Broxton, Chester; C. H. Cramphorn, Chatham; G. H. Croft, Brighton; E. H. Crump, Cheltenham; H. W. Curry, London; H. Dann, jun., Dartford; J. W. S. H. Davies, London; P. F. Dyer, Lewes; H. E. Edwards, Chelsea; R. L. Ellis, Lewisham; H. Evered, Horley; J. L. H. Flew, Manningham, Bradford; A. C. Frost, Morden; H. A. A. Gate, London; S. S. Gettings, Erdington, near Birmingham; H. Gould, Forest Hill; G. F. C. Hamilton, Dunboyne, Co. Meath; W. W. N. Harlow, Ilanley; H. K. H. Henderson, Worcester; H. A. S. N. Hoare, Bayswater; A. E. Hooper, Andover; W. C. Houghton, Walthamstow; C. F. Hutchinson, Preston near Hull; E. J. S. Jenner, Henley-on-Thames; H. D. Jones, London; A. V. Kington, Finchley; W. F. Langridge, Tunbridge Wells; L. Latham, Basingstoke; R. A. Lees, Bedford; H. Lemmoin-Cannon, London; J. Lewis, St. Albans; F. R. Lanley, Downton; W. S. Mackintosh, Studley; S. Mager, Tufnell Park; F. R. Mark, Stepney; C. V. W. Martin, Wakefield; T. J. Mealy, Wimborne; S. G. Meacher, Malvern Link; H. L. Michell, London; D. A. Morle, London; S. H. Newsome, Alvechurch; S. S. Orchard, Exeter; A. B. Paget, London; G. K. Pierson, Altrincham; G. Pinson, Solihull; F. P. Pratt, Ongar; H. R. Quarterly, Maidstone; H. S. Rendell, Newton Abbot; W. F. Robbins, Wingham; A. D. Rutley, Caterham Valley; P. Schofield, Atherton; E. Sharpe, Leicester; G. S. Simpson, Lancaster; E. J. Stead, Moss Side, near Manchester; C. F. Stedman, Cranleigh; A. W. A. C. Tannahill, North Finchley; R. Tanner, London; W. W. Tremlett, Downton; V. Turner, Wolverhampton; T. B. Wacher, Canterbury; P. Watson, Petworth; E. M. Wehh, Norwich; C. S. Weekes, Tunbridge Wells; H. Welsh, Cokermonth; F. C. Wheeler, Cobham; C. C. O. Whiteley, Streatham; C. E. Widdicombe, Cambridge; S. P. Wigley, Winslow; H. Williams, Norwich; J. Winslip, Cambridge; J. G. Withycombe, St. Albans; T. H. Wright, Streatham Park.

ARCHAEOLOGICAL SOCIETIES.

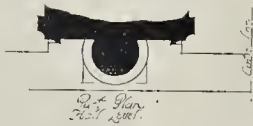
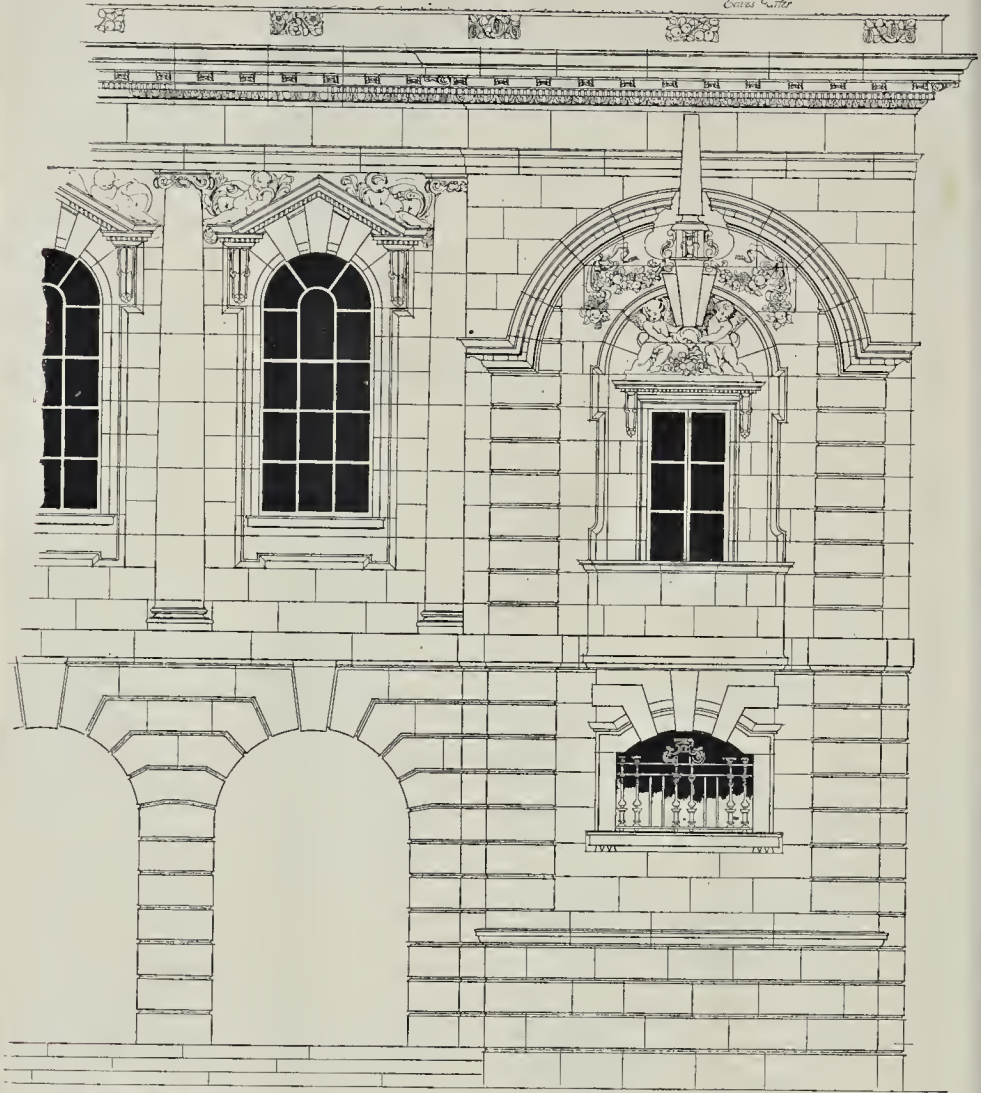
SOCIETY OF ANTIQUARIES.—A meeting of this Society was held on the 28th ult., Viscount Dillon, V.P., in the chair. The Rev. W. C. Stratfield exhibited and presented a number of illuminated pedigrees and other documents. Mr. Rome exhibited a small white marble bust of Jupiter Serapis, found in Egypt. Mr. Haverrfield communicated a note on a Roman lamp of terracotta found at Bradford, Berks, which was also exhibited. Mr. Hilton Price exhibited some beautifully-worked flints, with crescent-shaped heads, from Luxor; also a remarkable terra-cotta object containing an Archimedean screw—perhaps a model of similar contrivances used for irrigation purposes. Mr. J. R. Mortimer communicated a paper on a number of cruciform embankments in East Yorkshire, which he supposed to be the Christian successors of the circular mounds used for the assembly of the folk-moot. It was, however, suggested in the discussion that followed that such embankments were more probably thrown up as shelters for sheep and cattle, the summits being planted with bushes or small trees to keep off the wind.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. Thomas Elsley, ironmonger, informs us that his business has been converted into a Limited Company. The name of the firm will be Thomas Elsley, Limited, and the office address, 28, Great Titchfield-street.

* Passed at head of List.

*Detail of Principal Frontage
to Staff inch scale*

*Cast Iron
Corrus Center*



*Cast Iron
Corrus Center*

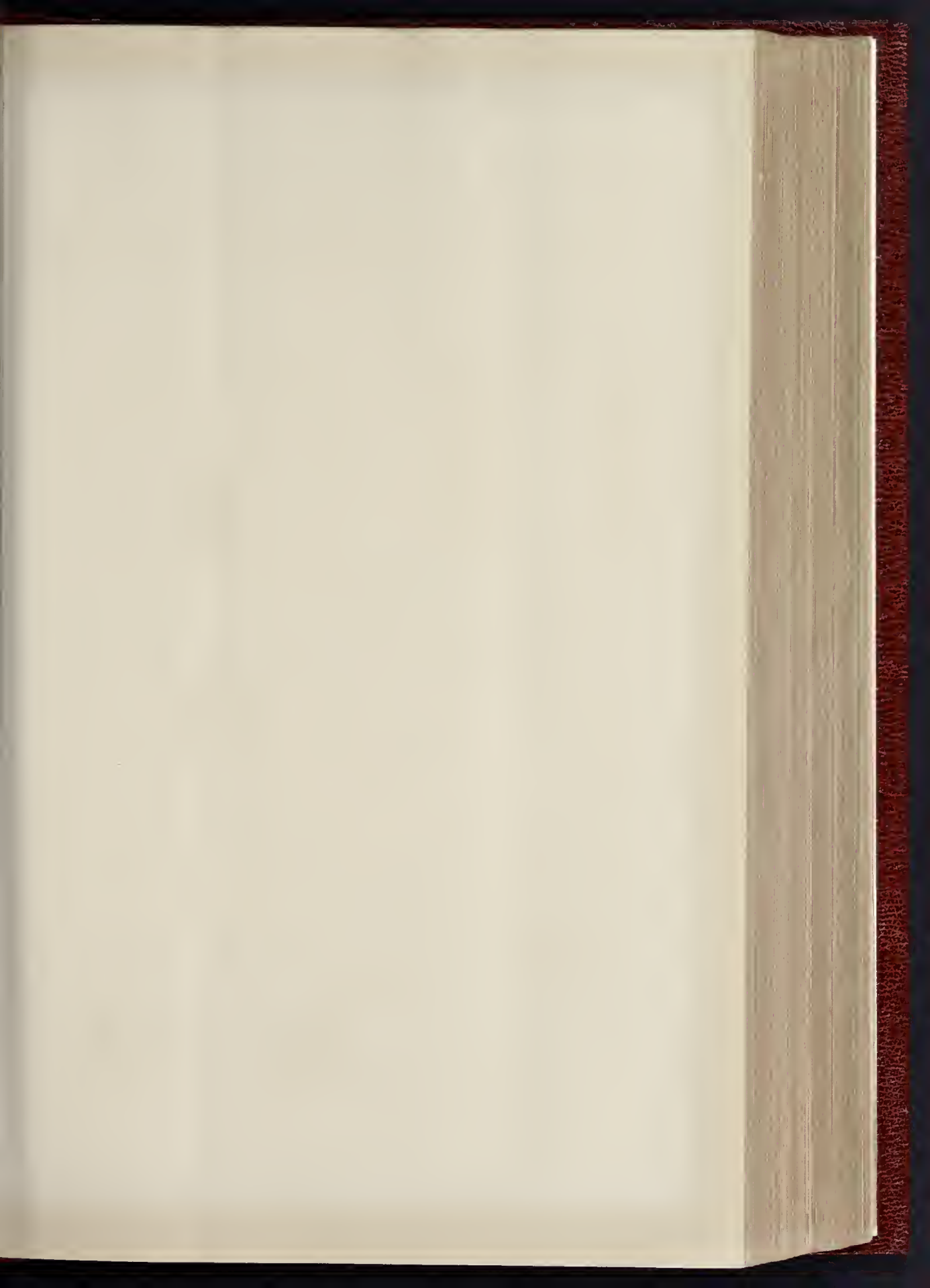


*Part Plan
Second Floor Level*

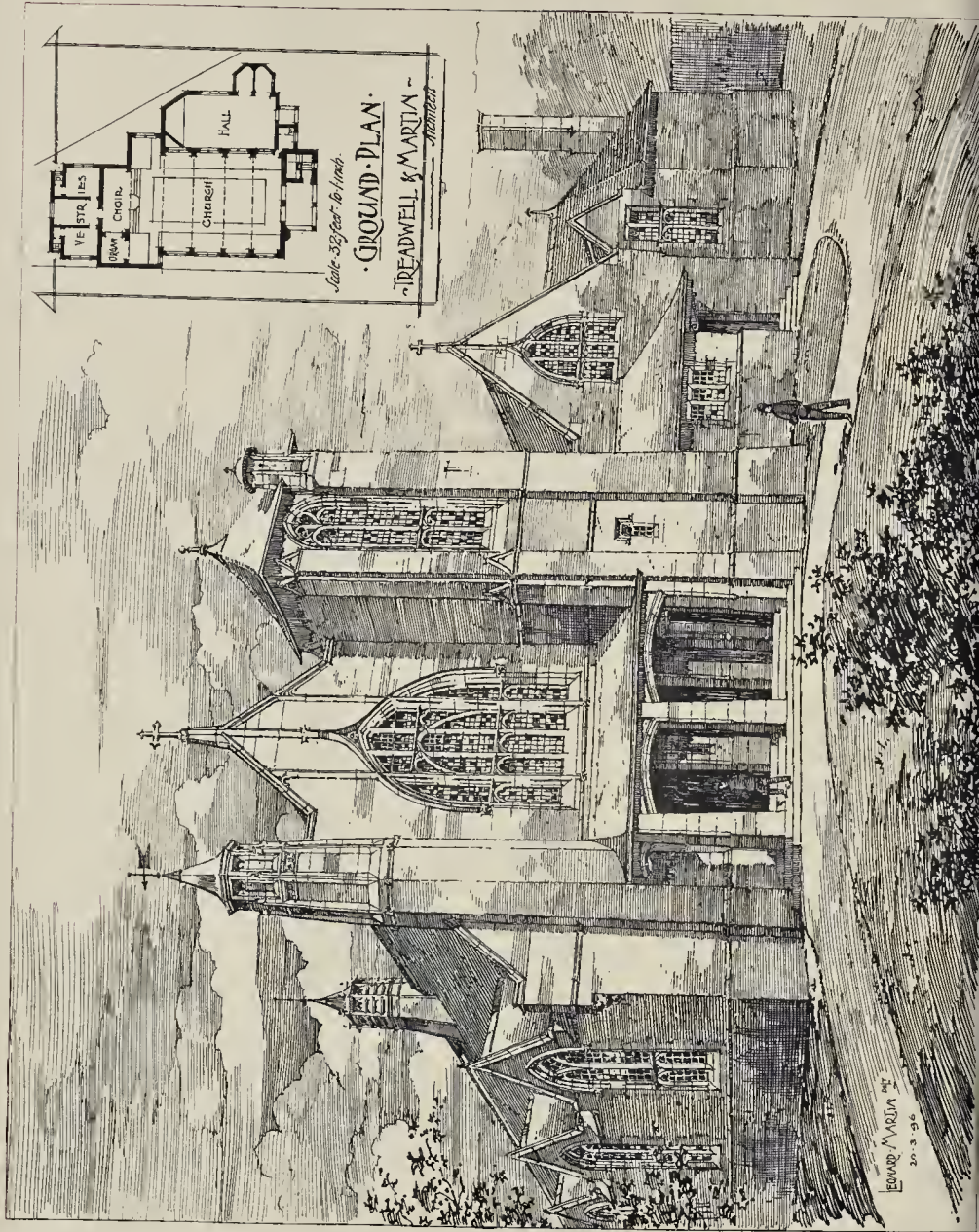
*Part Plan
First Floor Level*

A DESIGN FOR
A PROVINCIAL
MARKET HALL

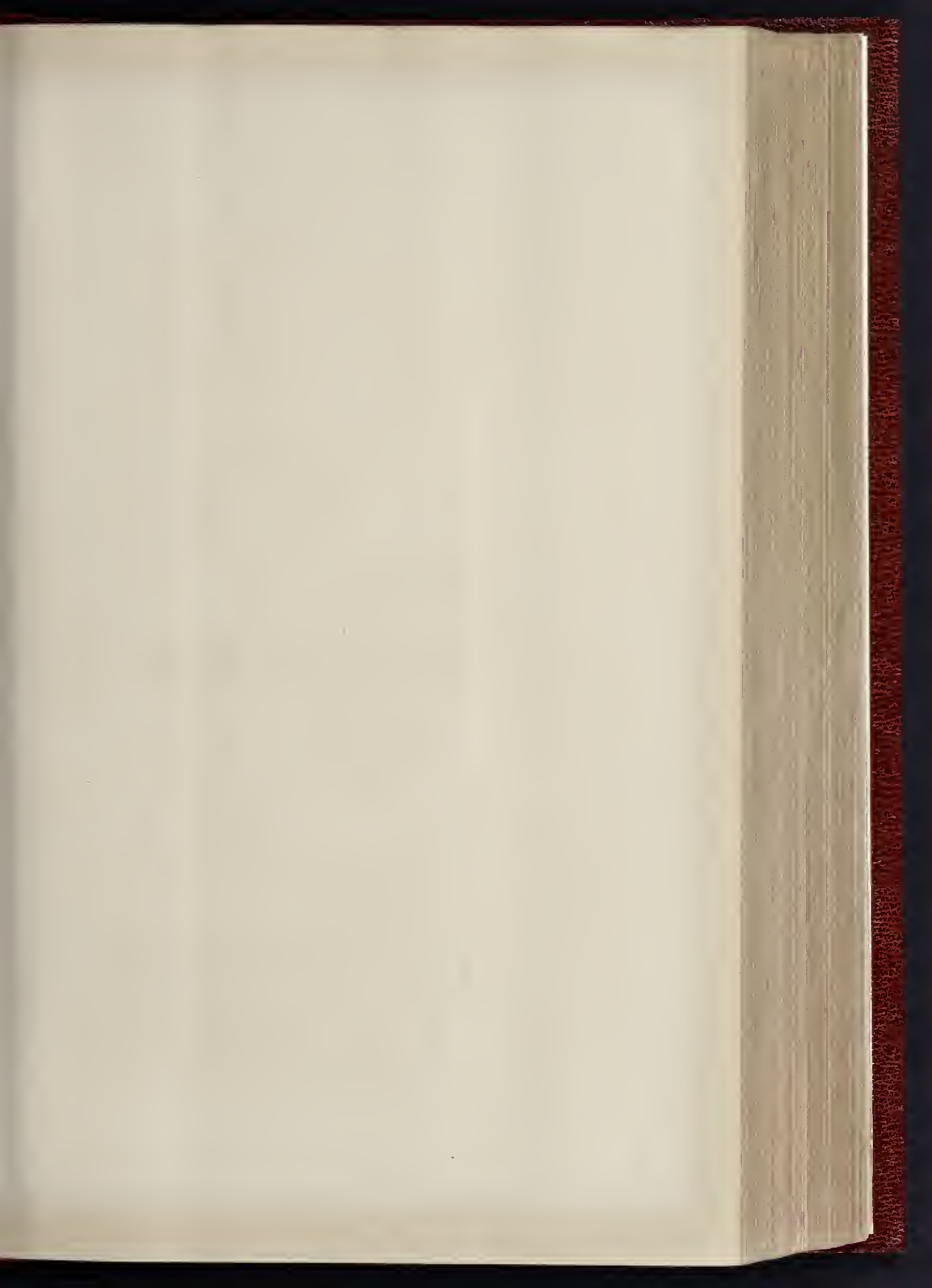
Swane Medallion Prize Design. Detail Elevation. By Mr. J. A. R. Inglis.



THE BUILDER, FEBRUARY 6, 1897.



EDWARD MARTIN
20-3-96



THE BUILDER, FEBRUARY 6, 1887.

"THE HEIGHTS' MINDHEAD."

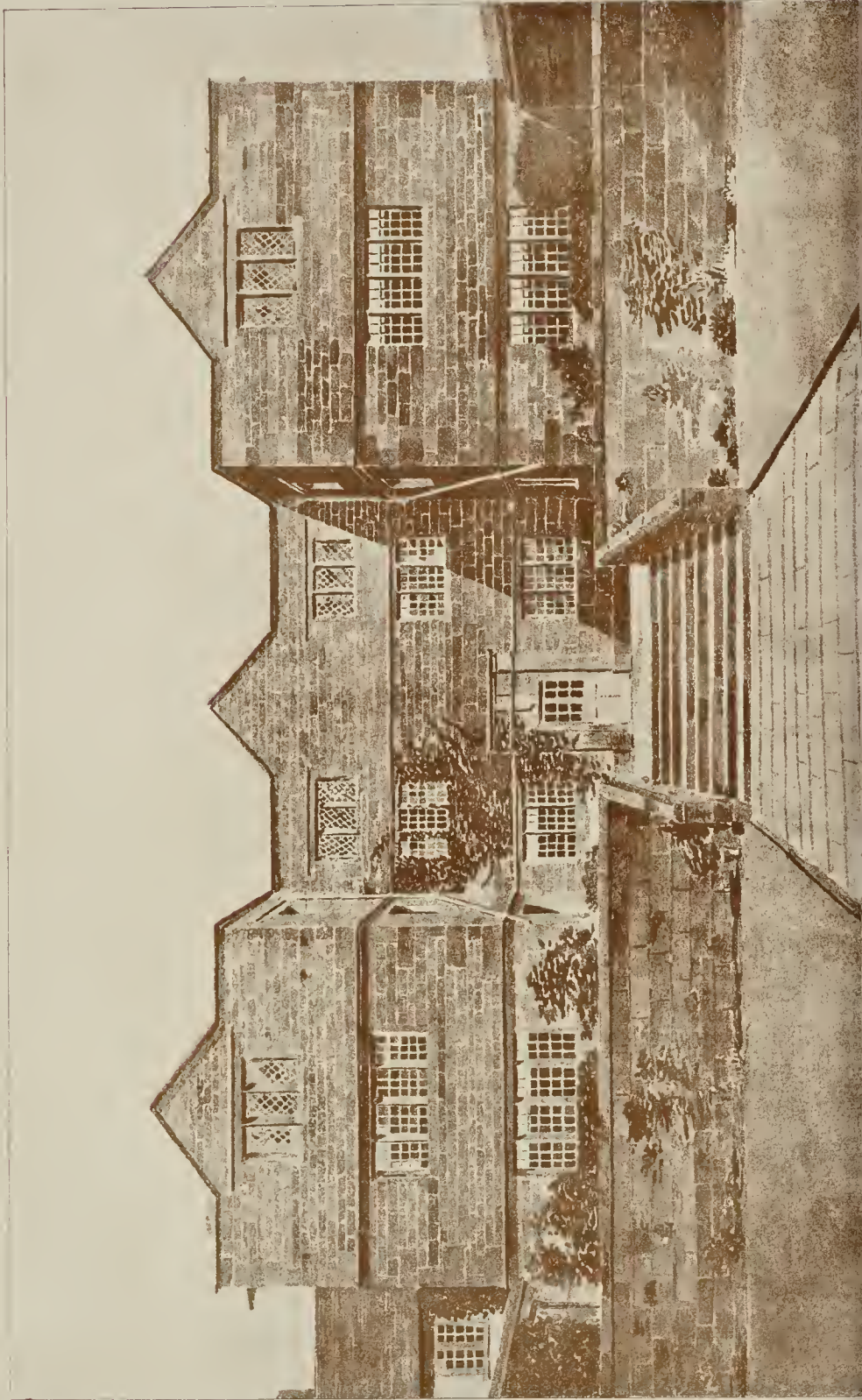
MR W.A. PILE, F.R.I.B.A., Architect

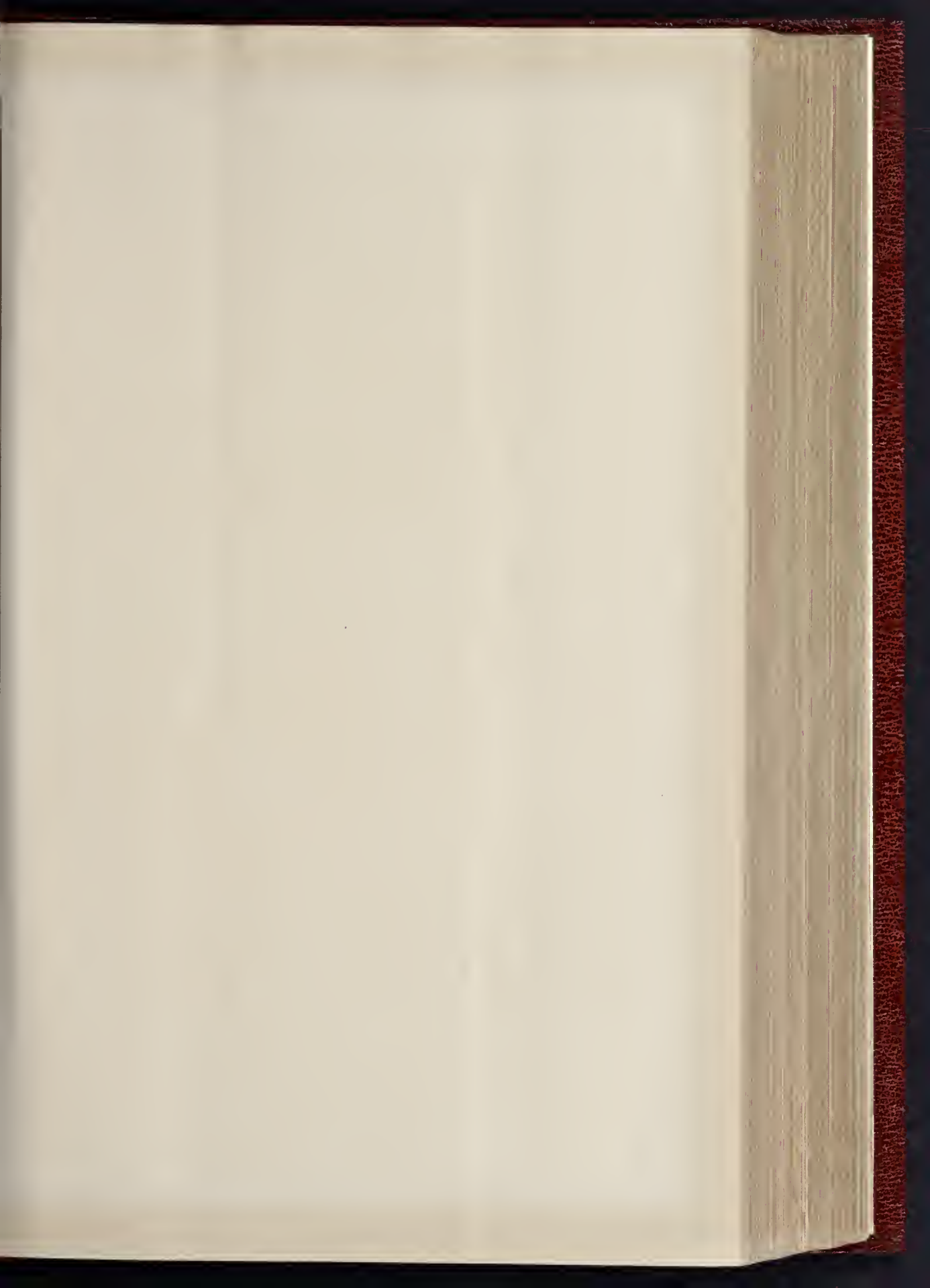


EAST ELEVATION.



THE BUILDER. FEBRUARY 6, 1897.

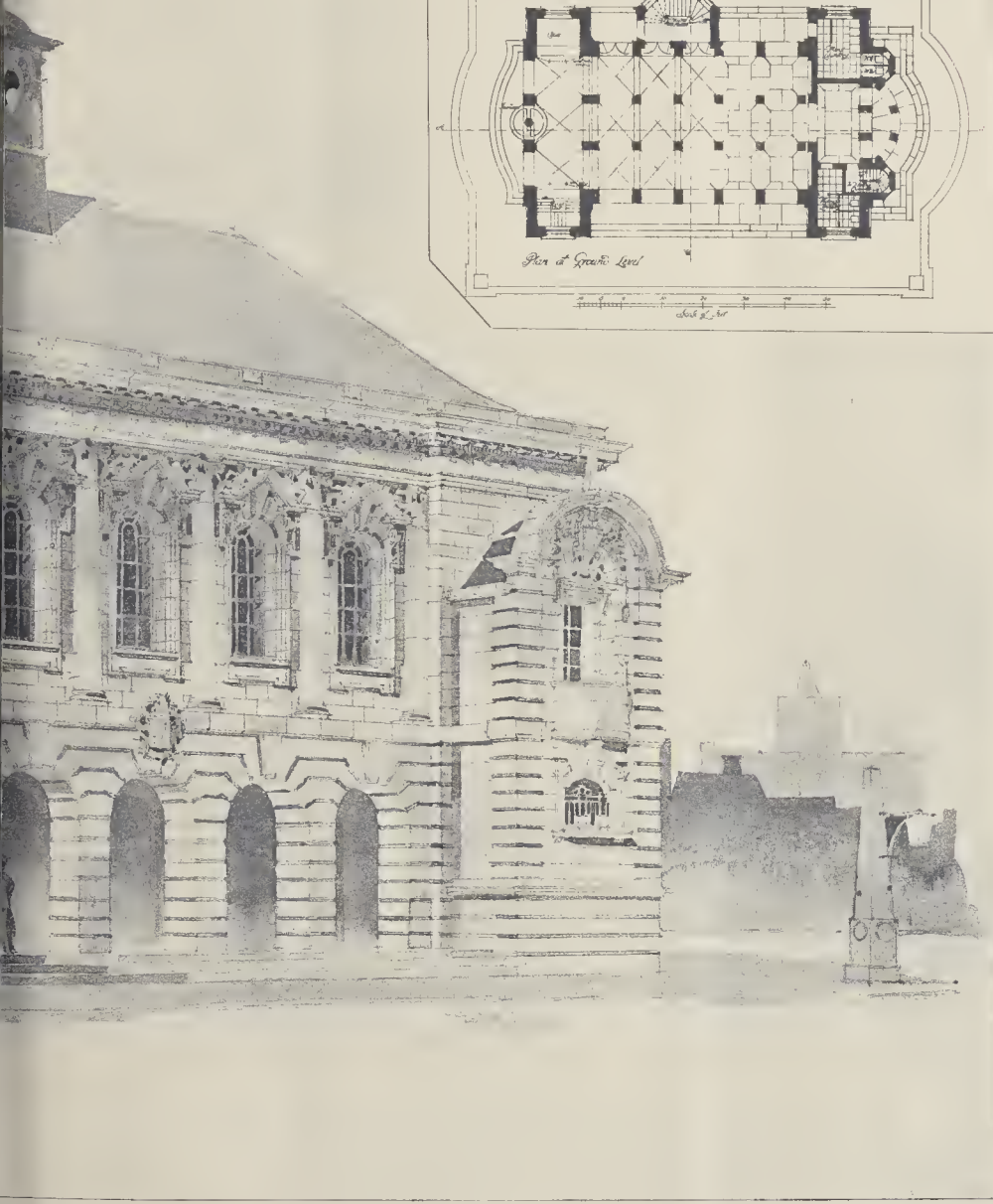
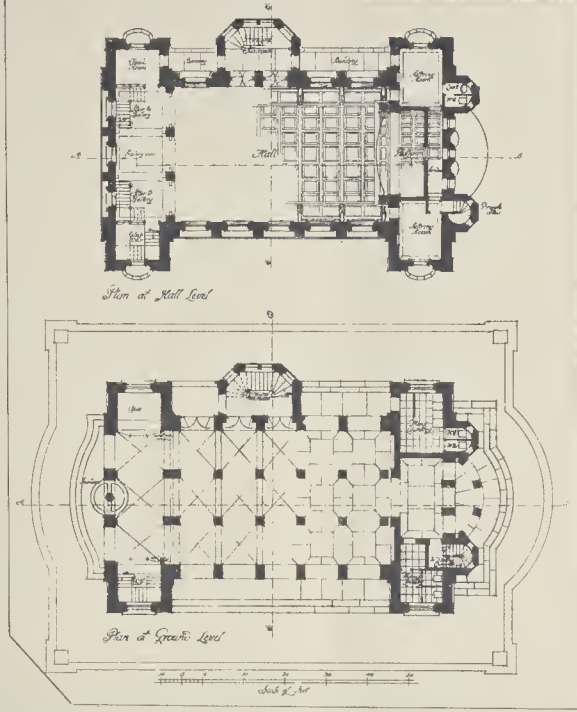






Soane Medallion, 1897

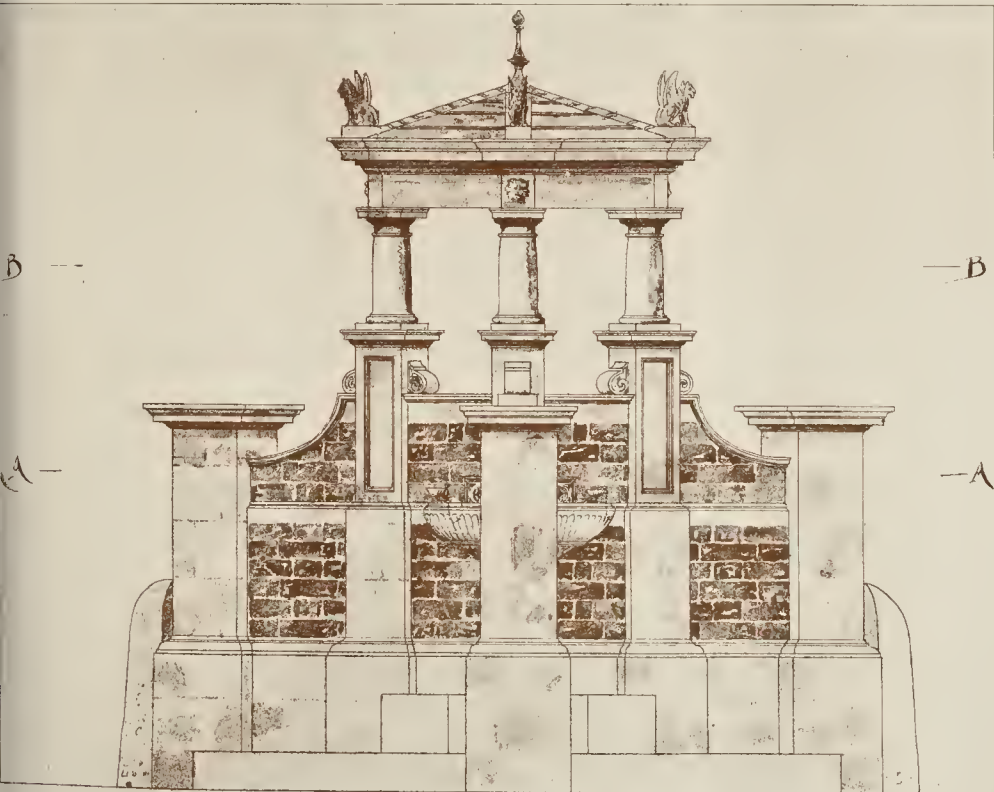
DESIGN FOR A MARKET



NO. 100, S. FACIE A. & S. EAST HARDING STREET FETTER LANE, E.C.



PERSPECTIVE VIEW.

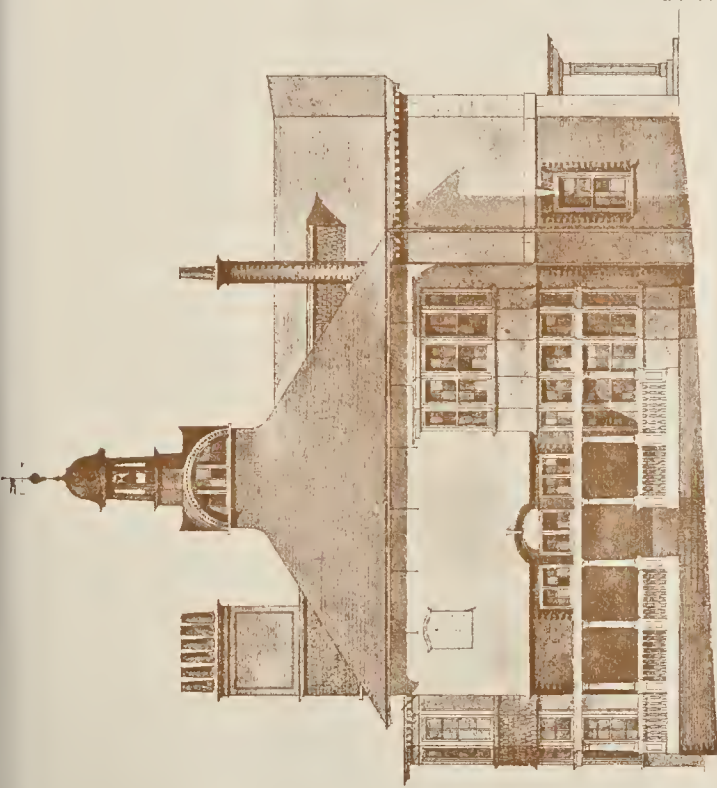


ELEVATION.

1/4" PHOTO SUPPLIES BY V.A. EASTMAN, 31/31" LETTER CASE E.C.

SELECTED DESIGN IN COMPETITION FOR A FOUNTAIN.—By MR. HUGH MACINTOSH

GROUND PLAN.



SOUTH ELEVATION.

THE PHOTO SPRAQUE & CO. 4 & 5 EAST HARDING STREET, BOSTON, MASS., U.S.A.

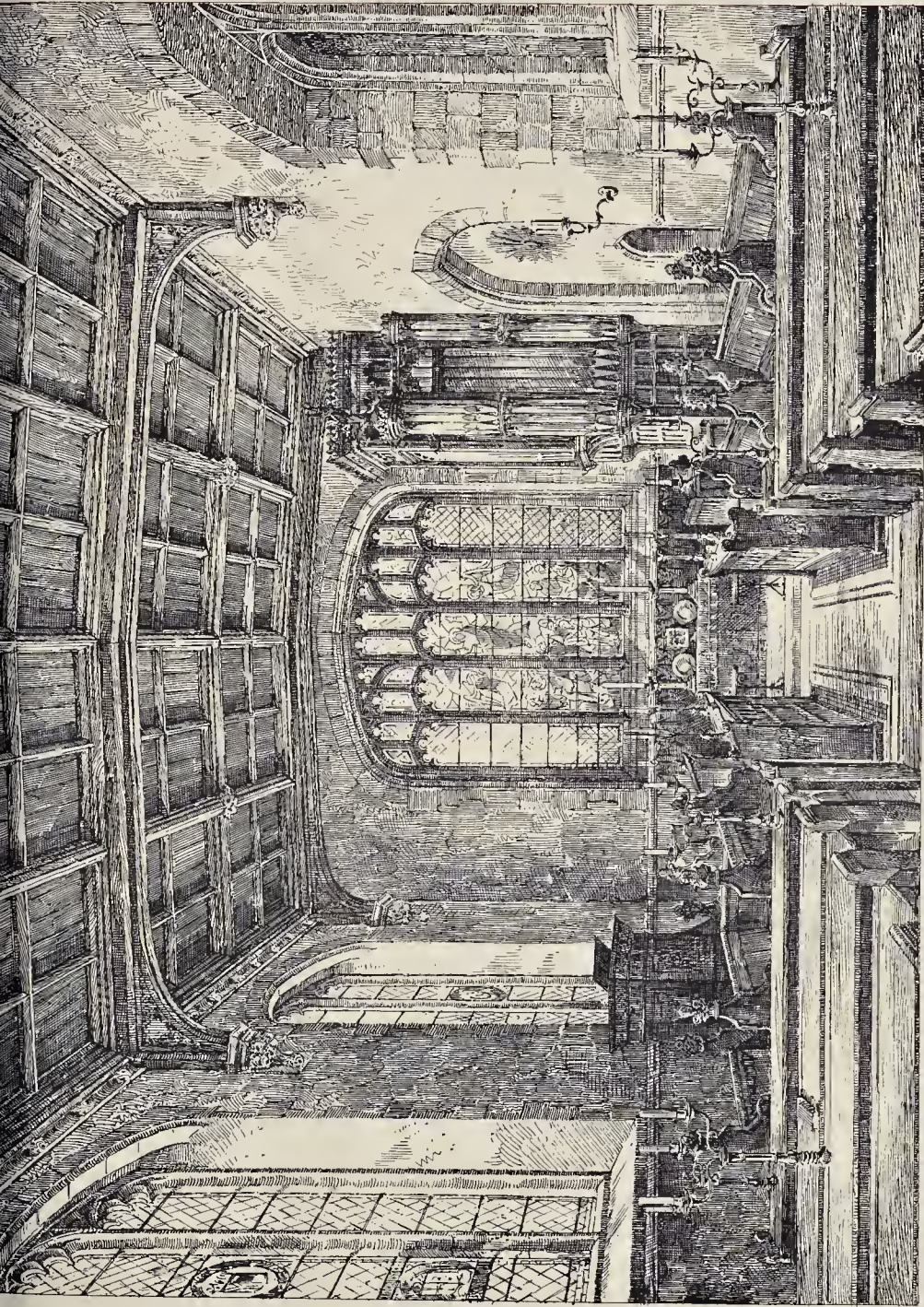


PHOTO LITHO SPRAGUE & CO. 43 EAST NASSAU STREET, NEW YORK

INTERIOR, GRAY'S INN CHAPEL: AS RESTORED.—MR. C. J. SHOFFEL, F.R.I.B.A., ARCHITECT

Illustrations.

DESIGN FOR A MARKET HALL.

THIS is the design, by Mr. J. A. R. Inglis, to which the Soane Medallion has been awarded this year; an award in which we entirely concur.

The building takes the old form, familiar to us in so many country towns of England, of an open vaulted ground story supporting a more lofty roofed hall above. The details of columns, ornamented windows, and rusticated voussours, are such as present no novelty in themselves, but the author has treated them with a rather unusual and sculptural boldness of relief which is very effective, and is well brought out in the perspective sketch. The weak point of the design lies in the projecting additions at each end, which do not seem quite sufficiently incorporated with the main design. But as a whole this is a very agreeable design which shows a good deal of promise for the future of its designer. The following is the author's description of the design:

"The conditions drawn up by the Council of the Royal Institute of British Architects for this travelling Studentship required a design for a provincial market-hall covering an area not exceeding 4,000 superficial feet, detached on all sides, and forming the centre of a market-place.

The subject does not seem to allow of much licence in the planning, and in this scheme the general features of our old examples have been adhered to, with some necessary modern additions in the accommodation of the adjuncts to the hall, private stairs to the retiring-rooms, &c.

The endeavour in the architectural treatment has been to follow in the lines of some of the best-known examples of market-halls, at the same time not rigidly keeping to tradition."

EYAM HALL, DERBYSHIRE.

The village of Eyam, in the North of Derbyshire, has obtained historic renown through the heroic conduct of its inhabitants during the terrible year of 1666, when the plague devastated the little community. Eyam Hall, however, according to Wood, the historian of his village, was built after the plague year, some time near the close of the seventeenth century, and is described by him as a "large, handsome, and rather picturesque looking building." This description was written in 1842, when, apparently, the appreciation of what we now call "the picturesque" was unknown to our historian. In other parts of his book, indeed, he evinces a decided partiality to the "elegant and respectable," but he evidently does not wish to disparage this building as he has said that it has been commended by "one skilled in architecture."

The Hall has been long the residence of the Vigants, an ancient Derbyshire family. It is situated in the heart of the village, facing the main street, but partly hidden by a high wall. The stone has weathered a beautiful colour, and with its well kept lawns, the building forms not the least picturesque bit in an exceedingly interesting village.

F. H. CHEETHAM.

DESIGN FOR FOUNTAIN.

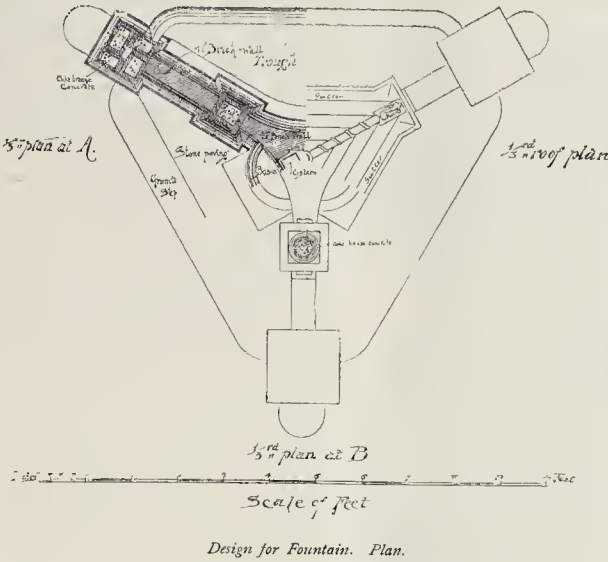
The conditions of the competition stated that the fountain was to occupy a triangular open space and was to serve people, cattle, and pigs. These particulars very naturally suggested a triangular plan.

The materials proposed to be used in its construction were: Doulton's Carrara ware for the tiers, pedestals, shafts, entablatures, roof, &c., all in fawn colour, except the shafts of the small columns, which were in blue; the filling of the lower part was to be in best selected dark-blue Staffordshire bricks. Owing to the curved shape of the trough it was thought advisable to use Victoria stone for this purpose. The steps and posts were to be in grey granite.

A small cistern regulates the supply to the drinking basins; this is placed in the centre of the brickwork, and is accessible from a small iron door fixed over one of the basins. The water from the drinking basins supplies the dog trough, which is placed underneath the cattle trough. Another small ball-valve is suggested at the side of trough to regulate this supply. The amount estimated for the erection of the fountain was 120*l*.

HUGH MACINTOSH.

* * * This is the premiated design in the com-



petition for a fountain which was advertised in our columns some little time since, and as to the result of which we received several inquiries from competitors.—Ed.

HOUSE ON HINDHEAD.

This house is being built for Mr. Rayner Storr, on Highcombe Edge, Hindhead, adjoining the Devil's Punch Bowl; and commands on three sides some of the most magnificent vistas in Surrey.

The materials are Petersfield brinded bricks, with red brick dressing, Headley stone piers, and keys, rough cast plaster. The roofs are covered with Elterwater slates in diminishing courses, and the dormer cheeks are tile hung; one of the bays being hung with oak shingles.

The contractor is Mr. Ernest Chapman, of Grayshott; the slating by Messrs. Thos. & J. H. Stirling; the sanitary work by Mr. George Chapelow; the architect being Mr. William A. Pite, of London.

PRESBYTERIAN CHURCH, WEST NORWOOD.

This building, which is shortly to be erected, will stand on an elevated and prominent site at the corner of Thurlow Park-road and Court-road, West Norwood.

The building comprises a church with minister's, elders', and choir vestries, and a large hall and class-rooms. In the church itself the ordinary aisle arcading is done away with—the roof being constructed on a modified hammer-beam method—in order that every seat may have an uninterrupted view of the pulpit. The materials to be employed are red brick facings externally and internally, with Portland stone dressings. The roof will be of pitch pine, as will also be the seating.

Messrs. Treadwell & Martin, of London, are the architects.

GRAY'S INN CHAPEL.

The accompanying drawing represents the interior of the chapel belonging to the Honourable Society of Gray's Inn. The old flat plastered ceiling has been replaced by a panelled ceiling in Sequoia wood supported on four-centred principals, four in number, and with intermediate ribs, and a stone cornice with carved bosses beneath the wall plates, and carved stone corbels under the principals. The old east window, which had been partly bricked up, has been restored as far as practicable to its original size, the remains of the old sill having been found in cutting down the wall. Two three-light windows were also discovered in repairing the walls, the brickwork of which had crumbled

away, and had to be cased with new brickwork in Portland cement. The three windows on the north side have also been restored and glazed with plain cathedral glazing.

The old shields of arms which were formerly in the east window have been incorporated with the glazing of the windows on the north side. Three of the openings of the five-light east window are glazed with stained glass (from one of the north windows) representing the Ascension, and the remainder with painted Grisaille glass, the work of Messrs. Heaton, Butler, & Bayne.

The screens to the entrance lobby, and beneath the gallery to the vestry, also the front to the gallery, are of oak, partly with linen-fold panels and enriched with suitable carving. The seats are also of oak. A moulded stone string course has been carried round beneath the sills of the windows, and the plastering of the walls is finished in Keen's cement. The altar space and the aisles are paved with black and white marble mosaic.

The site of the former vestry has been added to the chapel, so as to afford space for an organ chamber, and two four-centred arches accordingly have been reinstated in the south wall. The organ is by Messrs. Henry Jones & Sons, and is a much more powerful instrument than the organ formerly existing. The chapel is warmed by hot-water pipes, on the high-pressure system.

A stone tablet in three panels has been inserted in the south wall to commemorate the names of the preachers of the Inn from 1574 down to the present time. These names have been engraved on brass plates, which are inserted in the panels of the tablet.

During the progress of the works the remains of the old holy water stoup were discovered; these have been carefully rebuilt into the north wall near the entrance. The old Jacobean pulpit, which was covered with many thicknesses of paint, has been carefully cleaned, prepared, and refixed with an appropriate new staircase thereto. The paint which had been placed on the ashlar facing of the porch, has been carefully scraped off, and the stonework restored to its original condition, and a new panelled ceiling of oak formed in lieu of the incongruous plaster ceiling and cornice then existing.

No discovery of any importance was made in the excavations beneath the old floor, although it was at first thought that some objects of archaeological interest might be found hidden therein. A brass plate has also been inserted to commemorate the restoration.

The design and supervision of the works were entrusted to Mr. Charles Herbert Shoppee, of London. The contractor for the general works was Mr. S. F. Halliday, of Stamford, Lincolnshire; the paving was carried out by Mr. J. F. Ebner; the heating by Messrs. J. L. Jacon & Co.

LONDON COUNTY COUNCIL INQUIRY.

The special inquiry into the organisation of the Works Department of the London County Council was continued on Wednesday and Friday, January 20 and 22, Sir A. Arnold presiding.

The Comptroller, Mr. Haward, was examined at great length on the resumption on Wednesday, but no new point of importance was elicited.

The next witness called was Mr. Jacobs, one of the foremen in the employ of the Works Committee, who in reply to questions put by the Chairman with regard to the method of engaging workmen, said he took them on when they were wanted without making any distinction between trade unionists and non-unionists. There had never been on his works any interference by members of the Council, and he was not aware that any relatives of members of the Committee were employed.

In reply to Dr. Longstaff he said he was not now, but he had been formerly, a member of a trades union, that he had been twenty-five years a foreman, and since 1893 in the employ of the County Council. He had been employed principally under the Architect on many different jobs, some large and some small. He had never known any serious delay to take place in the supply of materials. He had usually found the workmen under him industrious, and he had not had more trouble with skilled workmen than unskilled men. He had had more difficulty with labourers than with skilled men. He could not say that the men he had under him in the employ of the County Council were better than those he had under him when in the employ of contractors, but they were quite as good. He thought the quality of the work was better. He had complete control of his men, was not unduly severe, and he thought that his works had been fairly profitable. He had never been told that the work was costing too much. His job was visited occasionally by the Chairman of the Works Committee, but seldom by individual members, and the witness repeated that on this account he had never had any serious difficulties. He had always been on good terms with the late manager, of whom he had no complaint to make, but he thought he might have been a little more experienced in building matters.

In reply to Mr. Alderman Peachcroft, he said he had been engaged as foreman by the late manager. It was part of his duty to engage workmen, and he had full power to dismiss them. There was no particular rule of selection. They were engaged by him solely on his own judgment and knowledge of the men, his acquaintance with workmen being very extensive, and it was not true to say that workmen were engaged on the recommendation of others. He kept a list of the names of workmen, but not of their addresses. Asked with regard to the popularity of the late manager and as to the existence of malpractices, the witness said that the late manager was not generally liked; he no doubt wanted to make the Department as successful as possible, but he (the witness) had not heard of any malpractices.

In reply to Mr. Davies, the witness said he had been employed in a similar capacity under various contractors, and he had no more difficulty now than under his former employers. He had no special instructions from the manager as to the quality of the work; both under the Department and under contractors his instructions were to get his jobs done as speedily as possible. He had never had special instructions from the manager as to the ordering of materials, and it had never occurred to him to order more than was wanted, though he might have been required at times to send to another job a few materials such as header bricks if he had any spare ones. He had no knowledge of any inferior mortar being used on his jobs. His work was performed under the direction of Mr. Blashill's assistants, but not under the Architect direct. He believed his work was considered satisfactory. With regard to the quality of the work done by the Department as compared with that done by contractors, he thought the work done by the Department was of higher quality for many reasons. He thought the workmen had a spirit to do the work better than contractors' men.

Questioned by Mr. Dickinson with regard to the code of regulations governing his work, the witness said he selected his men from a knowledge of their ability, without giving preference to local labour. It was subsequently explained by the next witness, Mr. Ward, the Chairman of the Works Committee, that a clause with regard to giving preference to local labour had been

omitted from the revised code of regulations which were those governing the duties of the foreman at the present time. On the question of strikes in the building trade it was elicited from the witness that the only workmen in the employ of the Department who went out during the late strike in the building trade were the plasterers.

In reply to Mr. Gruning, the architectural assessor, the witness said he generally selected his men from workmen he had known for years. He could almost always tell men that were suitable from their appearance. There was no difficulty in getting men when they wanted them, because it soon got known when men were wanted on any job.

Mr. Gruning: Do you know contractors who employ gangs of men on special terms?—Yes; to do special work. So do we for certain work, such as scaffolding.

Mr. Henry Ward, M. Inst. C.E. (Chairman of the Works Committee), the next witness called, in reply to Sir Arthur Arnold, said that the last witness had correctly described his functions, and that notices were posted on all the works, instructing foremen to make no difference between union and non-union men. Questioned with regard to the purchase of timber, Mr. Ward said the whole of their timber was bought by public auction (except a little hardwood), by an agent, on a commission of 1 per cent. The qualities varied as well as the prices, some being of best quality and some much cheaper. The Works Committee had to pay a much larger sum than any contractor doing the same amount of work in audit charges, and it was at a disadvantage in other respects. The tendency was, perhaps, for their workmen to do rather less work than for a contractor, whose sole idea was profit-making, and the more favourable conditions of the specifications issued to contractors would often enable them to make a saving where the Department could not make any saving. There was not the slightest doubt that the Council had suffered disadvantage from the friction that existed between the Committee and the Architect. This had arisen almost at the first, through the first job, the Fire Station at New Cross, having a specification very full of special items requiring the Committee to obtain certain materials from certain specified firms. Without these items the Committee could have carried out the work at 5 per cent. less cost. He denied that the iron-work was of an inferior character, and he also denied the allegations which had been made with regard to the use of lath and plaster instead of sand for mixing with mortar at Hughes Fields. The witness said a sample was taken at half-past seven at night, at a time when no one was at the job except the watchman, and the sample was probably taken from a heap of rubbish that had been rejected as unfit for use. Members of the Committee had tried the mortar with their knives and found it very good. He hoped the assessors would also try it. With regard to the alleged inferior brickwork at Mount-street, which the foreman had refused to rebuild, he said it had been examined since and had been pronounced one of the best bits of brickwork in London.

Asked to give his opinion with regard to the constitution of the Works Committee, the witness said he thought it was too large, and that the method of electing the Committee was a bad one. It had given them ten members in sympathy with the Works Department, and ten who were not altogether sympathetic. The result was that they pulled in opposite directions, and were like partners in a business who did not agree. If the Committee consisted of only five members selected from the Chairmen and Vice-Chairmen of the Spending Committees, or if they were men who really desired to get the work done instead of making party capital out of the Department, it would be a great improvement.

With regard to the question of tendering by the Committee, Mr. Ward said he doubted whether contractors would agree to tender under such conditions. A still more serious objection was that the Committee, which could only obtain its work from the Council, could not compete in open contract with a certain class of contractors, who, as stated in evidence by previous witnesses, did not know how to tender. He thought the work of the Department exceedingly good, and most experts would give 10 per cent. more for it than for work done by a contractor.

Replying to the allegation that the visits of members of the Committee had been disadvantageous, the witness said that in his opinion such visits, on the contrary, had proved a great advantage to the Council, and had helped forward the Council's interest.

The sitting was at this point adjourned on Friday, the 22nd inst.

The examination of the Comptroller was resumed on Friday by Mr. Gruning, who elicited the further statement with regard to audit charges that £50, was paid last year simply in order to satisfy the curiosity—the legitimate curiosity—of the Council as to the cost of the works completed or in progress. The difficulty of getting contractors to tender for work after introduction of the new labour clauses led to the formation of the Works Department, the tendency in which was to do less work than contractors had to do it better. It had been stated by Messrs. Cubitt, Trollope, Hoiland and Hannen, &c. that they could not compete with the Department at competition prices and put in the quality of work required. The Department, therefore, did work equal to the best firms and at competition prices. Notwithstanding the disadvantages mentioned, the Department was able to show a profit of 8 or 9 per cent. The jobs which the Department had refused were refused on the advice of the late manager, when he was not satisfied with the estimates. The witness was in favour of giving out some of the jobs to contractors in the same way as the Admiralty. He agreed that it was highly desirable that there should be a closer connexion between the Architect's, the Engineer's, and the Works Departments, but added that the principal difficulties had arisen from the fact that in order to satisfy those who thought the Department would fail, it had been decided to treat the Department exactly as a contractor, and although at a double cost, the Departments were organised to check one another. That course was, perhaps, justified on account of the great suspicion with which the Department was regarded. The time might arrive when a better understanding would prevail, and when it would not be thought necessary for one Department to supervise another. Being asked to account for the fictitious transfers, Mr. Ward said the Department was criticised very severely if it was not making a profit on particular jobs, while not getting credit in cases where a profit was being made; and it gave way to the temptation to hide or diminish the loss.

Mr. Gruning: To save its credit, in fact?—Yes.

In reply to Mr. Waterhouse, assessor, Mr. Ward said he did not think there would be an advantage in a separate staff for the book-keeping department; and with regard to the Architect and Engineer's estimates, he said the Works Committee were not informed of the details. The only required to know the lump sum, which was stated in open Council. This was submitted to the manager, who reported whether he was satisfied with the sum. When any job was undertaken the manager took out his own bills and quantities. With respect to the early difficulties met with, Mr. Ward said one of their chief difficulties was to get good foremen. Good foremen and a good staff could only be got by a process of natural selection. He agreed with Mr. Blashill that at first they had not proper control over the works. In reply to further questions with regard to strikes, the witness said they had not been source of difficulty for the Department, except one case. The men knew that they would get paid the new rates of wages that a strike might establish without going out themselves, and the result was that the Department's works had gone on when others were suspended on account of strikes.

In reply to a question from Dr. Collins with regard to the malpractices, the witness denied that any investigation had been offered by any officer of the Department. The Comptroller had reported the matter to him during the recess, and was upon his information that he had brought the matter before the Council.

Mr. Fletcher next examined the witness at considerable length, eliciting the admission that would not advocate an unlimited extension of the principle of direct employment. The object of the Department had in view was to get the work done as cheaply as possible, consistently with a good quality of work, and he thought that policy was in harmony with the general trend of public opinion. He could account for a certain amount of unpopularity by the fact that thousands of men had put down their names in the books, and many of them had failed to get employment, and were therefore disappointed. He did not know why policy should be unpopular, of which the main object was to save, for the ratepayers, the middle man's profit. He did not know it was any part of their duty to protect contractors. He admitted that the County Council would hold a more in-

partial position as arbitrator in labour disputes if it confined itself to administrative work.

In reply to Mr. Torrance, Mr. Davies, and Mr. Beachcroft, the Chairman of the Works Committee entered into long explanations with regard to the complaints of the Architect of inferior ironwork, overcharges on repairs to a directing lamp at a fire-station, and of bad work on a 6-in. drain. With regard to the latter he said the Architect had been entirely misinformed. The drain referred to in Scotland Yard was not 160 ft., but only 14 ft. long, and was not a 6-in. but a 4-in. drain. The joints were left unfinished because the workman refused to continue the job. He admitted that the affairs of the Department might have been better managed if it had not been for the misunderstanding about the Fire Brigade station, that Mr. Blashill did his duty nobly to the Council, and that the Architect had had to struggle with great difficulties, though having too much work put upon him. The witness admitted that it had been an advantage to the Department to have its work subjected to criticism. He would put no limit on the work to be undertaken by the Department, provided it was done well and fairly cheaply. The examination of Mr. Ward was not concluded when the Committee adjourned to Wednesday, January 27.*

ARCHITECTURAL SOCIETIES.

NORTHERN ARCHITECTURAL ASSOCIATION.—The Students' Sketching Club of this Association held their seventh annual smoking concert and exhibition of drawings and sketches in the Grand Assembly Rooms, Newcastle, on the 26th ult., when about 100 members and friends were present. The Vice-President, Mr. Joseph Oswald, occupied the chair, and opened the concert. Those present included the hon. secretary, Mr. A. B. Plummer, and Messrs. J. T. Caskett, W. S. Hicks, H. C. Charlewood, W. L. Newcombe, W. Glover, T. H. Morton, C. S. Ericsson, S. Piper, &c. The musical arrangements included the provision of an orchestra of nearly twenty performers, and the evening was considered to be very successful. The whole arrangements were made by Mr. W. E. Fenwick and Mr. Harold Oswald.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—"Two Methods of Architectural Practice and Design" was the title of a lecture delivered on the 2nd inst. to the members of the Leeds and Yorkshire Architectural Society by Mr. W. H. Bidlake, of Birmingham. At the outset the lecturer explained that a variety of new forces, such as the introduction of machinery and the commercial spirit had destroyed the traditional method of building, and at the present time we were, he said, in a state of flux. In all probability a considerable period of time would elapse before anything like a single or definite aim again actuated architects to endeavour to bring about a more satisfactory state of affairs by eliminating thoughtless architecture, which was simply swayed by passing fashion, and, by being true to first principles, assist the development of some general evolution towards a new style. Mr. Bidlake took as typical examples the man who simply satisfied the present thoughtless demand, although he might be perfectly conscious that the public demand was not the right one; and, again, the man who had convictions and principles, and instead of being ready to sacrifice these for his commission, endeavoured to modify public opinion, and so brought about a period of better taste. The lecturer was at the close accorded a hearty vote of thanks. Mr. W. Watson, the President of the Society, occupied the chair.

GLASGOW ARCHITECTURAL ASSOCIATION.—On the 26th ult., the President, Mr. William Tait Comber, in the chair, Professor E. J. Mills, D.Sc., F.R.S., of the Glasgow and West of Scotland Technical College, delivered a lecture on "The Application of Photography to Architectural Measurement." He stated at the outset that the architectural capabilities of an ordinary camera, and consequently of an ordinary photographic print, were much greater than usually supposed. It was, however, necessary that the camera should be used with reasonable care, and especially that it should be (1) rigorously upright; and (2) parallel to the plane of building whose reproduction was desired. A single measurement on the plane itself would then give a scale for any part of the resulting negative or print. But operations were greatly facilitated by the simple graduation of the ground

glass into squares and their sub-divisions; thus enabling the observer to obtain true parallelism at once, as well as vertically, and to measure also the height of an object's image. Professor Mills went on to explain how, by the aid of very simple mathematical formulae, the height of a distant object, accessible or not, could be easily ascertained with a camera so provided. Among adjuncts to a measuring camera, a ball and socket support was shown for a half-plate camera. Professor Mills supports his lenses in rising and cross fronts, each provided with scales and verniers, and screw motion, which he uses for obtaining very delicate measurements of the dimensions of images in the ground glass. The lenses he prefers are ordinary Goetz and wide angle zeiss rectilinears. It was shown that by following very easy rules, the plan of a photograph could be readily drawn; an illustration of this was exhibited. The lecturer concluded with the exhibition of a number of architectural lantern slides, illustrating a variety of points referred to in the lecture. On the motion of Mr. Wm. Jas. Anderson, seconded by Mr. Alex. McGibbon, a vote of thanks was accorded to the Professor for his lecture.

THE ARCHITECTURAL ASSOCIATION OF IRELAND.—A meeting of this Association was held on Tuesday evening, at the Grosvenor Hotel, Dublin. Mr. R. Caulfield Orpen occupied the chair, and an interesting lecture was given by Mr. W. J. Fennell, of Belfast, on "Some Old Buildings in Antrim and Down," which was illustrated by lantern. The lecturer gave some accounts of the ruins at Hollywood, co. Down, the old churches at Newtownards and Movilla, and the very interesting ruins of the Castle at Dundrum, the Cistercian Abbey known as Inch Abbey, and thence on to the historic town of Carrickfergus, with its fine old Church of St. Nicholas, and Antrim, with one of the best preserved round towers in Ireland, 92 ft. high, and 50 ft. circumference at base, Ballycastle, with its old Abbey and Gate House, and the extremely interesting stronghold of the McDonnell's Dunluce Castle. Mr. T. Drew having proposed, and Mr. McGibboun seconded, the vote of thanks, the Chairman announced the next meeting for the 16th inst., when Mr. F. Batchelor will lecture on "Hospitals and Hospital Construction." The drawings done by members of the Advanced Class of Design (the subject being "A Village Public-house") were hung in the room, and attracted much attention.

ENGINEERING SOCIETIES.

THE INSTITUTION OF CIVIL ENGINEERS.—At the ordinary meeting of this Institution, on the 2nd inst., Mr. J. Wolfe Barry, C.B., F.R.S., President, in the chair, it was announced that seven associate members had been transferred to the class of members, and that seventeen candidates had been admitted as students. The monthly ballot resulted in the election of five members, of thirty-six associate members, and one associate.

SOCIETY OF ENGINEERS.—The first ordinary meeting of this Society for the present year was held on the 1st inst., at the Royal United Service Institution, Whitehall. Mr. Samuel Herbert Cox, the President for 1896, occupied the chair, and presented the premiums awarded for papers read during that year, viz.:—The President's Gold Medal to Mr. George Tbudichum for his paper on "The Ultimate Purification of Sewage." The "Bersermer Premium" to Mr. D. B. Butler for his paper on "The Effect of Admixtures of Kenish Ragstone, &c., upon Portland Cement." The "Rawlinson Premium" to Mr. W. G. Wales for his paper on "Discharging and Storing Grain," and a "Society's Premium" to Mr. M. A. Pollard-Urquhart for his paper on "Examples of Railway Bridges for Branch Lines." Mr. Cox introduced the President for the present year, Mr. George Maxwell Lawford, to the meeting, and retired from the chair, receiving a hearty vote of thanks for his services during the past year. After briefly reviewing the work of the Society during the past year, the President drew attention to the steady reduction in the general death rate of this country during the last fifty years, and the comparative freedom from zymotic diseases, both of which were attributed to the progress of sanitary science and the impetus given to the practice and study of hygiene by the Public Health and River Pollution Prevention Acts. The provision of pure water and efficient drainage was the duty of the engineer, and on these two subjects, which are of such vital

importance to all communities, the President based his address. After alluding to the discoveries of Pasteur and the influence of biology in its relation to the purification of water he contrasted the system of lake supplies, as instanced by the water undertakings of Glasgow, Manchester, Liverpool, and Birmingham, with the Metropolitan supply, which, coming from such polluted sources as the Thames and Lea, was entirely dependent for its bacterial purification on sand filtration. He further contrasted the successful municipal enterprise of the four cities mentioned with the working of the London Companies, which were managed solely in the interests of the shareholders, finally expressing the opinion that the London supply should be managed in the consumers' interests by a body from which party and political feeling should be entirely excluded.

APPLICATIONS UNDER THE 1894 LONDON BUILDING ACT.

At the meeting of the London County Council on the 28th ult., the following recommendations of the Building Act Committee, in regard to applications under the 1894 London Building Act, were agreed to:—

Lines of Frontages.

Woolwich.—(a) That consent be given to the erection of one-story shops upon part of the forecourts of Nos. 13, 15, 17, 19, and 21, Lakeland-road, High-street, Plumstead, on the application of Mr. J. O. Cook on behalf of Mr. A. Hilder. (b) That so much of the application as relates to the proposed erection of a one-story shop in front of No. 23, Lakeland-road, be not acceded to; as the Council is not prepared to permit the erection of the shop, having regard to the objection of the owner of the property adjoining southward.

Greenwich.—That consent be given to the erection of a one-story addition in front of the "British Queen" public-house, Trafalgar-road, on the further application of Mr. H. Roberts on behalf of Mr. G. Burney.

Rotherhithe.—That consent be given to the erection of an open footbridge and gallery across Tooley-street, St. Olave's, Southwark, to connect Nos. 10 and 12 with Sun Wharf opposite, on the further application of Mr. S. Pullett, on behalf of Messrs. Culverwell, Brooks, & Co.

Westminster.—That consent be given to the erection of a block of residential flats on the south side of Birdcage-walk, on the site of Nos. 6 and 7 and a portion of the site of No. 5, Storey's-gate, and premises at the rear, on the further application of Mr. B. Slade.

Westminster.—That consent be given to the erection of a building with an open portico on the south side of Birdcage-walk, on the site of Nos. 2, 3, 4 and part of No. 5, Storey's-gate, Great George-street, on the further application of Mr. B. Slade, on behalf of the Institution of Mechanical Engineers.

Westminster.—That consent be given to the erection of buildings with projecting plinth, pilasters, bay window, balcony, and porch, at No. 12, Great George-street, at the corner of Little George-street, on the application of Messrs. A. Waterhouse & Son, on behalf of the Surveyors' Institution.

Norwood.—That consent be given to the erection of No. 58, High-street, West Norwood, with a one-story projecting shop front, upon the flank next Ernest-street, on the application of Mr. J. W. Brooker, on behalf of Mr. C. B. Southby.

Clerkenwell.—That consent be given to the construction and erection of a porch to a detached house on the north side of Alexandra Park-road, at the corner of Muswell-avenue, on the application of Mr. H. D. Evans, on behalf of Mr. T. H. Evans.

Fulham.—That the application of Mr. W. Hall for an extension of the period within which the erection of four houses with shops on the south side of Fulham-road, at the corner of Burlington-road, was required to be completed be granted.

Hackney Central.—That consent be given to the erection of five houses, with projecting bay windows, on the site of Nos. 133, 135, 137, 139, and 141, Haggerston-road, Dalston, on the further application of Mr. A. Woodward, on behalf of Mr. F. Bowcher.

Hamstead.—That consent be given to the erection of a balcony overhanging the public way in front of new bank buildings on the east side of Roper-hill, at the corner of Pilgrim's-lane, on the application of Mr. H. Field, on behalf of the Directors of Lloyd's Bank, Limited.

Holborn.—That consent be given to the erection of an iron footbridge across Lloyd's-court, Charing Cross-road, St. Giles-in-the-Fields, on the application of Messrs. Roumie & Aitchison, on behalf of Messrs. Crosse & Blackwell, Limited.

Kennington, North.—That consent be given to the erection of an iron and glass covered way in front of No. 17, Dawson-place, Bayswater, on the application of Messrs. H. Corry & Son, on behalf of Mr. G. Pitts.

Marylebone, West.—That consent be given to the erection of an oriel window at the second and third

* A report of subsequent sittings of the Special Committee is held over until next week for want of space.

floor levels in front of Nos. 1 and 2, Duke-street, Lisson-grove, on the application of Messrs. Wylson & Long, on behalf of Messrs. Spencer, Turner, & Boldeo.

Paddington, North.—That consent be given to the erection of an external iron staircase in front of No. 6, Blomfield-mews, Harrow-road, on the application of Messrs. New & Son, on behalf of Mr. W. Walker.

Rotherhithe.—That consent, granted December 1, 1895, to the erection of a one-story bay window in front, and of a two-story bay at the rear, of Pickle Herring Wharf offices, Pickle Herring-street, Tooley-street, on the application of Messrs. Mountford & Thompson, on behalf of Messrs. Hicks, Nash, & Co., as amended by the drawing dated November 7, 1895, be modified by the omission of the words "and at the rear" immediately preceding the words "of the building be dedicated to and left open for the use of the public."

Stepney.—That consent be given to the erection of two oriel windows in front of proposed new buildings on the site of Nos. 384, 385, 388, 390, and 392 Commercial-road, on the application of Mr. Keith D. Young on behalf of the Society for Promoting Christian Knowledge.

Hackney, Central.—That consent be not given to the erection of a house on the north side of Blackstone-road, London Fields, to flank upon Lansdowne-road, on the application of Mr. W. H. Adams.

Wandsworth.—That consent be not given to the erection of a covered way on the west side of "Angleholme," East Hill, to abut upon Acris-street, on the application of Mr. W. H. George on behalf of Dr. P. H. Davis.

Battersea.—That consent be not given to the retention of a timber store erected on the forecourt of No. 92, St. John's Hill, on the application of Mr. R. D. Hanson on behalf of Mr. T. Mills.

Fulham.—That consent be not given to the erection of a harness-room at the rear of No. 745, Fulham-road, to abut upon Dornell-street, on the application of Mr. S. E. Storr, on behalf of Dr. Eland Stewart.

Hackney, South.—That consent be not given to the erection of one-story shops upon the forecourts of Nos. 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, and 226, Morning-lane, on the application of Mr. W. Hall on behalf of Mr. T. W. Webber.

Hampstead.—That consent be not given to the erection of an addition on a portion of the forecourt of a house known as "Daydawn," No. 7, Netherhall-gardens, South Hampstead, on the application of Mr. D. Brown on behalf of Mr. L. Sinclair.

Kensington, South.—That consent be not given to the erection of an iron and glass covered way over the part of the footpath in front of the Maisonettes Hotel, Nos. 28 and 30, De Vere Gardens, on the application of Mr. C. A. Daw.

Lewisham.—That consent be not given to the erection of a one-story wash-house on a site between Nos. 68 and 70 Honor Oak-road, Forest-hill, on the application of Mr. S. E. Musgrove.

Marylebone, East.—That consent be not given to the erection of an open iron bridge across Berner's mews, to connect Nos. 1 and 3, Mortimer-street with Nos. 51 and 52, Newman-street, on the further application of Mr. J. Slater on behalf of Mr. E. Penton.

Strand.—That consent be not given to the erection of a sheet-iron sign, to overhang the public way, in front of Faraday House, Charing Cross-road, St. Martin-in-the-Fields, on the application of Mr. H. Fould, on behalf of the Electrical Standardising, Testing, and Training Institution.

Westminster.—That consent be not given to the erection of an iron and glass covered way at the Francis-street entrance to the Army and Navy Mansions, Nos. 109, 111, 113, and 115, Victoria-street, on the application of Mr. C. J. C. Pawley, on behalf of Mr. W. Goodwin.

Westminster.—That consent be not given to the erection of projecting porches, a bay window, and an angle oriel and turret at No. 54, Parliament-street, at the corner of a footway leading to Cannon-road, on the application of Mr. A. Williams, on behalf of Messrs. Grindlay & Co.

Width of Way.

Southwark, West.—That consent be given to the erection of a gymnasium on the north side of East-street, at the corner of Kell-street, St. George-the-Martyr, with the forecourt fence at less than the prescribed distance from the centre of East-street, on the application of Mr. Rowland Plumbe on behalf of the Borough-road Polytechnic.

Woolwich.—That consent granted on October 27, 1895, to the erection of a temporary wood and iron entrance and cloak rooms to the school building on the west side of Kne-hill, Plumstead, to abut upon, and with the boundary-fence or wall in front of such entrance and cloak-rooms at less than the prescribed distance from the centre of a footpath leading from Kne-hill, on the application of Mr. T. J. Bailey, on behalf of the School Board for London, be modified by the omission of the condition as to the setting back, without compensation, the portion of the boundary-fence or wall next the said footpath the prescribed distance from the centre of that footpath, when required by the Council so to do.

Greenwich.—That consent be not given to the rebuilding of No. 27, Woolwich-road, with the new portion of the flank of the building to abut upon Hatcliffe-street, on the application of Mr. W. A. Finch, on behalf of Mr. W. A. J. Hensler.

Greenwich.—That consent be not given to the extension of a portion of No. 45, Woolwich-road, at less than the prescribed distance from the centre of Commerell-street, on the application of Mr. W. A. Finch, on behalf of Mr. W. A. J. Hensler.

Hackney, South.—That consent be not given to the erection of two additional stories upon the existing one-story shops at Nos. 120 and 122, Morning-lane, at the corner of Back-lane, on the application of Mr. J. Hamilton, on behalf of Mr. E. Stevens.

Poplar.—That consent be not given to the erection of two houses on the north side of Manilla-street, Millwall, at the corner of Alpha-road, in the position and with a portion of the forecourt boundary of the house next the latter road as shown upon the plan submitted with the application of Messrs. J. and S. F. Clarkson, on behalf of Mr. W. Legg.

St. George-in-the-East.—That consent be not given to the retention of a temporary wood and iron shop and store erected on the north side of Watney-passage, at the corner of Winterton-street, on the application of Mr. F. Parker, on behalf of Mr. Craze.

Width of Way and Space at Rear.

Paddington, North.—That the Council in the exercise of its powers, under Sections 13 and 41 of the London Building Act, 1894, do not consent to nor permit the erection of an addition, not to exceed 30 ft. in height at the rear of "Carlton-vale Tavern," No. 33, Carlton-road, Maida-vale, at less than the prescribed distance from the centre of a road leading to Paddington recreation ground, on the application of W. J. Ancell, on behalf of Mr. G. C. Butcher.

Southwark, West.—That Messrs. F. S. Breton & Son be informed that their application on behalf of the trustees of Marshall's Charity for the Council's consent to and allowance of the erection of twenty-three houses on the west side of Webber-row, St. George-the-Martyr, on a site of Nos. 7 to 37, Webber-row and 77, Webber-street, with the flank of the northernmost building and the fence or boundary in front of such houses at less than the prescribed distance from the centre of Webber-row and Webber-street respectively, and with an open space not in accordance with the rules of the Act at the rear of the eight southernmost houses in the row as shown upon the plans submitted with the application, having been further considered, the Council sees no reason to depart from its decision of December 1, 1895, not to grant the application.

Open Space about Buildings.

Hackney, South.—That the Council do, in the exercise of its powers under Part V. of the London Building Act, 1894, permit the erection of one-story stabling and of a two-story engine-house and offices in a yard leading out of Chelmer-road, Homerton, with open spaces about such buildings, on the application of Mr. R. Peters, on behalf of Mr. F. Adams.

Kensington, South.—That the Council, in the exercise of its powers under Section 41 (r), iii. (h), of the London Building Act, 1894, do allow the erection of a five-story addition at the rear of No. 10, Brompton square, to abut upon an open space as shown upon the plan submitted with the application by Mr. E. W. Parker, on behalf of Mr. J. Davies.

St. George, Hanover-square.—That sanction be given to such deviations from the plan certified by the District Surveyor, under Sections 13 and 43 of the London Building Act, 1894, of the space previously occupied by buildings at Nos. 141 and 142, New Bond-street, and premises at the rear fronting upon Bloomfield-place, as would permit of the erection upon that site of a building on the further application of Mr. F. W. Foster on behalf of Mr. A. Coombs.

Brixton.—That the Council in the exercise of its powers under Section 41 of the London Building Act, 1894, do not allow a modification of the provisions of that section with regard to open spaces about buildings, so far as relate to the proposed erection of three blocks of residential flats, with shops on the ground floor, on the west side of Coldharbour-lane, next No. 18, with irregular spaces at the rear of such flats, on the application of Mr. J. T. Holmes, on behalf of Mr. H. Wood.

Paddington, South.—That the Council, in the exercise of its powers under Section 41 of the London Building Act, 1894, do not permit the erection of an addition upon a portion of the open space at the rear of No. 9, Gloucester-square, Hyde Park, at the corner of Devonport-street, on the application of Messrs. Mullett, Booker, & Co., on behalf of Mr. W. P. W. Norsworthy.

Line of Fronts and Width of Way.

Wandsworth.—That consent be given to the erection of a one-story addition to the Holy Trinity National School for Boys, Trinity-road, Upper Tooting, to the line, and with the forecourt boundary at less than the prescribed distance from the centre of the road, on the application of Mr. C. E. Sayer on behalf of the Rev. J. H. Potter.

Brixton.—That consent be not given to the erection of buildings on the site of Nos. 6a, 6, 8, 10, 12, 14, 16, &c., Coldharbour-lane, on the application of Mr. J. T. Holmes, on behalf of Mr. H. Wood.

Kensington, South.—That consent be not given to the erection of an enclosed covered way, constructed of glazed wood sashes and brickwork, upon part of the forecourt of No. 2, Victoria-road, on the further application of Mr. H. G. Ioberson, on behalf of Mr. H. Hampton.

Formation of Streets.

Woolwich.—That an order be sealed and issued to Mr. T. J. Young, sanctioning the formation or laying out of an extension 40 ft. wide, for carriage traffic, of Abbey-grove, Plumstead, and the widening of portions of Bostal-lane and Bostal-mews-way, on his application to the Council, on behalf of Messrs. J. & C. E. Pearson. That the name Abbey-grove (in continuation) be approved for the new street. That as the land upon which the extension of Abbey-grove is proposed to be formed appears to be below Trinity high-water mark, the attention of the Local Authority and of the applicant be called to the regulations made by the Council under the provisions of Part XI. of the London Building Act, 1894, with regard to the erection of dwelling-houses upon low-lying land.

Lewisham.—That an order be sealed and issued to Mr. J. Norton, refusing to sanction a deviation from the plan approved on October 19, 1893, for the formation or laying out for carriage traffic of Rhyme-road, Motes-vale, by partially widening and diverting the course of that road as shown by the amended plan and particulars dated December 7, 1895, on his further application to the Council.

Cubical Extent.

Finsbury, East.—That consent be not given to the erection on a site between Old-street and Banner-street, at the corner of Bunhill-row, St. Luke, Old-street, &c., of three blocks of buildings each to exceed in extent 250,000 cubic feet, and to be used only for the purposes of the manufacture of Bovril, and that the Council do not allow a modification of the provisions of Section 54 (a) of the London Building Act, 1894, with regard to the thickness of the recesses under the windows on the third floor of the block of buildings next Old-street, on the application of Mr. H. V. Lancaster, on behalf of the Bovril Company, Limited.

Recommendations marked * are contrary to the views of the Local Authorities.

Correspondence.

To the Editor of THE BUILDER.

"EXPERT" EVIDENCE.

SIR.—The other day I was waiting to give evidence in one of the Queen's Bench Courts, and listened to the trial of an action for obstruction of light.

The defendant relied on the evidence of a man who in the box described himself as a "builder, sanitary engineer, member of the Society of Arts, and light and air expert." This fellow—who had not an "h" in his vocabulary—endeavoured to teach the judge that the defendant had rather improved the light of the plaintiff's house by the substitution of a stock brick wall 20 ft. high, and 7 ft. distant from the windows, for a formerly existing low fence backed by a row of trees, which it was admitted by the defendant's own witness were spaced some 10 or 12 ft. apart.

Of course, the plaintiff won and got damages. That, however, is by the way. What impressed me was the fact that it should be possible for evidence from such a witness to be tendered at all on an expert point. I wonder what would happen if a judge were asked to receive testimony upon questions of law and medicine from a barrister's wig maker and a manufacturer of surgical instruments?

HARVEY DYBALL.

London, January 29, 1897.

THE CAPITAL AND COUNTIES BANK (BRISTOL BRANCH).

SIR.—Referring to the article on Bristol architecture in your last number, the Capital and Counties Bank in that city is the extension of a building which was erected from my designs, and illustrated in the *Builder* of December 12, 1895.

FRED. MEW.

9, Gordon street, Gordon-square, W.C.

KING'S COLLEGE SCHOOL.—It is stated that the Council of King's College, London, have acquired South Hayes, with about 6 acres of ground, at Wimbledon Common, whither the school will migrate after the current term. Until recently nearly all the school class-rooms were in the basement floor—on a level, though, with the small playground at the back, bounded by Strand-lane—of the buildings erected, after Sir Robert Smirke's designs, upon the establishment of the College in 1831; for the Hospital, founded in 1839, the present building was begun in 1852. Several eminent men have had their education here.

The Student's Column.

SPECIFICATIONS.—VI.

CARPENTER.

IN specifying the materials for this trade, the architect should make up his mind definitely as to the precise grade of quality which he desires and then define that grade clearly and insist upon its being supplied. To do this requires a good knowledge of the market, and of the current prices and supply. The marks on timber are constantly changing, and the quality of the various classifications of different shippers is widely divergent, hence the knowledge required to accurately specify the quality of timber needs constantly to be revised and brought up to date. We give examples of various methods of specifying timber.

Materials.—The whole of the fir timber is to be of the best Memel, Dantzic, or Riga. The deals to be the best quality seasoned Christiania. The timbers and deals are to be cut die square, entirely free from sapwood, shakes, large, loose, or dead knots, and all other defects.

(This is the oldest fashioned form now in use, and, in spite of its apparent stringency, is in reality delightfully vague. The term "best" has no real significance. The quality of Memel, Dantzic, and Riga timber is not equal, nor are these the only ports from which high-class timber can be obtained; whilst Christiania may almost be said to be the one port from which the deals for any particular work will most likely not come.) As another example of a clause not intended to be unduly strict, but meant to imply average quality, we have the following:—

Materials.—The timber for carpenter's work to be good quality yellow fir timber from Baltic ports, cut out of haulk where necessary, but in other cases converted from boards, free from sap, large or loose knots, shakes and other defects, all to be well seasoned and sawn die square, and to hold the specified scantlings when finished. No outside slabs or sapwood to be used, and no pitch line or other American timber to be used for arpentry without special permission from the architect. (If the architect wishes the scantlings, gured or specified, of his woodwork to hold full when finished it is necessary to state it, as the custom of the trade, both of carpenter and joiner, to allow for waste in working. There are many advantages in using converted timber rather than cutting from baulk, chief amongst which are better seasoning, and as a general rule better quality. In spite of the increased labour of working, pitch pine is, for reasons sufficiently obvious, really in favour with present day builders in preference to Baltic fir, and its use should therefore be guarded, as discretion is required.) Again as another example we may specify thus, hearing in mind that practically there are four qualities of fir timber, viz., "Crown," "best middling," "good middling," and "common middling," and that boards have "Crown" and "Crown brack" superiors though little used qualities to 1st, 2d, 3rd, 4th, and 5th quality.

Materials.—The timber for carpenter's work to be Crown Memel or other approved fir of equal quality where cut from baulk and of a quality equal to Petersburg 1st where cut from deals. The architect will, of course, use his own discretion as to the selection of the quality or brand that is to form the criterion of excellence. Crown Memel, for example, is far superior to the timber generally employed in building.) Having settled the question of quality, the specification will proceed as follows:—

Distances Apart.—No joists, rafters, or quarters to be fixed more than 12 in. apart in the clear, and all to be properly trimmed for fire-places, chimneys, &c. The trimmers and trimming rafters and joists to be in all cases 2 in. thicker than the ordinary timbers. (In some cases it may be desirable to still further increase the thickness of trimmers. Where this is so, the particular instances should be mentioned, as the cause given will apply generally.)

Lintols.—Put lintols where required to internal openings of all plastered rooms 1 in. in depth for every foot of span, the full width of reveals and 2 in. longer than the respective openings, but in no case less than 3 in. deep.

Centres, &c.—Supply all requisite centring for arches, turning pieces, springers, templates, &c., the trimmer arches to be fitted down and filleted or centres left in) to receive lathing, and no centre to be struck until sanctioned by the architect. Supply and fix all necessary bracketing and lathing.

Centring for Joinery.—Insert in jambs of all openings to be fitted with joinery wood slips

3/4 in. thick, 4 1/2 in. wide, and in length the full width of opening, built into and securely fixed in the joints of brickwork. (If wood bricks or breeze concrete fixing blocks are preferred, specify accordingly.)

Bresssummers and Binders.—The bresssummers over . . . to be formed of No. 4 9 in. by 3 in. deals bolted together with 3/4 in. wrought-iron bolts with heads, nuts, and washers, No. 6 to each bresssummer. The bresssummers to be 18 in. longer than opening, and to have 3 in. tooled Yorkshire stone templates, 1 1/2 in. by 1 1/2 in. under ends. The binders . . . to be 6 in. by 4 in. and 12 in. longer than span, and to rest on 3 in. tooled Yorkshire stone templates, 9 in. by 9 in.

Floor Joists.—The timber floors to be formed with joists of the following scantlings, all to be properly notched and spiked to 4 1/2 in. by 3 in. plates, which are not to be built into walls, but carried on corbelling of two oversailing brick courses where plaster cornices allow, and elsewhere on wrought iron corbels, weight 7 lbs. each, built into walls every 3 ft. apart. Joists to ground floor rooms, 5 1/2 in. by 3 in.

Joists to first floor rooms over scullery, larder, pantry, and servants corridor to be 7 in. by 2 1/2 in., over remainder of ground floor 9 in. by 3 in.

Herringbone Strutting.—All floors of first floor to have herringbone strutting 2 1/2 in. by 1 1/2 in., not more than 6 ft. apart.

Sound Boarding.—Put between joists of floors over reception-rooms, 1/2 in. sound boarding on 1 1/2 in. by 1 in. fillets, and lay pugging, 2 in. thick, of chopped hay and lime, in proportion of 4 to 1, laid dry.

Roofs.—(If the roofs are fully and clearly shown on the drawings, it may be sufficient to say:) The roofs of buildings and the trusses to same to be framed up, as shown upon drawings with timbers of the sizes figured thereon. The rafters to be notched down upon purlins and plates, cut true at the ridges, and securely spiked thereto. (Or the particulars may be given thus:) The roof over offices to be framed with three king post trusses, the beams 9 in. by 4 in.; principal rafters, 6 in. by 4 in.; struts, 4 in. by 4 in., and 1 inch circular wrought-iron king-rod, with wrought-iron plate at head, 18 in. long by 4 in. wide, and 1/2 in. thick, forged to shape and bolted with No. 2 1/2 in. bolts to principals. Put 1 inch wrought-iron bolts, 18 in. long, fixed solid through the beams and feet of principal rafters.

Purlins to be 6 in. by 4 in.; ridges, 9 in. by 2 in.; common rafters, 4 1/2 in. by 2 1/2 in.; hips and valleys, 7 in. by 3 in.; plates, 4 1/2 in. by 3 in. The main roof to have four king-post trusses, tie-beams, 10 in. by 4 1/2 in.; principal rafters, 7 in. by 4 1/2 in.; struts, 4 1/2 in. by 4 1/2 in.; and 1 1/2 in. circular wrought-iron king-rod with wrought-iron plate at head, 20 in. long by 4 1/2 in. wide and 5/8 in. thick, forged to shape and bolted with No. 2 3/8 in. bolts to principals. Put 1 1/2 in. wrought-iron bolts 20 in. long fixed solid through the beams and feet of principal rafters. Purlins to be 7 in. by 4 1/2 in.; ridges, 9 in. by 2 in.; common rafters, 5 in. by 3 in.; hips and valleys, 7 in. by 3 in.; plates, 4 1/2 in. by 3 in.

Boarding and Battening.—Cover main roof with inch rough boarding and McNeill & Co.'s bituminous, inodorous felt, lapped 2 1/2 in. at edges, and nailed to boarding with zinc or compo clout nails. Lay over the roof to offices 1 1/2 in. by 1 in. battening, set out to 3 1/2 in. gauge for tiling (or to the proper gauge for slating).

Flat.—The flat over porch to have 5 1/2 in. by 2 1/2 in. joists, 4 in. by 3 in. plates, and to be laid with 1 1/2 in. deal traversed boarding edges shot for lead, laid to fall with the necessary firrings. Put 2 in. rounded deal rolls for lead, 3 ft. centre to centre.

Gutters.—Lay the gutters with 1 1/2 in. gutter boards and framed bearers to a fall of 1 1/2 in. in 10 ft., with 2 1/2 in. cross rebated drips 9 ft. apart. The gutters to be 9 in. wide at the narrowest part. Form deal dovetailed cesspools, 8 in. by 8 in., and 6 in. deep, for outlet of gutters, with proper disbed and rebated perforation for 4 in. pipe.

Snow Gratings.—Lay over all gutters deal wrought snow gratings of 2 in. by 1 1/2 in. battens, about 1 in. apart, on 4 in. by 2 in. cut and shaped bearers, about 3 ft. apart. These gratings to be made in 6-ft. lengths for easy removal, and to be put together in white lead and pinned with oak pins and crossoted.

Lier Boards and Tiling Fillets.—Put 3/4 in. by 7 in. lier boards at sides of gutters and valleys and along slopes of roofs adjoining vertical faces and deal tiling fillets 1 1/2 in. by 1 in. To eaves put tiling fillets 3 1/2 in. by 1 1/2 in.

Eaves.—Put 3/4 in. by 7 in. wrought and beaded

fascia to eaves (or instead the treatment of eaves may be specified thus): The feet of rafters to project 12 in. from face of wall, and to be wrought and the ends shaped to detail with wrought sprocket pieces 18 in. long by 3 1/2 in. wide and the full thickness of rafters. (If the under side of eaves is boarded specify it; if to be plastered, say.) Put under eaves on feet of rafters and also plugged to wall, 1 1/2 in. by 1 1/2 in. fillet to receive lathing.

Half-timbering.—The half-timbering to be of well-seasoned fir, with 7 in. by 4 1/2 in. posts and beams out of 11 in. by 6 in., and heads 4 1/2 in. by 4 1/2 in., left as from the saw, put together in white lead and pinned with 1 1/2 in. oak tenails left projecting 3/4 in. from face of timbering. This half-timber work is to be cut out immediately after signing of the contract, and to be properly exposed to absorb 10 lb. weight of creosote per cubic foot. The contractor is to arrange for the weighing of the worked timber in the presence of the architect, before it is despatched to the erecting works, and also on its return before fixing.

Barge-boards.—The barge-boards to be 2 in. wrought and cross-tongued yellow deal 15 in. wide on main roof, and 12 in. wide on roof of offices, all to be moulded on lower edge, and to have 4 1/2 in. by 2 in. moulding planted on to the other. (If moulding is returned at foot, say so. Also specify apex finials if desired.) The barge-boards to be mitred and cross-tongued at apex.

GENERAL BUILDING NEWS.

PROPOSED ADDITION, CHURCH OF ST. LUKE, DEEPLISH, ROCHDALE.—An effort is now being made, it is stated, to complete the Church of St. Luke, Deelish, Rochdale, by the building of the nave. The present nave is entirely of a temporary character, and the chancel, designed by Mr. R. Keill Freeman, cost 2,700l. Further plans have been prepared by the same architect, which will require about 3,000l. to carry out.

BUSINESS PREMISES, DUBLIN.—New premises in Henry-street, Dublin, are being erected for Messrs. Arnott & Co. The architect for the entire works is Mr. George P. Beater. The contractors are Messrs. H. & J. Martin for the general building work; Messrs. Homan & Rodgers for the fire-proof construction; Messrs. Cummins Brothers for the electric installation; Messrs. Waygood for the electric lifts; and Messrs. Haywood & Co. for the patent glazing of roofs.

HOSPITAL, INVERURIE, ABERDEEN.—The fever hospital which has been erected at Inverurie has been built by the Garioch District Committee and Inverurie Town Council. The hospital, of which Messrs. Jenkins & Marr, Aberdeen, were architects, consists of a ground floor and attic. The cost of the hospital has been about 2,000l. The contractors were:—Mason—Mr. William Lauder, Inverurie; carpenter—Mr. James Milne, Inverurie; plasterer—Mr. Robert Moir, Inverurie; slater—Mr. S. Christie, jun., Dyce; and plumber—Messrs. Laing & Sons, Inverurie.

PROPOSED NEW THEATRE AT HOLBECK, LEEDS.—At a meeting of the Leeds Building Clauses Committee recently, it was reported that Mr. Hainsworth (the Building Inspector), together with two or three members of the committee, had had an interview with Mr. Rhodes, the architect who has prepared plans for the erection of a new theatre at Holbeck, and that the latter had agreed to make additional alterations and to improve the access to the gallery. The committee being now satisfied with the amended plans passed them.

CHURCH EXTENSION, SEFTON PARK, LIVERPOOL.—The Mission Church of St. Pancras, Sefton Park, was recently opened. The church is subsequently to be used as a parish room and Sunday school, &c. Adjoining this is the choir vestry, and between the latter and Lidderdale-road will ultimately be built a permanent church capable of accommodating 800 people. Pending the erection of the church the services will be conducted in the mission church, which is 60 ft. by 30 ft. The ceiling has a height of 29 ft. The building is of grey brick, with red brick quoins, and Rainhill sandstone dressings to the doors and windows. The choir vestry is 23 ft. by 16 ft., and the roof is panelled in pitch pine. The lead glazing has been executed from the architect's designs by Messrs. Williams & Watson, and the zinc roofing by Braby & Co. The architects are Messrs. H. & A. P. Fry, Liverpool, and Messrs. Morrison & Sons, Wavertree, have been the general contractors. The heating work has been carried out by Messrs. Killick & Cochrane.

ST. MARGARET'S CHURCH, JUNIPER GREEN, EDINBURGH.—A dedication service took place recently in St. Margaret's Church, Juniper Green, which has just been completed from plans by Councilor R. M. Cameron, architect, Edinburgh. The church, which has cost 5,000l., is seated for six hundred people. At present the only part of the church unfinished is the tower. The fabric is a Gothic structure, cruciform in form, with side aisles, a centre nave, north and south transepts, chancel, and

apse. The nave is separated from the side aisles by five pointed arches, while the transepts and chancel are spanned in single arches from the large piers of the central square tower which rises above the building. A barrel-shaped timber roof extends along the whole length of the building, and is divided into bays by moulded ribs. A stone-arched organ chamber is placed near the chancel and south transept.

RESTORATION OF EAST TUDDENHAM CHURCH, NORFOLK.—The parish church of All Saints, East Tuddenham, has been undergoing interior restoration, Mr. G. H. Green, being the architect, and Mr. C. S. Smith, of Norwich, carrying out the work under his directions. A new floor (with the exception of the centre passage in the nave) has been put down throughout, on a bed of concrete, wood blocks being placed by the London Wood Floor Company under all the sittings. The chancel and nave have been re-seated, the pulpit and prayer-desk altered and moved, and the reredos enlarged.

SCHOOL, GRANTHAM.—By the completion of the new school for infants, on Launder-terrace, Spittlegate, Grantham, additional accommodation for 348 children is provided. Messrs. Green & Wright are architects, and the contract was entrusted to Messrs. Walker Brothers & Parks. The new school—which is intended for infants only—is constructed of red brick, with Ancaster stone dressings. The large block facing Launder-terrace is capable of accommodating 216 children. It can be divided, if occasion requires, by two sliding screens. This room is heated by three open fireplaces. Two large classrooms, each with a gallery, open from this apartment. A small room is set apart for the use of the teachers.

SALVATION ARMY BARRACKS, HARGOATE.—Memorial stones were laid recently in connexion with the erection of the new Salvation Army Barracks in Beulah-street, Hargoate. The site cost 8,000*l.*, but the lower portion of the Army saloon will be utilised for shops. The architects for the building are Messrs. H. E. & A. Bown, of Hargoate; and the contractors, Messrs. Rhodes Bros., of Shipley.

ALTERATIONS, FREE ST. GEORGE'S CHURCH, MONTROSE.—Free St. George's Church, Montrose, has been re-opened after being altered and improved. Messrs. Matthew & McKenzie, Aberdeen, were the architects, while the contractors were:—Masons, Messrs. Reid & Burnett; joiners, Messrs. J. & W. Craigie; glazier, Mr. Douglas; heating, Mr. Alexander Mung; plumbers, Messrs. Christie & Smith; and painter, Baillie Adamson.

CASUAL WARDS, ST. PANCRAS.—New casual wards have been erected in Holmes-road, Kentish Town, at a cost of nearly 11,000*l.* The new wards will accommodate forty-eight males, eighteen females, and six children. The site has a frontage of 125 ft. to Holmes-road, and an average depth of 250 ft. The front or official block is a red brick structure occupying the centre of the frontage, and standing back in a wide forecourt with a cartway entrance on either side. To the rear of this block is the main building, stretching away for a length of nearly 200 ft. to the rear, and terminating in a railed yard communicating with the oakum store, sanitary offices, and the mill room. The accommodation for males is on the ground floor, and each inmate is provided with a separate cell sleeping apartment, which will be fitted with a hammock. The women have similar accommodation upon the upper floor, the apartments to be used by women with children being of larger area, and the whole fitted with beds in lieu of hammocks. The whole of the sleeping apartments are warmed by hot-water pipes, and in each is a push connected with an electric bell and indicator in the superintendent's office. Separate entrances are provided for each sex, with covered shelters for those who arrive before the regulation time. These give access to the entrance lobbies. The bathrooms are fitted with porcelain baths, supplied with hot and cold water. From the bathrooms run long corridors, giving access to the sleeping apartments.

In the basement of the front block is a small laundry, fitted by Messrs. Bradford & Co. Here also is a Lyons steam disinfecter, with boiler and other necessary appliances, and the hot-water boilers for warming the building and for supplying the bath water. The ordinary labour test at casual wards is stone-breaking and oakum-picking, and working cells have been provided for this purpose in connexion with some of the men's dormitories. Seeing, however, that these tasks are easy for the habitual tramp and hard for the occasional wayfarer, it is proposed to adopt a corn-grinding test, which gives no advantage to the expert. The grinding shed contains a central mill room, with accommodation for twenty-two hand-mills and a flour-dresser. Each mill handle is in a separate bunk for the use of one man, and a crank, for the use of twelve men, works the dresser. The building is so arranged that the men on mills or dresser have no access to the mill room, but small glazed openings in the division walls enable the official in charge of the mill room to see each man at work, and the men themselves to note the progress they are making with their tasks, small strips of glass being let in the hoppers of the mills for this purpose. Above the mill room is a corn and flour store. The buildings generally are of plain block brickwork, but the block next Holmes-road is faced with red bricks with moulded brick and

stone dressings. The floors throughout are of concrete. The surface finish of the greater portion is limestone and cement, but the day rooms and entrance lobbies are finished with carpet and the officers' rooms with wood flooring. The buildings have been erected by Messrs. T. Gregory & Co., of Clapham Junction, from the plans and under the superintendence of Messrs. A. & C. Harston, architects, Mr. G. Poole acting as clerk of the works. The contract sum was 10,697*l.*—*St. Pancras Guardian.*

WESLEYAN CHURCH, CROWBOROUGH, KENT.—The foundation-stone of the new Wesleyan Church, at Crowborough, was laid recently. When completed, it will accommodate over three hundred people, the inside measurements being 66 ft. 6 in. by 34 ft. 6 in., and there will be a schoolroom providing for a hundred children. The building is faced externally with local stone. Bath stone being used for the chief features. Mr. F. Borcham is the architect, and Mr. G. Beard, of Crowborough, the builder. The scheme involves an expenditure of 1,450*l.*

RECREATION-ROOM, GIRLS' HIGH SCHOOL, LOUGHBOROUGH.—A new recreation-room has been erected at the Loughborough Girls' High School. Plans were prepared by Mr. G. H. Barrowcliff, and the contract was placed in the hands of Mr. A. Faulks.

RESTORATION OF RAVENFIELD CHURCH, YORKSHIRE.—On the 28th ult., the new pulpit and font of St. James's Church, Ravenfield, near Rotherham, were dedicated. In addition to necessary repairs, &c., the church has been re-seated with pitch pine benches, a carved oak reredos has been erected, and the walls of the sacarium hung with curtains, the semidome above having a colouring of blue, studded with gold stars. The pulpit is of oak, with open panels of tracery. The font is also of oak. It is octagonal in shape, and has carved panels. The restoration has been carried out from the designs and under the superintendence of Mr. E. Isle Hubbard, of Rotherham, by Mr. J. Wortley, of Rotherham. Nearly the whole of the carved work has been done by Mr. Glenn, of York.

ASYLUM BUILDINGS, BODMIN, CORNWALL.—Mr. Silvanus Treval, of Truro, has we hear, been appointed architect of the new county asylum buildings at Bodmin, which are to be erected at a cost of about 40,000*l.*

PUBLIC HALL, TEIGNMOUTH.—A site for a public hall has been secured in Station-road, Teignmouth, running back to Lower Brook-street, and the building is to be so constructed as to be capable of use for theatricals, bazaars, &c., with lobbies and cloakrooms, and separate exits into each street. The length of the hall will be 92 ft., and the width 43 ft., with height to the roof of 36 ft., and seating accommodation for 500 to 600 persons. The architects are Messrs. Watson & Watson, of Torquay.

SCHOOL, LEYTONSTONE, ESSEX.—The memorial stone of the new boys' school at Newport-road, Leytonstone, was laid recently. The works of enlargement comprise:—1. A separate and distinct school building for 600 boys. 2. The addition to girls' department of the rooms now occupied by boys. 3. The addition of a class-room to the infants' department. 4. The erection of a house distinct from the school buildings for the caretaker. Boys' school. The new school building is designed to accommodate 600 boys on two floors, five class-rooms on each floor, the school places per class varying from fifty to seventy, to allow of the varying numbers in the classes. On the ground floor is a hall, 60 ft. long by 35 ft. wide, for assembly drill and other physical exercises. All the class-rooms are entered from this hall, those on the upper floor by means of a gallery extending the whole length of one side of the hall. Staircases are provided to the upper floor at both ends of the building, and cloakrooms and lavatories on each floor. Rooms for the master and assistant teachers are provided on the upper floor. The floors throughout will be constructed with steel joists and concrete, on which will be laid solid wood block flooring. The caretaker's cottage is being erected at the junction of the two roads, and will command the entire length of the two frontages. The contract for the entire work amounts to 8,772*l.*, and is being carried out by Mr. F. J. Coxhead, of Leytonstone, under the supervision of Mr. William Jacques, of London, the Board's architect.

REOPENING OF GREAT BADDOW CHURCH, ESSEX.—On the 24th ult., after having been closed six months for repairs, the parish church of Great Baddow, near Chelmsford, was reopened. The work has been carried out by Messrs. Choat & Sons, of Chelmsford, under the superintendence of Mr. Charles Pertwee, architect.

PROPOSED NEW TOWN HALL FOR COLCHESTER.—The Municipal Officers Special Committee of the Colchester Corporation have been deliberating as to whether a new town hall should be built or whether the existing erection should be modified and added to. They have had reports from Mr. E. W. Mountford, and from Mr. Binyon, Ipswich. Mr. Mountford's report is to the effect that the present town hall hardly contains a sound plank, and that it is dangerous. To pull it about would be dangerous and costly. He estimates that if were retained, the cost of the necessary additions to work would be less than 14,000*l.* or 15,000*l.*, while the result would be unsatisfactory. In a new town hall, a hall

to seat 500 persons, a Council chamber, mayor's parlour, committee-rooms, and sets of rooms for all the borough officials, together with Quarter and Police Sessions, courts, cloakrooms, and retiring rooms for persons engaged in the business of the courts would be absolutely necessary, and this would make a grand total of 24,192 square feet of required floor. To meet this there was at disposal the site of the existing hall, Joslin's premises, a store building, engine-house, yard, and police offices, and land left little to spare. As regards the style of architecture, he favours the free classic treatment, red bricks for the fronts, the principal fronts being treated in a simple and broadly dignified manner, such money, as could be spared being spent in employing a good sculptor to illustrate the town's history, an idea carried out with good effect at Sheffield, Northampton, and elsewhere. A perfectly new building exclusive of fittings, would cost between 48,000*l.* and 50,000*l.* Mr. Binyon reports that, notwithstanding defects, he is of opinion that the existing building could be made thoroughly sound for 700*l.* to 1,000*l.* He has, however, no doubt that the best results would be obtained by pulling down the present building. He considers that a town hall might be provided for 30,000*l.*, or with cost of furnishing, architect's commission, &c., a total of 35,000*l.* The cost of altering the existing structure and adding municipal offices, he estimates at 15,000*l.* As to the style of architecture, he favours a Jacobean or a later form of English Renaissance. The site, he adds, lends itself to the most effective introduction of a fine tower. The committee have decided on the recommendation they will make, and it is said they do not favour the patchwork scheme.—*Essex County Chronicle.*

SANITARY AND ENGINEERING NEWS.

DRAINAGE OF WEST HARTLEPOOL.—The Borough Engineer of West Hartlepool, Mr. W. Brown, has just issued his report to the Town Council of the Borough on the existing sewerage of West Hartlepool, with suggested remedial measures and extensions. In regard to the remedial measures Mr. Brown says "to fully provide for a trade and domestic sewage forty gallons per head of population per twenty-four hours is regarded by many experts as a proper provision, but, after fully considering the requirements of West Hartlepool, I have come to the conclusion that thirty-five gallons per head is a reasonable amount." Continuing Mr. Brown says—"The Barn Sewer is much too small, being little more than sufficient for the upper waters west of York-road alone, during heavy rain fall, and since Baltic-street, Whitley-street, and York-road sewers are intended to discharge into it an additional capacity of 6,000 cubic feet is necessary. 2. A new sewer should be constructed in Whitley-street, from Church-street to Burn-road. 3. New sewers of much increased capacity should be constructed in Baltic-street, Oxford-street, and Cleveland-street. 4. A new and much enlarged sewer should be constructed in York-road, Park-road, Waldon-street, and Hart-road. 5. The Bridge-street and Mainsforth-terrace sewers should be constructed to new levels. 6. The existing sewers in Front-street, &c., should be raised to new levels. 7. The existing sewerage system constructed prior to 1884 being found in such an unsatisfactory condition in every way, they should be wholly reconstructed on modern lines." The approximate estimate of the cost of the scheme is 70,922*l.* 10*s.*

NEW DOCK AT BURNISLAND.—The Burnisland Harbour Board met on the 30th ult., and the business of receiving offers for the construction of a new deep-water dock was before the meeting. The committee's report on the tenders received from the elected contractors recommended that the offer of Sir John Jackson, Westminster, be accepted, and the meeting unanimously adopted the committee's recommendations. The estimate of Messrs. Melk R. Henderson, engineers, as to the probable cost of the new works was 300,000*l.*, and the tender accepted, it is understood, is between 250,000*l.* and 260,000*l.* The new dock is to have a water area of fully ten acres, and a depth at spring tides of 29 ft.—*Scotsman.*

SEWERAGE SCHEME, CRABBS CROSS.—The Eckenhead Rural District Council have instructed Mr. J. E. Wilcock, G.E., of Birmingham, to prepare a scheme of sewerage and sewage disposal for the districts of Crabbs Cross, Hint End, and portion of The Ridgway within their district.

BRIDGE, BOLTON ABBEY, YORKS.—The contract for the making of the Bardenbeck Bridge and road has been let to Messrs. Morrison & Mason, contractors, Garsington, who are executing the works for the Bradford Corporation Waterworks, the conduct of which passes close by. The engineers are Messrs. John Varley, C.E., & Son, Skipton. Being on the route of tourists to Bolton Abbey, it is intended to open the works in time for the Diamond Jubilee.

THE CLAIM AGAINST THE ST. PANCRAS GUARDIANS.—In our report of this case in G. issue for the 22nd ult., page 87, we mentioned that Mr. Kirk & Randal's matter should have been given Wm. Jas. Renshaw, instead of "Bradshaw."

FOREIGN.

FRANCE.—A Committee has been formed for the erection of a monument to Sainte-Beuve in the Luxembourg garden.—M. Frémiet is to execute the statue of Jules Simon to be erected on a site to be hereafter selected in Paris. M. Scauer Glisson will design the pedestal.—The fourth exhibition of the works of French painters in the East will be opened at the Durand Ruel Gallery on the 15th, to remain open till March 13. The exhibition will include this year, besides modern sculpture and painting, a section for Oriental Art, consisting exclusively of Persian miniature paintings, and a retrospective exhibition dedicated to the works of the late Theodore Chassériau, which deal with Oriental subjects.—M. Huet, Inspector-General in the Department of "Ponts et Chaussées," has reached the age of official superannuation, but the difficulty of finding at present any one adequate to take his place has induced the Prefect of the Seine to continue M. Huet in office until the exhibition of 1900.—The jury in the competition opened by the town of Dunkerque for a Prefecture Hôtel have awarded the first prize to M. L. Portier, architect, of Valenciennes, and the second to M. Mollet, of Lille.—The death is announced of M. Blaquière, architect, of Bordeaux. He was born in that town in 1820, and after having studied architecture under his father, came to Paris to the atelier of Uchard. Subsequently he erected in his native town a number of noteworthy buildings, marked by a special style and refinement of design. Among them may be mentioned the Hôtels of the Comtes de Gohannes and Lafourcade; the Villa Faust, at Arcachon; and the château of Bivassac, in the department of Dordogne. He was a member since 1877 of the Société Centrale, and from 1882 to 1883 was president of the Société des Architectes de Bordeaux, of which he was the founder.—The death is also announced, at the age of eighty, of M. Collin, former manager-in-chief of the Gobelins ateliers, and who sat for twenty years in the Municipal Council of Paris, where he gave most valuable assistance in all questions of artistic improvement, especially in regard to the teaching of drawing. It was owing to his suggestion and his experience that the Fine Arts department of the Paris Municipality was able to preserve and restore its ancient tapestries, a selection from which is now to be seen in the Galliera Museum.

GERMANY.—Particular attention appears to be paid at present to the development of riding schools, which have become a necessity at Berlin, owing to the frost preventing outdoor riding, which sport is growing more popular from year to year in that city. New riding-schools have lately been built near the Brandenburg Gate and near the Bendlerstrasse, and we now hear of another at Charlottenburg. As is generally the case with the modern German riding-school, stabling is provided on the ground-floor level, whilst the riding-school is some 15 ft. above the pavement, the approach generally being by an easy gradient. In this instance there are two riding-schools, the larger of which measures 150 ft. by about 75 ft., while under it room has been found for ninety-three stalls and eight boxes. The architects are Messrs. Ende & Böckmann, and the total cost is 35,000*l.* We regret to record the death of Herr Arnold Bergstrasser, of Darmstadt—a well-known German architectural publisher—who has been responsible for such large publications as the "Handbook for Architecture," "The Heidelberg Castle," and other important technical works.—The twenty-fifth anniversary of office of Mr. Zimmermann, City Architect, of Hamburg, has been celebrated with considerable ceremony. Mr. Zimmermann has been responsible for an expenditure of over three millions sterling, more particularly on the numerous school buildings erected at Hamburg, and on the large and many important buildings in connexion with the new free harbour in that city. Mr. Zimmermann is also well known as a frequent visitor to this country, the occasion of his last visit being, we believe, to inspect the new fire stations built in London and the provinces.—From Hamburg we hear of a competition for the best method of heating conservatories, with particular reference to the requirements of the Horticultural Exhibition Committee of that town. A very influential jury will award the premium, the selection of the assessors being from master gardeners and engineers. April 1 is the sending-in day for the designs, the first premium being 50*l.*

AUSTRIA.—At a season when many visitors to the Mediterranean make some sojourns at Abazia, it is of considerable interest to note that new waterworks will be constructed for this resort, according to the design and under the supervision of Herr Anton Hecker, whose experience in waterworks for minor townships has been considerable. The promenades at Abazia are to be lighted by electricity.—The work for the Metropolitan Railway at Vienna has been carried out very energetically during 1896. The official report shows that about equal progress has been made on all sections of the line, both in the levelling of the track and in the new buildings.—Vienna is to have its first electrical tramway in the course of a few days, according to the system of Engineer Bannak, the principle of which is the installation of contact studs between the rails at a distance of some four or five metres from one

another. This prevents either the necessity of a third rail being laid in between the two principal rails or wires being carried overhead.—The architects of Vienna propose giving a large ball under the patronage of Prince Otto. Herr Oberbausch Wagner has taken the matter in hand.—Professor Neumann and the Cathedral architect, Herr Julius Hermann, have been appointed members of the special Government Commission on the Historical Monuments of Austria.

MR. RHODES'S SOUTH AFRICAN RESIDENCE.—One of the last acts of Mr. Rhodes before leaving Cape Town for England was to instruct Mr. Herbert Baker, architect, to rebuild his house which was lately destroyed by fire. The original design will be closely followed, except that Dutch tiles will be used for the roofing in place of the thatch in which, in the former building, the fire is supposed to have originated. The bronze bas relief of "The Landing of Van Riebeck," placed over the entrance to the house, was fortunately preserved unharmed, together with many of the most important works of art within.

MISCELLANEOUS.

THE INCORPORATION OF WESTMINSTER AND OF KENSINGTON.—Local committees have been formed to present petitions to her Majesty in Council in respect of the proposed incorporation of Westminster and of Kensington, under the Municipal Corporations Act, 1882. The united parishes of St. Margaret and St. John, Westminster, with the hamlet of Knightsbridge, population 55,509, rateable value 870,000*l.* are at present governed by a Vestry which was reconstituted in 1888, upon the dissolution of the Local Board of Works appointed in 1855. The Vestry, as such, claim to be the most ancient of their kind in London, carrying back their record for the civil parish to more than 350 years. Westminster, as another name for Thorney, is cited in Offa's (reputed) charter of A.D. 785; the boundaries of the manor which King Edgar gave to the Abbey by a generally accepted charter included parishes of which Langton deprived it in 1222, namely, St. Giles-in-the-Fields, St. Andrew, Holborn (in part), St. Bride, St. Clement Danes, St. Mary-le-Strand (Holy Innocents), and St. Dunstan-in-the-West. In 1535 it was further reduced for Henry VIII.'s new parish of St. Martin-in-the-Fields; out of the latter were successively taken St. Paul, Covent Garden, St. John the Evangelist, St. Anne, Soho, St. James, Piccadilly, and St. George, Hanover-square parishes. The detached portion of St. Margaret's contains nearly all Kensington Gardens, with the Palace and grounds (*olim* Neate Manor-house), Kensington Gore, and a slip of Hyde Park—these belonging to Eia, the three manors of Hyde, Neate, and Ehury, which Geoffrey de Magnavilla bestowed upon the Abbey *teme* William I. In Elizabeth's reign the civil government of Westminster was settled in lay hands, yet a survival of earlier times is found in the appointments of High Bailiff and High Steward—the latter by the Dean. The first High Steward was William Cecil, Lord Burleigh, nominated by Dean Goodman. In the muniment-room at the town-hall are records of parochial matters, beginning with the year 1464. In 1892 St. Mary Abbot's, Kensington, parish contained 24,139 rated householders, the rateable annual value being 1,164,947*l.* In Domesday Survey the manor of Chenevist appears as being held by Aubrey de Vere of the Bishop of Coutances, Aubrey, ancestor of the de Veres, Earls of Oxford, gave a large part of his holding, including the church, to the abbots of Abingdon; the remainder continued in the de Veres until 1266, when it passed through female descendants of the last male of that house to the families of Neville, Cornwallis, and Wingfield. In Edward III.'s reign it was valued at 20*l.* 5*s.* 6*d.*, arising out of a message with dove-house, one windmill, 360 acres of arable land, 24 acres of pasture, and 140 acres of wood, rents of tenants, &c., and is now represented, it seems, by Holland House, built, 1607 (and reputedly by Thorpe) for Sir Walter Cope, whose daughter Isabel married Henry Rich, advanced Earl of Holland in 1624. The wings are later. Thorpe's drawing, at the Soane Museum, is inscribed, "Sir Walter Cope plectet p me.—J. T."

A SHIP LIFT ON THE DORTMUND CANAL.—We have frequently referred to the extensive canal works being carried out in Prussia in connexion with a systematic programme of water-way inter-communication brought forward by the Government. The canals, as such, cannot be classed among works of considerable technical interest, but a number of the docks, locks, &c., call for comment. We would particularly call attention to a new ship-lift on the new canal between Dortmund and the Ems Harbours, which practically comprises an enormous tank into which the ships are first floated, the tank being then raised by a system of diving bells. The length of the tank is 70 metres, and its width 8½ metres; it allows for a water-level of 2½ metres. The tank is supported by five wrought-iron columns, and there in turn rest on five diving bells or buoys, which float in large reservoirs, and can be raised or lowered according to the amount of water let into the reservoir. The diameter of each reservoir is about 8 metres, or 25 ft.; boats of 600 tons capacity can be raised in the tank. The ship-lift is certainly one of the most interesting pieces of modern constructon

on the Continent. The patentees and constructors are Messrs. Haniel & Lueg, of Dusseldorf.

CITY COMMISSION OF SEWERS.—On the 26th ult. a meeting of the City Commission of Sewers was held at Guildhall. On the motion of Mr. Alderman Treloar a cordial vote of thanks was accorded to Mr. Benjamin Turner, the chairman, for his services in that capacity during the year. Mr. Turner, in reply, referred to the improvements carried out or projected during the year by the Commission, among these the most important was the intended widening of the western end of Cheapside, which would cost 160,000*l.* Other improvements at that part of the City would be the rounding off of the Post Office end of Newgate-street, and a corresponding advantage on the other side. The widening of Fleet-street between Salisbury-court and Ludgate-circus would be of vast public benefit, as would be the improvements in Thames-street. The Finance and Improvement Committee reported that the London County Council refused to contribute to the proposed widening of the eastern end of Widgegate-street. It was resolved to ask them to reconsider the decision. It was stated that the vacant land in Widgegate-street had been sold for nearly 30,000*l.*

MEDIEVAL ARCHITECTURE.—On the 25th ult., in the principal hall of the Nottingham Mechanics' Institution, Mr. Arnold Mitchell delivered a lecture on "English Architecture of the Middle Ages." In the course of his remarks, Mr. Mitchell, referring to Dnrham Cathedral, said that the edifice was the most beautifully situated of all English cathedrals, only rivalled, not equalled, by Lincoln. Its main feature was what was seen in all the great cathedrals—three large towers. Mr. Mitchell then proceeded to show how these towers gave external expression to the structural arrangement of the plan, referring to the great space which is devoted to the clergy, he said that few of the cathedral churches were built originally as cathedrals (Lincoln was an exception). They were only lesser portions of a great ecclesiastical foundation. They were monastic churches, and this was the reason why they had the extraordinary elongation of the eastern limb of the building. Returning to the subject of the towers, the lecturer explained that they also gave the required stability and strength to the long line of arches inside. The towers, he said, further, were intended to support spires, but Lichfield was the only instance in which this idea had been carried out, and in which the spires were still standing. The lecturer devoted some remarks to the lighting of the buildings from the top, which was the secret of obtaining entirely satisfactory light. In all periods of architecture this fact had been recognised. The Pantheon at Rome was the oldest building, he supposed, still standing, and in ordinary daily use. This building was without a single window, being lighted by a great hole, 30 ft. in diameter, in the centre of the dome. How barbarous and how primitive, they might say. Notwithstanding, there was not a single building in existence more beautifully lighted than was the Pantheon at Rome. Mr. Mitchell found much to relate in reference to the architectural beauties of Lincoln Cathedral, saying that Lincoln could teach them all they could desire to know of its beautiful period of architecture. It was divided into three groups, and extended over about one hundred years. He traced the history of the beautifying of the stonework by the early builders, and explained the manner in which they first began to enrich their ornamentation, exhibiting on the screen an example from Chichester to show the very early methods, and subsequently introducing photographs from Rochester, Peterborough, Lincoln, &c. Mr. Mitchell concluded with details of the west front of Peterborough Cathedral, strenuously advocating the restoration by the Dean and Chapter, he carried the large audience entirely with him in support of their scheme. The lecture was illustrated by lantern views.

THE PATENT OFFICE.—After a service extending over forty-seven years, Sir Henry Reader Lack retires this month as Comptroller-General of the Patent Office. When chief of the Statistical Department, Board of Trade, he was placed in charge of the Trade Marks Registry, opened on January 1, 1876. In March of that year he succeeded the late Bennet Woodcroft, F.R.S., as Clerk to the Commissioners of Patents for Inventions. Upon the abolition of the Commissioners, under Mr. Chamberlain's Act of 1883, the Patent Office, with the Registry of Trade Marks and Designs, was reconstituted as a department of the Board of Trade, a large staff of expert examiners of specifications was appointed, and Sir Henry Reader Lack was made Comptroller-general. We understand that the Comptroller (knighthood in June, 1891) will be presented by the members of his staff with what should prove a highly gratifying token of their regard and appreciation of his public services, and that to the appointment is attached a maximum salary of 1,500*l.*

BARRY MASTER BUILDERS' ASSOCIATION.—A meeting of the master builders of the Barry district was held at Barry Docks recently. Mr. Geo. Rutter, occupying the chair, when it was unanimously resolved to form a Master Builders' Association, with the following officers:—President, Mr. G.

* *Obit.* February, 1879. Founder of the Patent Office Museum and Free Library; formerly a consulting engineer, and Professor of Machinery, University College.

Rutter; vice-President, Mr. C. H. Hirst; secretary, Mr. E. E. Bryant, 11, Glamorgan-street, Barry; treasurer, Mr. E. Jones; committee, Messrs. S. Hopkins, H. Lloyd, W. W. Don, N. Thomas, E. Phillips, J. A. Marston, Jonathan Lewis, J. Poot, and E. J. Ince. The Chairman reported that a draft code of working rules had been received from the local Carpenters' Association, and it was decided to consider the same at the next meeting.

BRISTOL MASTER BUILDERS' ASSOCIATION.—The annual meeting of this Association was held on the 28th ult., at the Guildhall, Small-street, under the presidency of Mr. C. A. Hayes. The Secretary (Mr. Henry J. Speer) presented the annual report, which stated that the past year had been a fairly active one, business being active in most of the branches of the building trade, and the work of the Association had probably been of a more attractive character than in the preceding year. Several discussions had taken place during the year with reference to priced bills of quantities, and the following resolution was adopted by a large majority:—"That, in the opinion of the members of this Association, the practice of depositing priced bills of quantities with architects at the delivery of the tender is both unfair and inconvenient to the contractor, and should be discontinued by the members from November 5 last." This resolution was duly brought under the notice of the member of the Association, with an intimation that should they be invited to tender for a job where it was stipulated for the quantities to be sent in, they were to inform the Secretary, and the Committee would at once take up the matter, and thus avoid any friction arising between the member and the architect, and should the contract be accepted, of course the member could then let the architect have a copy of the priced quantities if required. Reasons having been assigned by some of the members that the resolutions passed upon May 27, 1891, were not considered still in force, the Secretary was thereupon instructed to call the attention of the whole of the members to the same, and to enclose a copy of the form of tender, together with the resolutions referred to, to follow. That, on and after the 1st of July next, the enclosed form of tender will be adopted by this Association, and that the members of this Association conform to such form for all work in this city and district." "That, from this date, the members of this Association pledge themselves not to sign any contract in which any professional man employed by the principal is the sole arbitrator. During the year there had been two plasterers', one bricklayers', and one painters' disputes, but it was satisfactory to state that all had been of a very trivial nature, and that though in most instances boards of conciliation had met and discussed the points at variance between the employers and employed, yet they all had been settled in a most amicable manner, and with great despatch. Mr. C. A. Hayes moved, and Mr. A. Krauss seconded, the adoption of the report, which was carried *nem. con.* The treasurer (Mr. George Humphreys) presented the audited accounts of the Association, which showed a credit balance of over 50*l.* The President moved and Mr. George Humphreys seconded, and it was resolved by acclamation, that Mr. August Krauss be elected President of the Association for the current year. Upon the motion of Mr. E. Walters, seconded by Mr. Geo. Wilkins, it was resolved unanimously that Mr. William Church be elected Vice-President for the ensuing twelve months. The re-election of Mr. George Humphreys as treasurer to the Association was unanimously adopted upon the motion of Mr. Frank Cowlin, seconded by Mr. A. S. Scull. The election of the committee was then proceeded with, and at the close of the proceedings Mr. A. Krauss, Mr. C. A. Hayes, and Mr. William Church gave a report of the proceedings in connexion with the National Association at Blackburn recently. A vote of thanks was accorded to the retiring President (Mr. C. A. Hayes) for his valuable services during the past year.

INDUSTRIAL AND TRADES EXHIBITION, LEAMINGTON.—An eleven days' Industrial and Trades Exhibition was opened at the Winter Hall, Leamington, on the 2nd inst., by the Mayor.

LEEDS BUILDERS' EXCHANGE CLUB.—The annual dinner of the Leeds Builders' Exchange Club was held in Fairburn's City Restaurant on the 29th ult. Mr. G. Burnell presided over the gathering of about 80 members and friends. "The Mayor and City Council, and the Chairman of the Highways Committee," was proposed by Mr. J. Speight. Mr. W. H. Cliff proposed "The Chairman and Deputy Chairman of the Building Clauses Committee and Officials." Mr. Batley, Chairman of the Committee, responded. Mr. Carter, Mr. D. Hainsworth, and Mr. W. Towers also responded. Mr. Hainsworth said that anyone who had seen the slums of Leeds would agree that it would have been a blessing if the Building By-laws, made as they were criticised, had been in force 10 years ago. He referred with pleasure to the settlement of the strike in the building trade, adding that, in spite of it, more plans had been passed last year than in any previous one. Never at any time had the work of the builders in the city been done better than it was at the present time. "The Visitors" was proposed by Mr. E. Stead, and responded to by Mr. Freeman and Mr. Sawlow. "The Leeds Builders' Exchange

Club" was given by Mr. Dews, and Mr. Puffitt responded. After dinner, a smoking concert was held in the club's rooms.

BUILDERS' ASSOCIATION DINNER AT HANLEY.—The annual dinner of the Potteries, Newcastle, and Leek branch of the National Builders' Association took place at the "Saracen's Head" Hotel, Hanley, recently. Mr. J. Gallimore (Newcastle) presided, and the vice-chairs were occupied by Mr. W. Grant (Burslem) and Mr. L. Price (Stoke). After dinner the loyal toasts were proposed. Mr. W. Cartledge (Burslem), in submitting the toast of "Success to the Building Trade and the Builders' Association," said, from the present outlook success seemed a long way off. Success in the building trade depended upon the treatment which they experienced, and they were told by their secretary that according to a notice received from the operatives they were to be hampered by delegates from the trades union going to a job, and even to a builder's yard, to make inquiries at various stages. This would sure to entail a loss upon the builder, because the moment a delegate appeared, men put down their tools and wanted to know what he was after. If the delegates were going about in that way to examine men's tickets, the employers would suffer, by reason of work being hindered. Then again, if a builder was to be successful he must have control over his own business, and regulate the numbers of apprentices according to his requirements. The next thing which he wished to mention was the new Truck Act, which he recommended every builder to carefully examine and consider: it should be brought before the National Federation of Great Britain. Mr. J. Bowden (Burslem), the secretary in responding, said it was their duty to be united and to meet the requirements of the workpeople in a fair and reasonable manner. Trades unions were an institution, and they had to be dealt with, and the only way to deal with them was for employers to meet workmen in harmony and strength. It would be better for the masters if every workman belonged to a trades union. One source of weakness was that many workmen did not belong to trades unions, and were not under the same instructions to delegates would be final. With two or three exceptions all the builders of the district were in the Association.—Mr. Cooke, one of the auditors, having presented a financial statement, the President said Mr. George Ellis, Mr. Bowden, and himself were the only three present who were members of the old Builders' Association. During the seven years of the present organization Mr. Ellis had been their hon. secretary. How well he had done the work they all knew. The members of the Association wished to mark their sense of Mr. Ellis's good qualities by presenting him with a testimonial on his retirement. He (the President) then presented to Mr. Ellis, on behalf of the subscribers, an illuminated address, bound, and containing ninety signatures, also a purse of money. Mr. Ellis briefly replied. Mr. J. Bagnall (Tunstall) proposed the toast of "The President and Officers." Mr. Gallimore, in reply, strongly urged them to band themselves together for their own well-being as tradesmen. Mr. L. Price and Mr. Chas. Smith (Tunstall) also responded. The toasts of "The Visitors," for whom Mr. E. J. Hammersley responded, "The Press," and "The President" followed.

CAPITAL AND LABOUR.

THE COVENTRY WORKMEN'S DEMANDS: INCREASE GRANTED.—As was reported in these columns recently, at the end of last year applications were received by the Coventry Master Builders' Association from every branch of the building trade, except the painters, for an increase of wages; and in several cases also the employers were asked to assent to important alterations to the trade rules. Carpenters, who were receiving 8*d.* per hour, asked for a "minimum wage" of 9*d.*—the masters could give more if they liked; bricklayers, plasterers, and masons applied for an increase from 8*d.* to 9*d.*, and mason fixers from 8*d.* to 9*d.* Bricklayers' labourers, who were getting 5*d.*, requested an advance of 3*d.*, and plasterers' labourers and scaffolders desired 1*d.* increase, from 5*d.* to 6*d.* The Masters' Association have now considered the applications, which affect 5,000 men, and have decided to grant the carpenters, bricklayers, plasterers, and masons a fixed increase of 3*d.*, and the various labourers 4*d.* per hour, and to meet them part of the way in reference to the proposal to introduce new rules. The replies to the trade societies have yet to be received. It is possible they may not be satisfied with the concessions; if not, the matters will be settled by arbitration. With regard to the alteration of rules, the carpenters and joiners, bricklayers, and masons each asked for a reduction of working hours, viz., carpenters 2 hours, bricklayers 3 hours, and masons 2 hours. To this the masters reply that they will consent to any reasonable alteration, provided that there shall be uniformity in the working hours in all branches of the trade. With regard to the bricklayers alone, the masters agree to the omission of the following rule, which has hitherto prevailed:—"Neither masters nor men shall interfere with any man on account of his being a society or non-society man. The society men pledge themselves not to annoy

non-society men, and the masters pledge themselves not to annoy or allow any annoyance to society men." As to the question of apprenticeship, the masters assent to the indentures being extended from three to at least five years. They also agree to convert 1*l.* 5*s.* 6*d.* ball count from 5.30 p.m. instead of 8 p.m.

WAGES IN THE OLDHAM BUILDING TRADE.—The Builders' Association of Oldham and district has received notices for advances in wages, &c., as follows: (1) The operative bricklayers have given three months' notice for an advance in wages from 9*d.* to 10*d.* per hour, such notice to expire on April 30, 1897. (2) The operative plasterers have given six months' notice for an advance in wages from 8*d.* to 9*d.* per hour, and an alteration of existing rules as to overtime, &c., such notice to expire on July 15, 1897.—*Manchester Courier.*

LEGAL.

AN ARCHITECT AND HIS ARTICLED

PUPIL:

ACTION FOR DAMAGES.

The case of Sadgrove v. Coad came before Mr. Justice Charles, sitting without a jury, in the Queen's Bench Division on the 17th ult. It being an action brought by Mr. Edwin James Sadgrove, an architect and surveyor, of Surrey-street, Strand, to recover from the defendant, Mr. John Coad, of Tunbridge Wells, damages for the alleged breach of certain covenants contained in an apprenticeship indenture dated October 23, 1894, entered into by Mr. Richard Henry Coad, deceased, the defendant being sued as the executor of Mr. R. H. Coad.

The statement of claim alleged that the indenture in question contained a covenant that Mr. Percy Arthur Coad, the son of Mr. R. H. Coad, should faithfully and diligently serve the plaintiff as clerk and articled pupil during the term of three years, and that Percy Arthur Coad would not absent himself from such service without the plaintiff's consent; that on September 15, 1896, Percy Arthur Coad had unlawfully absented himself without the plaintiff's consent, and had ever since continued to absent himself, and refused to serve the plaintiff. The plaintiff alleged that inasmuch as his pupil had become of value to him on September 15, 1896, he had been injured by his continued absence, for which he claimed damages.

The defence pleaded was that it was a term of the indenture that the plaintiff should to the utmost of his skill and knowledge teach and instruct, or cause to be taught and instructed, P. A. Coad in the profession of an architect and surveyor in consideration of a premium of 50*l.*, and that the plaintiff had neglected and refused to do so, and had prevented him from learning his profession by employing him on other work than that agreed upon, and whereby he had failed to obtain the benefit of the agreement. The defendant counter-claimed for the return of the premium and for damages.

Mr. Kemp, Q.C., and Mr. J. C. Earle appeared as counsel for the plaintiff; and Mr. McCall, Q.C., and Mr. G. M. Cohen for the defendant.

The plaintiff in his evidence-in-chief stated that Mr. P. A. Coad had become useful to him in his business, and that to fill his place would cost him 250*l.* per annum for a qualified man.

Mr. McCall cross-examined with a view to showing that the witness had constantly sent Coad on errands of a personal character which had nothing to do with his profession. The witness further stated that Coad did plenty of work as an architect, and that he was to be secretary and clerk of works to a company he had promoted at Dulwich, where he would have had a splendid opportunity of gaining experience in his profession. Coad was to receive a salary of 100*l.* a year from the company, but out of that he was to pay an assistant 1*l.* a week.

Re-examined: Coad had never made any objection to going for little errands for him.

Mr. Thompson, an architect and surveyor, and an Associate of the Surveyor's Institution, gave evidence as to frequently assisting Mr. Sadgrove in his business. So far as he saw Coad was instructed in the work of the office, and he himself had instructed Coad. He did not remember Coad making any complaint about not being instructed.

Cross-examined: He had his own practice to attend to. Mr. Sadgrove assisted him sometimes and sometimes he assisted Mr. Sadgrove. He would not be the person to receive complaints from Coad.

Mr. Harry Watkins, examined, said that he entered the plaintiff's employment in 1893, and became articled to him in July, 1894, and was in the office the whole time Coad was there. Coad performed the same duties as himself. Quantity surveying was witness's forte, and he went into that more than architecture. Coad was instructed from time to time by the plaintiff. When the plaintiff was away qualified assistants were left in charge. Coad had complained to him about being sent on errands by the plaintiff, but that occurred very seldom. At the time Coad left he was able to assist in the work of the office. Coad had made progress.

Cross-examined: Coad was of use to the plaintiff at quantity surveying. He got on better at quantity surveying than Coad, as he kept almost exclusively

quantity surveying. Coad did complain to him as he was put to do work that an office boy should have done. Coad had complained to him of dusting the plaintiff's office.

Re-examined: The housekeeper employed there sometimes did not dust properly, and he and the other gentlemen used to dust sometimes to save the trouble of sending for the housekeeper. Coad rarely seldom complained to him about going errands for the Sages.

Mr. King gave evidence as to entering the service of the plaintiff in February, 1896. During the time he was there Coad was treated as an articled pupil in the same way as Mr. Watkins. Witness entered Mr. Sadgrove's service as an improver, to gain experience. He had previously served his articles. Mr. Sadgrove had more work than could be done during office hours, and he (witness) did many hours overtime work for him. Coad had made drawings as an architect, and had also been sent on quantities. Coad most certainly had an opportunity of learning his business if he had liked to do so.

Cross-examined: He went to the plaintiff as an approver at a salary of 2l. 2s. a month, with extra remuneration for overtime work.

For the defence Mr. P. A. Coad, called and examined, said that when he first went to the plaintiff's office no boy was kept to do the ordinary work. From time to time he used to visit the plaintiff's office in conjunction with Watkins, the other articled pupil. He did that on many occasions.

His Lordship remarked that the witness had kept very minute diary, and it was curious to find that he did not say much in it about the dusting.

The Witness: Because I did not put it down.

His Lordship: It does not matter a twopenny piece whether the witness did or did not dust the plaintiff's papers.

Examination continued: As far as quantity surveying was concerned Mr. Sadgrove had instructed him in the way to take abstracts and to square dimensions, but any one could learn how to do that in about five minutes.

He had been on several personal errands for the plaintiff from time to time. He had been sent by the plaintiff to the tobacconist, and also to the tailor, and boots to be mended. The sum of 540l. had been put in the Dulwich Company by his brother and himself. The plaintiff had never expressed satisfaction at any work witness had ever done, and he had received no encouragement. He was absolutely of no use in taking out quantities.

Cross-examined: He had never written to the plaintiff making a complaint he had made them. The plaintiff had complained to him of the way he had done his work sometimes. The reason he had remained with the plaintiff for two years was because he did not wish to create any unpleasantness between the plaintiff and his father. Since his father's death he had been studying architecture privately. He came into an annuity a few days before he threw up his articles. He had not earned any money since he threw up his articles.

Mr. John Coad, the defendant and the uncle of Mr. P. A. Coad, gave evidence as to a conversation which he had had with the plaintiff, who then told him that he (the plaintiff) had advised young Coad to get out of it, as he was of no use in the work adapted for the profession.

Cross-examined: His nephew was a moderately intellectual young man, but not at his profession. He did not think that his nephew was capable of doing out quantities.

At the conclusion of the defendant's case, Mr. Coad addressed his Lordship in mitigation of damages, stating that he could not now deny, having heard the evidence, that there had been a breach of the agreement with the plaintiff.

Mr. Kemp having replied,

His Lordship, in giving judgment, said that having heard the evidence he had no doubt whatever that the plaintiff had done his duty by the young man in mitigation. The plaintiff did a large business and gave young Coad ample opportunity of seeing that business. Further, the plaintiff had instructed him, as far as he could, himself, and when not able to attend himself, there were able assistants in the office who could give instruction to him. His opinion was that at the close of the second year of his articles young Coad was a great deal of use to the plaintiff, although he (Coad) had invited him to believe he was next door to a blockhead and of no use at all. He felt that the young man had done an unreliable account of his own capacities, as he had no doubt that he had learned a great deal in the last two years. There was proof of that, because he could not believe that a man like the plaintiff, who was working up a company to develop the Dulwich Estate, would propose to put the youth in a responsible position of secretary and clerk of works at a salary of 100l. a year if he was the incompetent person he (Coad) said he was. On the other hand, he was of opinion that the plaintiff had exaggerated the damage he had suffered. There was no evidence to warrant the assertion that had the services were worth 250l. a year to him. He thought that the proper thing to do would be to give

judgment for the plaintiff for 55l. on the claim and also judgment for the plaintiff on the counter-claim, with costs.

Judgment accordingly.

THE COUNTY COUNCIL AND THE BUILDING ACTS.

AT the North London Police-court on the 29th ult., Mr. William Hickling, of Stoke Newington, and Mr. A. T. Frampton, of Bournemouth, were summoned before Mr. d'Eyncourt for paying rates in respect to a series of buildings in Prince George-road, Stoke Newington. The sum claimed amounted to 136l., and Mr. Webb, who appeared for the Vestry, asked that orders should be made for the payment of the amount forthwith.

The rate had been made in respect to the buildings on a piece of land 120 ft. wide by only 20 ft. deep. The buildings have been the subject of much litigation. The County Council alleging that the buildings, which had been erected at great expense, stood out 7 ft. beyond the building line. Nearly two years ago the High Court decided in favour of the County Council, and the case being remitted to this court, the magistrate (Mr. Lane) made an order for 7 ft. of the whole length (120 ft. of the building) to be demolished. On the 29th ult., as the owner had not complied with this order, the Council proceeded to erect a hoarding round the buildings preparatory to the 7 ft. of the whole length being demolished.

Mr. Hickling said that this action on the part of the Council altered his position with regard to the paving rates. His frontage was being altered into a flankage, and he objected to pay frontage rates for a flankage such as the land would be when the Council had demolished his building—a receptacle for all the dead cats and rubbish of the neighbourhood.

Mr. d'Eyncourt said that the position was clearly altered. He would adjourn the case for twelve weeks to see whether the Council did pull the building down.—Morning Advertiser.

THE LONDON BUILDING ACT.

BEFORE the Lord Mayor, at the Mansion House, on the 12th ult., C. F. Kealey, a builder in High-street, Kensington, was summoned under the London Building Act, 1894, for failing to comply with a notice of irregularity requiring certain omissions to be remedied in the building of premises at 60, Cheapside.

Mr. Hugh McLachlan, the District Surveyor, who appeared in support of the complaint, said the builder was willing to do the work required, but the architect and owner declined. The question was whether certain dormer windows on the roof of the premises which were constructed of wood covered with lead were combustible within the meaning of the Act, because, if so, the party walls must be made 12 in. higher and wider on each side of them to comply with the Act, and that was what the notice served on the defendant required to be done.

Mr. Dalry, solicitor, who appeared for the owner of the premises, contended that the dormers being covered with lead were not combustible, although the lead might be melted by fire. There was only a small proportion of wood, and his view was that lead and glass were not combustible.

The Chief Clerk (Mr. Douglas) said the list of fire-resisting materials enumerated in the Act did not include lead.

The Lord Mayor, observing that it was a pity the Act was not more explicit, directed the notice to be complied with within a month, and granted 13s. costs.—Morning Advertiser.

MEETINGS.

FRIDAY, FEBRUARY 5. Architectural Association.—Mr. A. S. Flower on "The Written Chapter of English Architectural History." 7.30 p.m. Royal Institution.—Professor Jagadis Chandra Bose, M.A., D.Sc., on "The Polarisation of the Electric Ray." 9 p.m. Institution of Mechanical Engineers.—Annual General Meeting (concluded). 7.30 p.m. Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m.

SATURDAY, FEBRUARY 6. Sanitary Inspectors' Association (Carpenters' Hall)—6 p.m.

MONDAY, FEBRUARY 8. Royal Academy of Arts.—Fifth Lecture on "The Advancement of Architecture, Chiefly in Relation to Gothic Architecture," by Professor Atchison, A.R.A. 8 p.m. London Institution.—Mr. Cyril J. Davenport, F.S.A., on "Decorative Bookbinding from Medieval Times," illustrated. 5 p.m. Surveyors' Institution.—Mr. J. W. Willis Budd on "Allotments and Small Holdings." 8 p.m. Society of Arts (Cantor Lectures).—Mr. William Burton, F.R.C.S., on "Material and Design in Pottery," IV. 8 p.m. Clerks of Works' Association.—Fourteenth Annual Dinner, Holborn Restaurant (The King's Hall). The chair to be taken by Mr. Beresford Pitt. 9.30 p.m.

TUESDAY, FEBRUARY 9. Society of Arts (Applied Art Section).—Mr. George Cullison on "Lithography as a Mode of Artistic Expression." 8 p.m.

Institution of Civil Engineers.—Mr. H. F. Donaldson on "Cold Storage at the London and India Docks." 8 p.m. Carlisle Architectural, Engineering, and Surveying Society.—Mr. G. Slack on "Warming of Buildings."

WEDNESDAY, FEBRUARY 10.

Sanitary Institute.—Dr. F. J. Waldo on "Sanitary Supervision of Shelters for the Homeless." 8 p.m. Society of Arts.—8 p.m. Edinburgh Architectural Association.—Mr. Alexander Drew, C.E., on "The Practical Designing of Iron and Steel Roofing," IV. 8 p.m.

THURSDAY, FEBRUARY 11.

Royal Academy of Arts.—Sixth Lecture on "The Advancement of Architecture, Chiefly in Relation to Gothic Architecture," by Professor Atchison, A.R.A. 8 p.m. Royal Institution.—Mr. J. W. Gregory, on "The Problems of Arctic Geology," I. 3 p.m. Society for the Encouragement of the Fine Arts.—Mr. James Orrock, R.I., on "William Miller." 8 p.m. Institution of Electrical Engineers.—Continuation of discussion on Mr. F. T. Hollins paper on "Electric Interlocking the Block and Mechanical Signals on Railways." 8 p.m. Society of Arts (Indian Section, Imperial Institute).—Professor Jagadis Chandra Bose (of Calcutta), D.Sc., on "The Progress of Science Teaching in India." 4.30 p.m.

FRIDAY, FEBRUARY 12.

Institution of Junior Engineers (Westminster Palace Hotel).—Paper on "The Construction of High-class Bridge and Girder Work," by Mr. J. A. Macpherson. 8 p.m. Royal Institution.—Professor John Milne, F.R.S., on "Recent Advances in Seismology." 9 p.m. Institution of Civil Engineers (Students' Meeting).—Mr. H. W. Barker on "Cooling Reservoirs for Condensing Engines." 8 p.m.

SATURDAY, FEBRUARY 13.

London and Provincial Builders' Foremen's Association.—Annual Dinner, Holborn Restaurant. 7 p.m. Edinburgh Architectural Association.—Visit to Brougham School.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

161.—DRAIN TRAP: J. W. Maerns.—This invention consists in a trap formed of one piece of stoneware which inventor claims is self-cleansing. It is not so deep as other traps, though providing sufficient water-seal; flow of matter and water through trap is unobstructed, and it can be fixed to existing drains without reducing the gradient.

351.—PREVENTING FROST FROM BURSTING PIPES: J. G. Jones.—In order to efficiently empty pipes from cisterns when stop-cock is turned off and draw-cock is turned on, inventor forms an air channel in the outer surface of, and between the two openings in the plug of the stop-cock, and extending from the top of the plug (and consequently open to the air) towards, but not reaching, the bottom of the plug. A similar air channel may be used in the spindle of screw-down tap.

3223.—CEMENT OR ARTIFICIAL STONE: F. Turner.—Inventor relates to a novel compound, composed of powdered limestone and powdered waste slate, and powdered stone or stone chippings, in suitable proportions, intimately mixed with fresh or salt water. The slip or slurry, if for cement, is spread upon layers of coke in a kiln to the desired depth, for the water or moisture to be absorbed by the coke, and be rapidly dried thereby. The coke becomes slightly impregnated with limestone and the result is a better cement.

20,665.—WINDOW AND DOOR FASTENER: A. R. Emsphart and Another.—Invention consists in a modification of the brass pivoted arm-catch at present in ordinary use for sash windows, &c. Inventors form a projection inside the brass plate which holds the catch (that on lower sash), and a corresponding recess in plate which bears arm (that on upper sash), with the result that any interference between the meeting bars of sashes is bridged over by this projection, and the blade of a knife, &c., inserted between projection and recess, will not force back the arm which fastens the window.

24,242.—ARTIFICIAL STONE: A. Clerly.—Invention consists in the preparation of a more or less plastic, strong mass, suitable for various purposes. The formulae are:—Solid Mixtures:—(1) Zinc oxide, 33 per cent.; pulverised sandstone or freestone, 67 per cent. This is used for restoring weathered or decayed stone, and for mouldings, vases, statues, &c. (2) Zinc oxide, 30 per cent.; pulverised Portland stone, 35 per cent.; sand, 35 per cent. For lining basements, vaults, cisterns, &c. (3) Pulverised marble, 50 per cent.; silver sand, 20 per cent.; zinc oxide, 30 per cent. For interior walls, cornices, &c. (4) Crushed granite, 70 per cent.; zinc oxide, 30 per cent. For pavements, steps, landings, &c. Liquid Mixtures:—Aluminate acid, 65 per cent.; zinc, 35 per cent. (or thereabouts). For forming solids into paste.

26,145.—WATER AND LIQUE TAPS: F. Bell and Another.—Inventors form an annular groove around a conical plug or tap, which, when in proper position relative to neck and nozzle of tap, permits water to flow around it and out. When screwed down, however, this groove descends below the passage of tap, and only the upper solid part of plug comes there, closing up the channel. Various modifications are specified, and the invention is applicable to all draw-off taps, whether for water or other liquids.

NEW APPLICATIONS FOR LETTERS PATENT.

JANUARY 18.—1,259, J. Coulthurst, Joining Sanitary Pipes.—1,299, C. Edgington, Sheet Iron Corrugated Roofings.—1,322, Tonks, Limited, and I. Whiting, Spring Hinges and Door Springs.—1,345, J. Thomason and others, Dies for Brick-making Machines.

JANUARY 19.—1,334, W. Goodman & Co., Sack Supports of pipes for Sewerage, &c.—1,414, J. Richardson, Moulds for Brick-making Machinery.—1,432, A. Boulton, Decoration of Glass Tiles, Bricks, &c.—1,453, P. Tomkinson, Setting the Teeth of Saws.—1,454, F. Dessoigne, Closing Doors Opening Both Ways.—1,507, L. Schlenker, Hearth Stones and Curbs.

JANUARY 20.—1,574, G. Fuhrer, Wall Staples.—1,595, A. Bickert, Heating and Ventilating Rooms, &c.—1,539, W. Allen, Flushing Drains, Sewers, Water-closets, &c.—1,544, J. Drummond, Securing Plate and Sheet Glass to Walls, Ceilings, Bricks, &c.—1,578, E. Kirchner, Horizontal Band-sawing Machines.

TENDERS.

Communications for insertion under this heading will be addressed to 'The Editor,' and must reach us not later than 10 o'clock on the day before the closing of tenders unless authenticated by the name and address of the sender...

BERDEEN (N.B.).—For laying granite causeway, Rossmore, for the Town Council, Mr. Wm. Dyack, Bugh Street, Town House, Aberdeen.
P. Tawse, Birchfield, Kenney ... £1,108 11 4

LNWICK.—For the execution of sewerage works, Barneystile, Alwark Castle, for the Urban District Council, Mr. Geoffrey ...
P. Tawse, Birchfield, Kenney ... 1,026 6 8

ACUP (Lancs.).—For the execution of sewerage works, Broad-grad, &c., for the Corporation, Mr. John Wilson, C.E., ...
W. Harbrow ... £704 12

OSTON (Lincolnshire).—For the erection of a shop with a house ...
W. Harbrow ... £1,700

ROUGHTON ASTLEY.—For the erection of hosiery factory, ...
H. A. Annett & Son ... £1,700

WOLVERTON.—For two entrance lodges and two cottages, ...
H. A. Annett & Son ... £1,700

NEWAY.—For the water main extension (Sarn Mynach to Llyd- ...
W. Harbrow ... £1,700

ST MARY.—For constructing and laying main sewer, ...
W. Harbrow ... £1,700

DINGTON.—For kerbing, channelling, and making portion ...
W. Harbrow ... £1,700

DINGTON.—For six-ways improvement scheme, Erdington, ...
W. Harbrow ... £1,700

LIFAX.—Accepted for additions, &c., to Holy Trinity ...
W. Harbrow ... £1,700

STONESTONE.—Accepted for the erection of iron mission ...
W. Harbrow ... £1,700

LONDON.—For alterations at 'The Cooper's Arms' public- ...
W. Harbrow ... £1,700

LONDON.—Accepted for repairs and decorations at 'The ...
W. Harbrow ... £1,700

LONDON.—For cleaning, painting, and decorating at the Royal ...
W. Harbrow ... £1,700

LONDON.—For the erection of new dairy stables and offices in ...
W. Harbrow ... £1,700

LONDON.—For pulling down and rebuilding Swan House, ...
W. Harbrow ... £1,700

LONDON.—For alterations to No. 45, Kirby-street, Hatten- ...
W. Harbrow ... £1,700

LONDON.—For alterations and repairs at No. 36, Trebovir- ...
W. Harbrow ... £1,700

LONDON.—For the erection of a bottling shed at George-yard, ...
W. Harbrow ... £1,700

LONDON.—For alterations and repairs at Perry House, Notting ...
W. Harbrow ... £1,700

NEWCASTLE.—For Primitive Methodist New Church, Kings- ...
W. Harbrow ... £1,700

W. BACON.—Main building, Tower, Total.
W. Harbrow ... £1,700

LONDON.—For paving, &c., for the Vestry of Paddington. Mr. G. Weston, Surveyor.—
W. Harbrow ... £1,700

Table with columns for Aberdeen, Neway, Aberdeen, Neway. Rows for Straight, Circular, Per foot run.

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LONDON.—For superstructure to warehouses at Ratcliff Cross ...
W. Harbrow ... £1,700

NEW BROMPTON (Kent).—For the erection of a villa resi- ...
W. Harbrow ... £1,700

NEWPORT (Mon.).—For the erection of a footbridge from ...
W. Harbrow ... £1,700

NORDEN (Lancs.).—For the erection of workshop and show- ...
W. Harbrow ... £1,700

NORWICH.—For alterations of buildings to convert same to ...
W. Harbrow ... £1,700

NORWICH.—For additions to the 'Queen's Hotel,' Great Yar- ...
W. Harbrow ... £1,700

PORT TALBOT (Wales).—For the erection of four shops &c., ...
W. Harbrow ... £1,700

RICHMOND (Lancs.).—For the erection of cloakroom, &c., ...
W. Harbrow ... £1,700

LONDON.—For paving, &c., for the Vestry of Paddington. Mr. G. Weston, Surveyor.—
W. Harbrow ... £1,700

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SCARBOROUGH.—For the erection of shops, stables, &c., St. Thomas-street, for Mr. W. Vasey. Mr. Charles Edson, architect, 20, Huntley-row, Scarborough. £1,000 0 0
Bricklaying, &c.—J. W. Bland, 33 Nelson-street, £500 0 0
Trainers—J. S. M. Malton-street, £50 0 0
Son's and Foundry—Appley & Brodgett, 45 5 9
Sussex street 108 10 10
Painting, &c.—T. Fildes, 29 5 0
Slating—J. Hardgrave, Bellevue-para. 43 5 0

SKEGNESS (Lincolnshire).—For the erection of a house, for Mr. James Rowell, architect, Borough Offices, Boston. £1,472 10 0
 J. Crawshaw £553 0 0
 H. & S. Rowell £472 10 0
 Son 490 0 0
 S. Sherwin 490 0 0
 H. W. Parker, Boston* 432 10 0
 * Accepted.

TYNEMOUTH.—For alterations and new shops with rooms over in Percy Park-road, Tynemouth, for Mr. T. Moore, Messrs. Marshall & Dick, architects, Newcastle and North Shields. £2,909 7 0
 Henry Ewert £299 7 0
 J. L. Miller 994 14 0
 J. Hutchinson 995 7 0
 T.ios, London 947 17 0
 James Douglas, Cal. lemcosts* 107 3 4
 * Accepted.

TYNEMOUTH.—For new schools, North Shields, for the Tynemouth Board School. Messrs. Marshall & Dick, architects, Newcastle and North Shields. £2,781
 J. Elliot, North Shields [Accepted subject to the approval of the Educational Department]

WALSALL.—For providing and laying sewer, Little Newport-street, for the Corporation. £1,103 16
 J. Atkins, Ryecroft-hill, Walsall

WALTHAMSTOW.—Accepted for the erection of iron mission church in Oliver-road, Walthamstow. Mr. F. Boreham, architect. W. Harrow. £810

WATER ORTON.—Accepted for completing outfall sewer and steel pipes over river, and schedule of pipes for house drainage works. Mr. J. Edwards, Wilkes, C.E., Birmingham, engineer. Mr. H. Holloway, Wolverhampton. £562
 [Also Mr. Holloway's schedule for house drainage works.]

WEDNESBURY.—For the execution of sewerage works, Holden-road and Oxford-street, for the Corporation. Mr. E. George Law, Borough Offices, Wednesbury. £2,024 14 8
 C. Curral, Lewis, & Co. J. Smith 289 0 0
 Martin 315 0 0
 H. Hughes & Son 300 0 0
 * Accepted.

WINCHESTER.—For alterations and repairs at No. 4, The Close, Winchester. Converting the same into Judges' lodgings, for the Dean and Chapter of Winchester. Mr. J. B. Colson, architect, Winchester. £2,957
 J. Thompson £2,957 0 0
 T. Grace 2,929 0 0
 H. C. Tucker 2,929 0 0
 E. Carter & Son 2,851 0 0
 * Accepted.

WINCHFIELD (Hants).—For the erection of additional vagrant wards at the Union House, for the Harrier Whistery Union Guardians. Mr. H. T. Sugden, architect, Eversley. Quantities by the architect. £2,750
 J. J. B. Cooper £2,750 0 0
 W. J. Bloxham 2,757 0 0
 G. Hooker 2,756 0 0
 McC. E. Pitt 2,643 0 0
 * Accepted conditionally.

YORK.—For additions to the Wenlock Laundry, Ambrose, street. Mr. G. H. F. Jones, architect, 8, Lendal, York. £1,447 0 0
 J. Kewick & Son £1,450 0 0
 G. Underwood 1,609 11 8
 R. Martin 1,235 16 3
 J. Simpson 1,221 0 0
 T. P. Barry 1,448 17 0
 W. Bellerby 1,240 19 0
 W. Blich 1,275 8 6
 Horner & Sons 1,193 0 0
 Bishopthorpe, York* 1,193 0 0
 * Accepted.

TO CORRESPONDENTS.

H. A. A. & Son, T. A. B.—(Amounts of tenders should have been stated.) E. H. L. B. (Paragraphs have already appeared.) A. C. (Bring our limits.)
 NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.
 If cases undertake to return rejected communications, letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DEEMED.
 We are compelled to decline pointing out books and giving addresses.
 Any communication to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who reserves the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.
 All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and not to the Editor.

WATFORD.—For making five roads, Harwoods Farm Estate.—Ford £4,655 0 0
 Wheeler 4,312 0 0
 Hebburn 3,895 0 0
 Hunt 2,978 0 0
 Tree & Son 3,755 0 0
 Brunton 3,413 0 0
 Martin 3,221 0 0
 Lee 3,356 0 0
 Main 3,357 0 0
 Killingback 3,354 0 0
 Wimpey & Co. 3,235 0 0
 Coulson & Loffe 3,154 0 0
 J. Hare 3,144 0 0
 Bell £3,203 0 0
 E. Doughton 3,205 0 0
 F. J. Gifford 3,204 0 0
 W. Jenner 2,949 0 0
 F. L. Johnson 2,977 0 0
 W. J. Phipps 2,977 0 0
 T. Rob. Adams 2,677 0 0
 J. Jackson 2,615 0 0
 W. Hollingsworth 2,202 0 0
 Parsons & Taylor 2,230 0 0
 Siddons & Freeman 2,200 0 0

PUBLISHERS' NOTICES.

Registered Telegraphic Address, THE BUILDER, LONDON.
 THE INDEX and TITLE-PAGE for VOLUME LXXI. (July to Dec. 1896) was given as a supplement with the number dated Jan. 9.
 CLOTH CASES for Binding the Numbers are now ready, price 6s. 6d. each; also
 READING CASES (Cloth), with Straps, price 9s. each, and THE SEVENTH VOLUME of "The Builder" (bound), price 10s. Twelve Shillings and Sixpence, is now ready.
 SUBSCRIBERS' VOLUMES, on being sent to the Office, will be bound at a cost of 2s. 6d. each.

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 SITUATIONS VACANT, PARTNERSHIPS, APPOINTMENTS, FRAMES OF GENERAL ADVERTISEMENTS.
 Six lines (about fifty words) or under 4s. 6d.
 Each additional line (about ten words) 6s. 6d.
 Terms for series of Trade advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c., may be obtained on application to the Publisher.

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 PREPARATION IS ABSOLUTELY NECESSARY.

* Stamps must not be sent, but all small sums should be remitted by Cash in Registered Letter or by Postal orders, payable to DOUGLAS FOURDRINER, and addressed to the Publisher of "THE BUILDER," No. 45, Catherine-street, W.O.
 Advertisements for the current week's issue are received up to THREE o'clock p.m. on THURSDAY, but "Classification" is impossible in the case of any which may reach the Office after HALF-PAST ONE p.m. on that day. Those intended for the Front Page should be in by TWELVE noon on WEDNESDAY.

SPECIAL ADVERTISEMENTS IN STANDING DISCONTINUED. ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before 10 a.m. on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to advertisements and strongly recommends that the latter OFFERS ONLY should be sent.

PERSONS Advertising in "The Builder," may have Copies addressed to the Office, 45, Catherine-street, Covent Garden, W.O. free of charge. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

AN EDITION Printed on THIN PAPER, for FOREIGN and COLONIAL CIRCULATION, is issued every week.

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 "THE BUILDER" (Published Weekly) is supplied gratis to the Office to residents in any part of the United Kingdom, at rate of 19s. per annum PREPAID. To all parts of Europe, America, Australia, New Zealand, India, China, Ceylon, &c., 26s. per annum. Remittances (payable to DOUGLAS FOURDRINER) should be addressed to the publisher of "THE BUILDER," No. 45, Catherine-street, W.C.

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Asphalte.—The Seysse and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 4, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floor flat roofs, stables, cow-sheds and milk-room granaries, tum-rooms, and terraces. Asphalte Contractors to the Forth Bridge Co. [Adv.]

SPRAGUE & CO'S INK-PHOTO PROCESS,
 4 & 5, East Harding-street, Fetter-Lane, E.C. [Adv.]

QUANTITIES, &c., LITHOGRAPHIC accurately and with despatch. METCHIM & SON, 20, Parliament-st. S.V. "QUANTITY SURVEYORS' TABLES," For 1897, price 6d. post 7d. In leather 1/- Post 1 1/2 [ADV.]

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Suffolk House, Cannon-street, E.C. SUPPLY THE BEST MATERIAL AND WORKMANSHIP FOR BUILDINGS, DAMP COURSES, AREAS, ROOFS, WASHHOUSE AND DAIRY FLOOR, &c., &c.

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The Builder.

VOL. LXXII. No. 289.

FEBRUARY 13, 1897.

ILLUSTRATIONS.

Main Entrance Gates, Sheffield Municipal Buildings. Designed by Mr. E. W. Mountford, F.R.I.B.A., and executed by Messrs. Singer & Co.	Double-Page Ink-Photo.
Premises, Duke-street, Grosvenor-square, W. Mr. W. D. Caroe, F.R.I.B.A., Architect	Double-Page Ink-Photo.
Design for Chapel, Berkhamsted School. Messrs. Batterbury & Huxley, Architects	Double-Page Photo-Litho.
House, Headingley, Leeds. Mr. F. W. Bedford, A.R.I.B.A. Architect	Single-Page Tone-Block.
Wordsworth Building, Lady Margaret Hall, Oxford. Mr. R. T. Blomfield, Architect	Single-Page Tone-Block.

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Stained Glass as a Modern Art.



MODERN works on the art of stained glass have hitherto almost invariably, in this country, been mainly occupied with the art in its archaeological or historical aspect. Just as painting is pre-eminently the art of the Renaissance, so stained glass is pre-eminently the art of the Mediaeval period; it arose, developed, and declined as a decorative adjunct of mediaeval buildings; it was finally lost entirely as an art of modern practice, and attention was only seriously turned to it again with the mediaeval revival; and until quite lately it was followed, both in theory and practice, almost entirely on mediaeval lines. It is only within the last few years that we have awakened to the perception that with this art, as with architecture, the mere imitation of mediaeval precedent can produce not a dead and not a living form of art. And even with this perception, the emancipation of this decorative art from the bonds of precedent has come about much more slowly than is the case with the mother art of architecture; if indeed it can be said to have been fairly achieved as yet. The bulk of the stained glass produced in this country is still for the most part designed on mediaeval models; the designs in which there is an attempt at infusing a modern spirit into the work are comparatively few and exceptional; and the illustrative books on the subject, some of them voluminous and valuable in their way, are still mainly occupied with mediaeval history and mediaeval examples; and thus, as far as their influence goes, tend to keep up this mediaeval view of the object.

The practice, however, of a few able artists seems at last to promise a breaking up of the old revival school, and the great agent in this emancipation is the study of the figure as the leading element in stained glass design. It was the neglect of figure-study in connexion with this form of art which, more than any other cause, operated in keeping us bound to an archaeological manner. It was assumed that the stiff, timidly drawn, and apparently conventional figures

of the mediaeval artists represented somehow a style which was peculiarly suited to stained glass; whereas in fact the artists who designed the mediaeval windows were not essentially figure draughtsmen, and merely drew the figure as well as they were able, and in the same way as they would have drawn it in a painting, making a little allowance for the more rigid and limited possibilities of representation in glass. This has indeed been said over and over again, but it has been hitherto but little acted on. Recently, however, artists like Mr. Richmond, Mr. Holiday, and Mr. Whall have shown practically that the free study of the figure from nature is as applicable to stained glass as to the almost equally conventional arts of fresco and bas-relief; and with that practical demonstration the mediaevalising theory goes overboard at once. The predominance of figure-study for modern glass promises us a double emancipation. It overthrows the mediaeval precedent, and at the same time it overthrows the system of the production of stained glass as a mere trade. The imitative production of windows in the style of the fourteenth or fifteenth centuries can be carried out, as it usually is, by a firm with a body of nameless trained artisans in its employ. For the design of glass in which the figure, as studied and employed in modern art, forms the principal element, the individual artist must be reckoned with. The actual putting together of the materials, as in mosaic, may be the work of subordinate hands; the design must be as much the work of an original artist as any other form of pictorial design.

The appearance of an important work on stained glass in which almost the whole of the illustrations are those of modern and not of ancient glass* is, at this juncture, both appropriate and significant. Mr. Holiday's illustrations in the body of the work are, in fact, taken entirely from his own designs, for which he makes a partial and intelligible apology, to the effect that it was more easy thus to illustrate his own remarks, as he could lay hand at once on whatever design would specially illustrate any one point; that they naturally illustrate his own views best; and that in taking the works of other artists he might

* "Stained Glass as an Art." By Henry Holiday. London: Macmillan & Co.: New York: the Macmillan Company: 1896.

unintentionally read into them something which the authors had not intended. He gives, however, as additional illustrations, several designs by Sir E. Burne-Jones and Mr. Richmond. The book is divided into three main sections: I. "Material and Technique;" II. "Artistic possibilities inherent in stained glass from the point of view of technique;" III. "Artistic possibilities of stained glass, considered in relation to the situation and purpose of the work." In regard to the first section we need only remark here that the materials and processes are very clearly though briefly described; that the author disapproves of thick or wide leading, which he considers an error in modern glass—a matter which however (as he partially admits) depends to some extent on situation and distance from the eye; and that he gives some special and detailed reasons against a realistic style in stained glass, which may be recommended to the attention of those who require any reasons on such a point. But our interest here is more with the second and third sections of the work, and with some of the critical points discussed in them.

In speaking of the "artistic possibilities" of design in stained glass, Mr. Holiday sets out with the perfectly sound position that the design has to be subordinate to the architectural forms which it should adorn, and therefore condemns all designs for windows of more than one light which ignore the dividing mullions or other stonework between the lights, making the stonework appear an interruption to the design instead of one of its governing conditions. Of the truth of this principle we are so convinced that we are not disposed to allow Mr. Holiday the exceptions which he makes in his own favour, in the case for instance of the window in the Church of the Incarnation at New York (fig. 17 in the book) where the couch on which Jacob blessing his children is seated runs through two lights, and that of the boat in "Christ stilling the tempest" (fig. 18), which runs through three lights. Mr. Holiday argues that the continuity of the background in these designs "has no more tendency to make the mullion appear to be an interruption than does the continuity of the panels of ornament and architectural features in fig. 15." We turn to fig. 15, and find that this is a five-light window in which the portions above and

below the figures are occupied by ornamental designs, all on the same line and of the same character, no doubt, but each of which is a separate design in itself. The author has thrown over his own principle here, and given a very illogical excuse for doing so. When he says that a subject containing many figures may be extended over a mullioned window, provided that the groups of figures in each light, though with a general relation to the whole composition, have a more close and special relation to each other, so that they form a sub-composition within their own compartment, we quite agree with him; and some of the examples which he gives of this method of treatment are admirable and convincing as far as the figures are concerned. But as soon as you attempt to introduce a common background, extending behind the groups of figures and ignoring the mullions, however subordinate this background may be, you have given up the principle and introduced an anomaly in design; and we prefer Mr. Holiday's decisive words on one page to his ingenious exceptions on other pages.

And the fact is that this restriction, rigidly adhered to, is a most wholesome one, for it tends to keep the designer from straying beyond the proper limits of stained glass art. Above all other forms of decorative art, perhaps, in which figures are introduced, stained glass is essentially the art for symbolism rather than for representation. If it is urged that, under these restrictions, it becomes impossible to put a background at all into a figure composition extending through several lights of a window, we should reply—"So much the better." Backgrounds are a snare, as soon as they begin to represent anything real. You cannot indicate a landscape, in however conventional a manner, without dropping nearer to realism than stained glass will bear, if you are to make the landscape recognisable at all. And then there is the question of plane, too. Mr. Holiday says, "A distant mountain often looks blue. Why should I not represent it by a piece of blue glass?" To which we reply—What have you to do with representing a distant mountain at all in a stained-glass window? It is a thing that has no business there. Your blue glass mountain implies a distance plane behind the plane of the figures; it implies the representation both of aerial and linear perspective. We have nothing to do with either in stained glass: we are treating the transparent plane of the window-surface in a decorative manner by means of line and colour; what have we to do with suggesting another plane far beyond it? That is all right in a picture, because it is intended that a picture should produce a perspective illusion; we look *into* it; but we look *on to* a window-glass. Mr. Holiday on the same page makes what seems to us the equally curious suggestion that "a distant figure looks smaller than a real one. If the suggestion of distance is in some degree essential in a subject, by all means make the remote figures small. There is no fear of their *looking* on a different plane, the quality of the colour and the lead lines round each will preclude this. The spectator will *infer* difference from the difference of scale: there will be no illusion to the eye." No, there certainly will not; but will there not be a somewhat ludicrous contradiction to the eye, and to the mind also? And what a

very curious mode to take to lead the spectator to "infer" something which, after all, he ought not to infer. We press this point strongly because we feel that there can be no true school of stained glass design, no right æsthetic of stained glass, without the full recognition of the fact that stained glass is the medium for symbolic design, in figure and ornament, *in one plane*, and that a stained glass artist has no business to be coquetting with distances and landscapes and "blue mountains" and little bits of perspective merely because they fill up conveniently some spaces in his design. That is why we approve very much of Mr. Whall's stained glass designs, as far as we have seen them; he is purely symbolic; that is why we think Mr. Richmond's clearstory windows for St. Paul's Cathedral, two or three of which are illustrated, among the most real stained glass art exemplified in the book; that is why we far prefer the style of Mr. Holiday's own west window in St. Saviour's, Southwark, or his Quillinan memorial window, both of which are pure symbolism, to such a design as "Joseph leaving Pharaoh's Court," where we see a gallery in the rear and steps coming forward to the foreground, down which Joseph is advancing, and the two ladies (with a curiously modern air, by the way) walking away from us into the background. That would make a very good mural decoration in fresco painting; we do not call it a good stained glass design. In the author's window in Salisbury Cathedral (fig 10), which is almost entirely a pure glass design, the æsthetic completeness is just spoiled by the little bits of perspective seen through one or two of the arches in the lower compartments. As Mr. Holiday himself says—"If the mind of the spectator is once entrapped into a false position by attempts at pictorial realism in the glass, he will misread the whole work. If he gets realism in one form he will expect it in another." Nothing could be more true; then why not act up to it always and consistently?

The question of the supporting ironwork in wide windows without architectural divisions is rather a difficult one. Mr. Holiday recommends that the design should be made with some regard to them, at all events to the extent of getting the bars to fall, as far as possible, where they will either coincide with some prominent line in the design, or avoid crossing any important feature, especially a head. The point seems to be whether the iron supports should be recognised as a part of the design or not. Mr. Holiday has shown one design (fig. 11) for a window in the Brick Church at New York, where the metal framework is treated almost as a simple form of tracery, and marks with arched heads the main divisions of the design. We should not go so far. The iron supports are not a portion of the architectural design, they are a practical necessity which we would do without if possible. They ought not therefore to be recognised as part of the design; only the design should be studied so as to escape being prominently interfered with by them.

The author's circular window in the Theological College, New Jersey, is a good example. The metal bars, though carefully avoiding the heads, make horizontal cuts through the space between the inner and outer circles, in a manner quite at variance with the main lines of the work; but just because we feel this, and that they

are not intended as part of the design, we are able to ignore them. If they had been arranged as equidistant bars radiating from the centre of the window, they would have forced themselves on the eye as claiming to be an element in the design, and would have caused much more annoyance.

What does the author mean by saying, in reference to the Chartres and Florence windows illustrated in figs. 2 and 7, that "such shading as there is in these windows serves to suggest natural forms, but is treated solely as a means of heightening the beauty of the glass"? The words imply that the shading was introduced only to add to the decorative effect of the glass; which surely cannot be the right way to put it. That it was (and rightly) carried out in such a manner as not to interfere with the decorative effect would surely be the more correct expression.

In the chapter on "Style" Mr. Holiday puts more effectively than we have seen it put before the absurdity of the modern manufacture of mediæval windows, with many trenchant comparisons which hit hard; what he says is what all artists are agreed upon but a large proportion of the public are still in the dark on the subject, and may learn something from this chapter, if they will read it. Mr. Holiday particularly instances as a concomitant evil of the trade manufacturing system, the deadening "division of labour" among the artisans, so that one man has only learned to do one thing, and "the one who painted draperies could not paint a head." It was mainly on account of this, and the consequent difficulty of getting his work carried out in the spirit which he wanted that the author established his own glass-making works, where he abolished the division of labour and had the whole making of a window under his sole control from first to last.

In considering the question of Style in relation to architecture and ornament, the author, while repudiating the idea that any concession can be made to architectural style in the matter of the figure, touches on the interesting question how far ornament in a window inserted in an ancient church or in a building in any special architectural style, should conform to the recognised types of ornament of that style. While admitting that the point is quite open to argument, he leans towards the conclusion that well-designed ornament—that which is really ornament and not "ornamental painting" (like Raphael's arabesques), will harmonise with any good style of architecture. This position must not be pushed too far; Arabic ornament, for instance, has a very marked character of its own, and would look much out of place in a building of Renaissance stamp; but in the main we think it is correct. The grisaille ornament shown in fig. 41, from the author's window in Salisbury Cathedral, would do equally well either in a Classic or a Gothic building; and the fact is that one of the effects of conventional treatment of foliage is to tone down special characteristics in natural leafage, and to lead to the evolution of an idealised foliage which cannot be claimed as belonging to any particular group, either botanical or architectural.

There are other interesting points raised in regard to the treatment of figures and drapery in windows, as to which we are mainly in agreement with the author, but for which we must refer the reader to the book.

One could have wished that the digression (or such it certainly is) on pages 71-74 had been omitted; it is out of place in a work on art-processes, and because an author is an authority about stained glass it does not allow that his readers attach any special value to his opinions on religion and on international morality. But on the subject which it mainly treats the book is one which is calculated to clear the air a good deal.

NOTES.

On Saturday a small party of members of the Institute of Architects visited Peterborough, on the invitation of the Dean to have the opportunity of inspecting the west front of the Cathedral. The party was limited to thirty, and the visit was considered as a private one, as it had been already announced at the Institute would take no publication in the matter. We hear, however, from a member of the party, that the visitors in general thought the state of the front even worse and more alarming than they had realised from description; and thus we fancy will be the remark of most architects who have any opportunity of seeing it for themselves. Among other things a careful examination was made of the bonding of the piers, which was pronounced to be exceedingly faulty in method; in fact, says our correspondent, "such as could not be tolerated by any reputable architect" in the present day. The Dean and Chapter, it is interesting to learn, have purchased an old farm-house built of Barlick stone, in order to use the material for facing the front where new stones are absolutely necessary.

It is not altogether satisfactory that apparently the intentions of the Government in regard to the water supply of London should have been made public in a hole-and-corner manner. It is understood that when the President of the Local Government Board met the London Unionist members this week he informed them that the Government proposed to support the second reading of the London County Council's Bills. By supporting the second reading, the Government agrees to the principle of the Bill, which is that the County Council should be the public body in whom the management of the water supply is vested. This of course is a policy quite opposed to that of last session, when, as will be remembered, the Government proposed to establish a "Water Trust," or separate body, to look after the water supply of London and the adjacent districts. We have always been of opinion that it would be best to place the management of the water supply in a separate body, created for the purpose only. If, however, the Government have come to the conclusion that it is impracticable to establish such a body, then the only course open to them is to make the County Council the water authority. But this sudden change of policy on the part of the Government says little for their capacity as vigorous politicians.

To the last number of the *Revue Archéologique* M. Henri Lechat contributes an interesting paper on the nature of the patina on Greek bronzes. It has usually been supposed that

this patina, often beautiful in effect, was produced by a natural process of oxydisation, due to exposure to the air and to chemical action of the soil. The question of natural *versus* artificial patina was raised, it will be remembered, long ago (Plutarch, "De Pyth. Orac," II.), by visitors inspecting the bronzes at Delphi, some of which were covered with a beautiful deep blue patina. M. Lechat holds it certain that in many cases the patina was produced artificially by the artist himself, and was an effect he deliberately aimed at; in fact, patina in bronzes played the part of polychromy in marble statues. In such cases a kind of coloured varnish was applied to the bronze, which materially affected and aided the natural oxydisation. The precise effect, he believes, was known and carefully allowed for. The exact chemical process M. Lechat does not discuss, nor does he seem hopeful that it will ever be formulated. The paper should be of interest both to artists and archaeologists.

Railway Rates. THE Mansion House Association, who have had the subject of railway rates legislation under discussion this week, and who have for years been very persistent in pressing it upon the attention of Parliament, are far from satisfied with what has been achieved. The interpretation of the Acts has proved rather uncertain, and the railway companies manifest a great disinclination to regard the decisions in the test cases promoted by the Association as final. It has always been a matter of complaint that the procedure before the Railway Commission is too expensive. The inquiries are certainly almost invariably very protracted—as in the apparently interminable coal case of Messrs. Rickett, Smith, & Co., which has just been to the fore again—and also that heard last week, in which the Manchester Ship Canal Company have sought the intervention of the Commissioners. They are asking for compulsory through rates for timber and other imports from the Canal Station to distant towns on the Midland Company's system. Although suing as a railway company, and with a view to bettering the position of the Canal in competing with Liverpool, the arguments, as usual, have turned very much upon "the public interest,"—a phrase occurring in the Act which appears of considerable service to others besides the public. Highly desirable as a cheapened form of procedure may be, however, it must be conceded that the questions involved are frequently of considerable magnitude, and the issues too far-reaching and complex to be decided by any but competent specialists.

Railway and Canal Traffic Acts. THIS was the subject of an address by Mr. J. H. Balfour Browne, Q.C., on Wednesday at a special meeting of the London Chamber of Commerce. The lecturer referred to the well-known Southampton case, in which the question was raised whether the South-Western Railway Company were entitled to charge English traders for the conveyance of goods from Southampton and intermediate stations to London a higher rate than was charged for similar goods coming from abroad. As the lecturer said, this involves a large issue which must be settled before long if the English trader is to successfully compete with the foreigner. In fact, the ques-

tion is of national importance, and its solution must give to the English manufacturer means of transport which are at least equal to those of his competitors; not only is the foreign producer favoured in the introduction of his goods into this country, but the home producer, when he desires to compete with a foreign rival in a continental or colonial market, finds the home railway rates against him and foreign railway rates in favour of his competitors. The lecturer suggested various alterations in the present railway law, and urged that some further control of the railway companies was needed. Whether any expedient similar to that which now existed in the case of gas companies, by which the company was allowed to divide a dividend larger than the standard dividend only when they reduced the price of gas below the standard price—and by which the profits were in effect divided between the shareholders and the customers—could be devised for railways it was difficult to say. But short of the acquisition of all the railways by the State, might not an experiment be made in that regard? There were in this country a considerable number of railway companies which did not pay, and had not paid, any dividend upon their Ordinary stock for some years. It would therefore be easy for the State to purchase these derelict lines at a price which would put no great burden upon the taxpayer—and if they purchased these lines the public would insist upon their being worked at rates which were reasonable in the interests of the community. In that event State competition, by means of these at present derelict lines, would introduce a wholesome element into the railway world, and would, he thought, make the other railways of this country so conduct their business towards trade as to make the purchase of the whole of the railways in the country a matter which might be indefinitely postponed.

The Flushing of Closets and Drains. A SERIES of tests for the purpose of ascertaining the volume of water required to flush water-closets and to keep the drains from them clean was carried out last year at Newcastle by the Newcastle and Gateshead Water Company and the Northern Architectural Association, and formed the subject of a paper read by Mr. Arthur B. Plummer at the Sanitary Congress held at Newcastle in September last. The tests are far from exhaustive, and some of the conclusions which Mr. Plummer draws from them do not appear to us to be reasonably deducible. His opinion that "all syphon cisterns are a mistake, so far as water companies are concerned, and . . . necessary from other points of view," will not be generally accepted by sanitarians. Briefly, the tests afforded further proof that drains are now usually too large and that iron drains are kept clear more easily than stoneware drains of the same gradient. They also showed that drains were soon choked by artificial faeces carried into them by a two-gallon flush from a water-closet, while a two-and-a-half-gallon flush sufficed to keep them clean. It may be pointed out that the drains in these experiments were laid with less inclination than is customary for branch drains. A fall of 1 in 40 may be sufficient for a 4-in. drain running constantly about half full, but it is not sufficient for a branch drain having an intermittent flow. The well-known rule that

a 4-in. drain may have an inclination of only 1 in 40, and a 6-in. drain 1 in 60, has probably been as much misapplied as any other rule; it is intended for drains running half full, and is *not* applicable to drains running only one-fourth full or having a very variable flow.

In connection with the same subject we may call attention to the letter printed in another column, signed by the managers of several firms or companies dealing in sanitary appliances, and complaining of the new and baneful activity now shown by some of the Water Companies in endeavouring to require the removal of 3-gallon flushing cisterns and the replacing of them by 2-gallon ones, in defiance of sanitary science and common sense. The Companies are unfortunately within their legal right, and are now stimulated to fresh activity by the recent illjudged and mischievous action of the Local Government Board (who were evidently misled by some persons acting in the interest of the Water Companies) in formally confirming the 2-gallon cistern. We heard only a few days ago of the case of a house on one of the London ducal estates, where the tenants under a new lease, doing up a house in a manner regardless of cost, had at the demand of the Duke's agent inserted 3-gallon cisterns, and were forthwith served by the Water Company with a notice to remove them! It is impossible that this kind of thing can go on much longer; public opinion will not stand it; and the Water Companies are acting very unwisely in thus putting themselves forward as the opponents of sanitary progress at a time when their very existence is threatened.

We are informed that a scheme is on foot for the "complete external restoration" of the tower of this church, and that the Vicar is anxious to receive subscriptions for that purpose. Is anything so sweeping as is implied in the term "complete external restoration" really required? If not, it ought not to be done. It is stated that the pinnacles are in a dangerous condition, partly from injuries received in the recent gales, and that their total collapse is inevitable unless measures are soon taken to make them secure; and also that it is desired to add two additional bells to the existing six, to complete the octave. These are perfectly rational objects, in aid of which subscriptions may reasonably be asked from those likely to be interested in the church. But when we are asked to draw the attention of "those interested in old English church architecture" to the fact that the complete external restoration of the tower is contemplated, we may as well point out to the Vicar that, unless the external masonry is in such a condition of decay that refacing is practically necessary, those "interested in old English architecture" are exactly those who will demur to subscribing towards its restoration.

Ilicit Commissions.

FROM a circular letter dated February 5 we are glad to learn that the Council of the Chamber of Commerce has appointed a Special Committee to inquire into and report upon the subject of "the pernicious practice of giving and receiving secret trade commissions." One of the obstacles towards

effectually contending with this evil has always been the difficulty of obtaining evidence of a practice which is essentially an underhand one; and it is no doubt in recognition of this difficulty that the following sentences have been incorporated in the letter which the Secretary of the Chamber of Commerce has been instructed to write:

"In order that the Committee may have the fullest information before it I am desired to make it known through the medium of your valuable columns that the Committee are willing to receive and consider *confidentially* any evidence or information on the subject which any one may be disposed to bring before it.

I am further desired to invite confidential communications to be addressed to me by letter, or to be made to me verbally to be laid before the Committee, and to say that no communication or information will be given to the Committee without the previous consent of the party forwarding the same. I have also to add that any communications or information which may be given to me will be treated in the strictest confidence, and no names or particulars will, unless authorised, be allowed to transpire even in Committee."

Communications of the kind mentioned can be addressed to the Secretary, Mr. Kenric B. Murray, at Botolph House, Eastcheap. The mere publication of such a request for information will be enough to put a considerable check on the practice referred to, as any one making such offers may be denounced to the Chamber of Commerce, under circumstances which will prevent the denouncer being in any danger of an action for libel. We have done what we could, on various occasions, to expose the practice as far as it concerns the architectural profession and the building trades, and we are glad to find that the subject has been taken up in a formal manner by so important a body as the Chamber of Commerce.

THERE is no doubt that Dr. The London Dwelling House. Poore, in his lecture on "The Dwelling House" briefly reported in another column, is perfectly right in his strictures as to the increasing evil of overcrowding, and the inconvenience and labour entailed by the increasing development in London of the tall and narrow type of house, in which, as he observes, all changes from room to room have to be made vertically instead of horizontally, with great increase of fatigue both for owners and servants. The most serious evil of the modern tall house, however, is the manner in which it promotes overcrowding, by providing lodgment for a much larger number of persons over the same square area of ground. With all this we are quite in agreement; but what is the remedy? Dr. Poore does not seem to suggest any; he confines himself to pointing out the evils. In doing so he is perhaps preparing the way for a gradual improvement, by promoting the growth of a public opinion adverse to this vertical piling up of dwellings, which may in time have its effect in lessening the supply of them. But such an influence must be very slow in producing any sensible improvement. Do we not require some legislation limiting the number of persons who can be housed per square rood of surface, so as to put a compulsory check on this vertical overcrowding?

The Kerry Bog Slide.

THE Congested Districts Board of Ireland are considering the advisability of carrying out several works in the district recently devastated by the bog slide in Kerry. Amongst

other things, it is proposed to reopen a quarry by clearing it of the mud; also to erect a bridge, re-make roads, to clear the lands at present covered with peaty matter and to restore the area as far as possible to its former condition, so that the ground may be used for agricultural purposes. So far so good. But we cannot find that anything is going to be done to the remains of the bog to prevent further slides, or to prevent the peat from accumulating again at the same spot. No scheme which does not include an elaborate system of drainage will be of any use in remedying matters, and we doubt if the results obtained in any case will be worth the expenditure.

Ventilation of Underground Railways.

THE comparatively recent fight over the "blowholes" on the District Railway is, no doubt within the recollection of most of our London readers, although the efforts of the Metropolitan Railway to secure ventilation are not so well known. It is interesting to note in this connexion that it is now definitely proposed to work the District Railway by electric haulage, under powers to be obtained this Session, together with the deep level express extensions. We are inclined to doubt, however, whether it would not be a much sounder policy, considering the large amount of extra capital involved, to make a further attempt to obtain a thorough system of ventilation under the present régime, worked by the induced currents caused by the trains themselves. Such a system can be employed without unsightly blowholes, and with great improvement on the present outlets for the vitiated air.

Floods and Reservoirs.

THE rural districts have lately passed through one of their uncommon periods of floods. Water is too abundant, and has become a nuisance, doing harm to property and health. In about six months' time it is quite probable that many of those localities which are now complaining of floods will be crying out about a drought. The fact is that as regards the storage of rain-water no proper progress has been made. In the rural districts, and in small semi-urban localities, far too much dependence is placed on the springs. The health, comfort, and well-being of many districts would be greatly improved were some of the great quantities of rain-water, which is now allowed to run to waste, preserved in reservoirs. The latter are very easy to construct. Some labour for excavation, a good bed of concrete, a sound cover, and a large pump, pretty well complete the tale. There is hardly a village in the South of England which would not be the better for such a reservoir, and Parish Councils should take up the matter. Again, landlords are very short-sighted, in places where the soil is dry, not to construct tanks on their farms. There is often in dry summers a large sum spent on extra labour in conveying water to dry places, and a serious pecuniary loss to farmers by the want of it. Yet this could be almost entirely prevented by the storage of rain-water in tanks when it is abundant.

The Manufacture of Enteric Fever.

DR. BRUCE LOW'S Report to the Local Government Board on the cause of the recent outbreaks of enteric fever at Kessingland in the Rural District of Mutford and

...thotland, Suffolk, states that there is no proper system of sewerage; excrement and refuse disposal is chiefly by means of pit privies; these are situated generally close to the dwellings, and are excavated below the level of the ground; some of them have no brickwork lining to their sides or bottoms, and consequently readily permit the soaking of fluid filth into the porous soil. The water supply is from surface wells, also situated "generally near the houses," and merely dry stoned. The manufacture of potteriferous is thus carefully and scientifically provided for.

The Paris Peintres et Sculpteurs have opened their sixteenth annual exhibition at the Palais de l'Industrie, which this year includes some remarkable works, almost all among a preponderance of inferior productions. The exhibition includes over nine hundred works. Among the good ones are various contributions by Mme. Demontretton; Mme. Elodie La Villette exhibits a remarkable sea-piece, and Mlle. Beck a painting of calm water which is also worth attention. Miniatures by Mlle. de Chaussé, water-paintings by Mlle. Voruz, some landscapes by Mme. Scailles, are among other things that are a credit to the exhibition; and in sculpture, a statue by Mme. Coutan, bust by the Duchesse d'Uzès, and some very pretty polychromatic wax figures by Mlle. de Fresnaye.

The people at Oxford who were hostile to Mr. Hare's proposals for the treatment of the Carfax Tower seem to have succeeded in getting Mr. Bodley called in to advise, without doubt in the hope that he would demolish Mr. Hare; but his report, which was printed in full in the Oxford *Weekly News* of last week, practically only repeats Mr. Hare's recommendations, except that Mr. Bodley thinks that to reface the lower portion with rough ashlar work would make it look too much like a new work. As Mr. Bodley admits that the lower or ancient portion of the tower must be refaced for practical reasons—on which point he is as strong as Mr. Hare—it might seem that as the exterior facing will actually be modern work it is not of much consequence how modern it looks. Mr. Bodley entirely concurs in thinking that the upper stage of the tower is of no value whatever, and should be rebuilt in a better style. Altogether the opponents of Mr. Hare have certainly not made much by calling in Mr. Bodley.

THE ADVANCEMENT OF ARCHITECTURE*: WITH SOME REMARKS ON THE STUDY OF GOTHIC.

ARCHITECTURE, properly so-called, does not exist without an ideal or emotional side, and it is always hemmed in by the practical difficulties of construction, so that when the art of construction has greatly advanced, reconditio emotions can be more readily expressed: take, for example, the Propyleum of the Acropolis. The central opening had to be made large enough for the herds of sacrificial cattle to pass through, but this span of some thing like 17 ft. 10 in. could only, in monumental buildings, be spanned by a stone lintel before the arch was in use. At the central opening at the Temple of Diana at Ephesus a similar difficulty occurred. Although in both

cases the marble quarries were near at hand, this large marble lintel had to be brought by oxen to the site, and in the case of the Propyleum it had to be dragged up a steep incline, and then rolled up a slope of earth to its place. In Pliny you read of the difficulties of the fixing this vast piece of marble at the Temple of Diana, the despair of the architect, and the assistance of the titular goddess. At Lincoln Cathedral you have the flat arch of 28 ft. span, each stone of which could probably be carried up on a man's back, so you see how more complex emotions could be expressed constructively in the thirteenth century than in 450 B.C., though in the thirteenth century there were vaults of much larger span. I mention the flat arch on account of its flatness, its rise being only about one-twenty-third of its span. You see in the latter part of the nineteenth century Sir Benjamin Baker building the Forth Bridge, one of whose spans is 1,700 ft., so that the constructive difficulties, as far as architects are concerned, have disappeared.

A vast change in the sentiments of mankind has, however, occurred since the sixteenth or seventeenth century; up to that time, or even later, mankind desired to embody every abstract idea by a building, a statue, a group of figures, or by symbols; but that desire has ceased, at least among the most advanced of mankind, and a little semi-scientific jargon is supposed to supply its place; leaving the mind of the masses completely vacant of instruction. The principal embodiment of law and order in their minds is the policeman, by no means a high ideal figure; while punishment and penal death is embodied by a man in a big chair with a gown and a wig, not so very unlike a Japanese Venus. The glimpses the scientific men have got of our visible universe and of its laws, and the rough results which are spread abroad, so far from diminishing our wonder and our awe, should increase them; but nothing is done to embody these wonders, so that they may be understood by the multitude. The pangs of grief, of guilt, and of remorse are not extinct in the human breast, the cries of misery, agony and despair resound from the whole earth, and yet we are told that there is no occasion for religion; and we are even without the consolation of the Stoic philosopher, Epictetus, who tells us that Jupiter said to him, "I would have made you always comfortable and happy if such a state were compatible with the conditions of the universe, but it is not; consequently I have given you a particle of the divine spirit by which you will be enabled to bear without complaint the necessary evils that will occur, and when these become intolerable you can go out."

I have adverted to these matters, which may appear irrelevant, to point out that to learn to evoke emotions from architecture we must study their embodiments in the structures dedicated to extinct faiths and worn-out creeds, to show us how to evoke the emotions proper only to our own time. We cannot afford to neglect the study of the embodiment of the emotions by any past race, nor can we afford to lose the aesthetic or practical lessons that they teach, and least of all can we afford to do without a study of Gothic, for it is certainly one of the most wonderful phases of architecture that the world has seen.

My Romanesque lectures brought us down to the time at which the groin points of vaults had just begun to be superseded by ribs, the rudiments of which are found at the front half of Vézelay, the choir having ribs, and exterior flying buttresses.

We might have supposed that the Romanesque architects would have been satisfied with the knowledge they had then got of the strength of materials, the solution of the apparently insoluble problem of vaulting in thin stone securely, and with the sort of buildings they had already erected (we must not, however, forget that in the thirteenth century, architecture from being a clerical art became a lay one); but so far was this from being the case, that new features were at once introduced, and the style progressed for 300 years and continued for at least 450 years, for the piece of fan-vaulting over the staircase to the hall at Christchurch, Oxford, was built in 1640. We must remember, however, that the Renaissance in Italy began early in the fifteenth century. Poggio discovered the MSS. of Vitruvius in 1414, and Brunelleschi had measured some of the Roman ruins and began to build in the new way about 1419. Leon Battista Alberti built at Rimini the Temple to Isotta for Pandolfo Malatesta in 1447-50, and the Rucellai Palace at Florence in 1460. The visits of Charles VIII. and Francis I. to Italy, where the revived Classic

taste permeated society, were probably the cause of that grafting of Classic detail on Gothic that charms us in Blois, Chambord, and the other early Renaissance buildings of France. About 1500 Torrigiano paid a visit to England, and a little later executed the tombs of the Countess of Richmond and Henry VII., and probably encouraged a taste for the Classic revival. At Hampton Court Palace there are Renaissance terra-cotta medallions of the Roman Emperors. Holbein came over in 1526, and John of Padua in 1544; if not earlier, and is supposed by some to have furnished designs for Wollaton Hall, while Daniel Barbaro, one of the editors of Vitruvius, and one of the patrons of Palladio, was ambassador here about 1550.

It seems curious enough to us that a highly organised phase of architecture, like Gothic, that seemed to meet every want of its time, ecclesiastical, lay, and military, and that by the knowledge, skill, and genius of its architects had rivalled the buildings of the Romans in size and height, and nearly equalled the spans of their vaults, should have been supplanted by a futile attempt to revive Roman work. We must, however, remember that when society has been permeated with new beliefs, new hopes, and new aspirations, it wants a new phase of architecture to express these changes. This was the case at the Renaissance, and from the absence of architectural schools and trained architects, there was nothing to be done but to fall back on the less developed phase of Roman, which would at least express some of the most prominent of the new ideas, such as the appearance of solidity, simplicity, and grace. The sciences fortunately are not carried on in this way, the new advances are built on those that have last been made and tested. If this method could be adopted in the fine arts, our painting, sculpture, architecture, music, poetry, and eloquence would be as much in advance of the best of bygone times as our arithmetic is beyond that of the Romans, or our astronomy is beyond that of Job.*

I think, however, that in architecture we are wrong to abandon any advances that have been made in the knowledge of materials, construction, or arrangement, if it can be helped; for instance, I doubt if we should revert to the massive pier of the Romans, which is expensive, and reject the flying buttress, which is a cheap substitute, merely because we do not like the look of a building permanently shored up with slight stone-shores. We might make the flying buttresses stronger, so that they were not a constant menace to the building through their decay by weather wear. And we might try and make them beautiful, according to our own taste, and not by geometrical piercing that is not. Their main use to us now is to see how they managed in Gothic days to give them an architectural appearance; they were originally plain arches, but were eventually made into pierced work or open arcades. The flying buttress was an entirely new feature, and one purely structural, and was brought into harmony with the rest of the work. Now, if we wanted to roof a building with an incombustible ceiling, we should use ironwork, concrete, and plaster, or coloured and enamelled terra-cotta. The using of bygone forms of construction is archaeological pedantry or incompetence; and we should throw off the pedantry, and try to make ourselves competent. Architecture is essentially a constructive art; the first and more important part is to make the general forms, both inside and out, of such a character as not only to perfectly meet the wants, but also to proclaim the use of the building; and the higher its use, the more important is it that the shapes employed should suggest that higher use.

Those important structural parts that arrest the attention have all to be made conducive to that end; the Greeks used round piers to look like columns, and the parts of the column, when it was originally of wood, *i.e.*, the capital and base were necessary, and eventually those necessities were made as beautiful as possible. The Romans used monoliths when the weight to be carried was considerable, and beautified their capitals more or less after Greek models, modified to suit their coarser taste. The Byzantines kept close to the Roman examples, only modifying the abacus to take larger piers and heavier weights, and greatly varied the shape and the carving of the capitals. Many of their capitals are cubical and their carving superficial, so that the mass of the capital was preserved to bring down the weight securely to the shaft. The early Mohammedan columns were mostly Classic or Byzantine taken from old buildings, but their later capitals were

* Being the second Royal Academy Lecture on Architecture this session. Delivered on the 28th ult. by Professor Atchison, A.R.A.

* That is to say—if Art were Science; which it is not.—Edo.

of the Stalactite form, or with their own poor floral ornament, either keeping the concave outline of the Corinthian or the solid cubic or ogive form of the Byzantines. The early Romanesque architects sometimes used enormous piers, column-shaped, as at Durham, Peterborough, Southwell, Gloucester, &c., with shallow caps, and even when thin shafts were used, the cap was often comparatively shallow.

As the Romanesque architects progressed in knowledge and skill they got their sculptors to carve their capitals mainly with figures.

The Gothic architects threw aside all thought of Classic proportions—at any rate above the bases of their columns or piers, and ran up their piers to a great height, and let their sculptors use floral ornament almost exclusively for the capitals; the foliage was altered from nature to produce a more broken surface, with brighter lights and sharper shadows, but the foliage of their capitals was almost destitute of interest or grace.

As the Gothic architects became abler constructors, they more and more lost all sense of artistic beauty, and trusted to their utilitarian success, by this I mean the better lighting of the nave by enormous windows, and to the astonishment of the beholders at their apparently insufficient and acrobatic construction; a paltry ambition. The great feature of the latest comices was a large, flat hollow, filled in with stone imitations of the struts in gingerbread from a country fair. The structural perfection attained in late Gothic culminated in the single open-work spire of Strasburg, supremely wonderful, and supremely ugly.

We saw in Romanesque architecture the logical tendency of the times. The architects found that the Romans had always used a column to support something definite, so they did the same, and carried up the wall pillars to support the roof truss; the stepped arches, a purely economical arrangement to save centring, were each supported by a separate column. The piers were sometimes made cruciform, with a half column on each face to resist the thrust of separate arches, and sometimes they clustered the columns. The Gothic architects carried this out more completely, and carried down every rib by means of columns surrounding the main one, and afterwards made them attached; and eventually they superseded the columns by a pier down which the ribs of the vaulting descended, though this is describing how they were designed; looking at them we should say that the channelling of the piers ran up and formed the mouldings of the arches of the aisles, and the ribs of the vaulting of the nave and aisles, or else a cylinder was supposed to have fallen from heaven on to the channelled pier leaving the projecting bits of the original one sticking out. The rib and panel vaults are a useful and most interesting study, showing the gradual multiplication of the ribs, eventually forming patterns known in English Gothic as stellar vaulting, such as those in the cloister at Westminster, at Oxford Cathedral, and elsewhere. Some of these ribs abroad were made into curious and pretty patterns, as at the Cathedral of Las Palmas, Grand Canary; in England, however, the stellar vaults gave rise to the fan vault, in which real ribs ceased to be used, the very numerous thin and small ribs worked out of the solid vousoirs, and in some places in England and abroad flat stones were carried by open work on the curved ribs, an instance of this may be seen under the rood screen at Southwell. Most of the progressive steps are shown and explained in Professor Willis's interesting paper read before the Royal Institute of British Architects in the year 1842. However much the Gothic architects may have lost their early artistic sense, some qualities remained with them to the last. They never lost their logic, their daring, or their excellence in mechanical contrivance. They made their windows where they were wanted, and kept them of the requisite size for the lighting they had to do, and when stained glass came into vogue, a church was all window, except where the buttresses occurred, and this is only one instance, for if they found the slopes of their buttress tables did not take off the rain fast enough, or that the splashing of the rain damaged the stonework above, they made them steeper and steeper, until they perfectly answered their purpose. The height and slightness of Strasburg spire is certainly an instance of their daring, and there are innumerable instances of their ingenuity in mechanical contrivance in windows. For example: When the stone was hard they used pierced slabs; when it was soft tracery; and some of their late tracery is as mysterious as the eddies of a stream, and as

compared with the size of the building, as slight as a spider's web. With an elastic style like this, neither the architects nor the sculptors were ever at a loss for invention, and they trusted to a general picturesque effect however incongruous the parts might be, e.g., if a pointed arch were wanted with a rose-window beneath it, they put the circle in and left the point to take its chance. I by no means wish to depreciate the invention either of the architects or the sculptors, but, as compared with a Greek or a fine Early Renaissance building, the task was slight when anything crammed in would answer the purpose. In such vast buildings with such infinity of detail, forgotten pieces had sometimes to be filled in impromptu. At Ely Cathedral there are two buttress tops which had been apparently left for appropriate buttress caps to be designed for them. I suppose these had to be finished in a hurry. I presume some plants had grown up in the accumulated dust on the unfinished square tops, and the architect had these wind-sown plants cut in stone to make a finish.

Architecture would not be one of the master arts of the world if it did not require the possession of so many varied capacities, some of which, if not antagonistic to one another, are rarely found in the same person. Great architects can, therefore, be only looked for occasionally, when men of exceptional genius, industry, and ambition embrace it. Architecture rarely arrives at any great pitch of excellence all at once, even if it ever does; there is mostly a school with an aim, in which the knowledge that is acquired in one generation may be handed down to the next as the foundation on which a new edifice can be raised. Unhappily, the method of teaching in the different schools from which the brilliant epochs of successive architectures have sprung has been entirely lost, and we can only very imperfectly judge of what it was, by an exhaustive study of the buildings that have come down to us. We must recollect that before the last century much of the knowledge that can now be got from books was personal or traditional, or was worked out by some rule of thumb. Until Wilkins, in 1812, found out what Vitruvius meant by his "unequal steps"—"Scamilli imparēs,"—no one had suspected the optical refinements of the Greeks, and it was not until Mr. Penrose verified their existence at the Parthenon that we could appreciate the geometrical knowledge of the Greek architects. We see by the plan of the Temple at Bassæ that there was some thrust against the columns, and a considerable number of pieces of the stone ceiling have been found. Professor Cockerell showed in his restoration a segmental arch, but, as far as I know, no one has calculated the thrust of such a ceiling, and the resistance that was offered by the wall and the attached columns, so we are in complete ignorance as to the truth of his hypothesis. We know a little of the early Roman knowledge of construction from Vitruvius, supposing he lived into the reign of Augustus, for a learned Dane, a Mr. Ussing, has just published a treatise to prove that Vitruvius was a literary man who lived in the third or fourth century A.D. We know that the Emperor Constantine started schools of architecture in certain parts of the Roman dominion, but we know not what was taught. Still, we know St. Sophia, and since the publication of M. Choisy's "Art of Building among the Romans, and the Byzantines," we know more about the methods of both people than was ever known before, since the irruption of the barbarians. Mr. Tarn, too, has given those who will take the trouble of learning it, the methods of calculating the thrusts of vaults and domes. We know that a profound knowledge of stereotomy was possessed by the Gothic architects from the researches of Professor Willis, Viollet-le-Duc, and others.

Let me, however, enumerate the requisite equipments of an architect. He wants first to know the strength of materials and their resistance to the ravages of the weather. He wants to know by experience, or still better, by calculation, *statics*, or the equilibrium of opposing forces. He wants not only to be able to plan conveniently, but so that the shapes both of his whole building and of its internal parts have the proper character. He wants the whole and every part to evoke the emotions proper to the structure, and these emotions vary at different epochs. The masterpieces of Greek, Roman, Byzantine, Romanesque, Saracenic, Gothic, and Renaissance architecture aroused enthusiasm and admiration when they were built. Some continue to do so still, some are only viewed with indifference, while others excite contempt or disgust. The question for us now is, how cognate emotions can

be raised by us in the present, or by some of our successors in the immediate future. That we do not raise the enthusiasm and admiration we hope for and expect, I, I fear, only too obvious, for who ever hears of an architect or his building calling forth anything but condemnation or censure, and when the building does not, it is supposed to have built itself. This must, I think, be due to one of two causes—either that the public are capable of enthusiasm for architecture, and that at present the architects are unable to apply the proper stimulus. During the Gothic period, we read of the building of a cathedral in a town evoking an enthusiasm akin to madness; the townspeople not only contributing to it in money and kind, but men and women too, dragging in the materials, and working at the building, assisted by the monks, and even on some occasions by the aged bishop himself. I am far from supposing that this enthusiasm was wholly due to expectant artistic delight, even to a better chance of getting to heaven. These cathedrals were a mark of earthly benefit that had accrued to the people by the exertion of their bishops, and were built with a prospect of obtaining still further benefits. Many doubtless looked forward to seeing new beauties and new structural achievements, that were beyond their fondest expectations; while all were ready to admire in anticipation the size and splendour of the proposed edifice. The people looked for more well-paid work being wanted, to the immense advantages of a new centre of attraction, opportunities, too, for their own intellectual and artistic exercise, that did not bring with it pain and penalties. Dull and unimaginative as people now are, I think if a man discovered a gold reef in which all might share, and from which those who harpies who get all the benefit of new discoveries and inventions were driven off, were to suggest the building of something grand and novel as thanks offering, and promised that, when the building was done, he could lead them to still greater advantages, there would be no want of subscriptions or enthusiasm now.

There must be a certain amount of liking for every creation of beauty and perfection, as we saw by the Greek revival in the last century. We look on the last century and the beginning of this as peculiarly tasteless and inartistic periods; yet this Greek revival gave us some admirable works of a beauty of proportion, of a delicacy and refinement that we now look for in vain, though the style is not fitted for our climate, and is in some respects even absurd,—still, it touches chords in us that are not touched now. I mention such buildings as the National Gallery and University College by Wilkins, the Bank of England and Bank buildings by Soane, the Suffolk Fire Office, the London and Westminster Bank, and Hanover Chapel in London (now, alas, destroyed), and the Insurance offices, at Liverpool, by C. K. Cockerell, as well as St. George's Hall, by Elmes, in the same town. We, therefore, need not be surprised at the passion for the cathedrals of the thirteenth century while the Gothic style was being elaborated, when, too, the buildings were not only erected to the highest end, and showed the greatest constructive skill the world had seen, but met every taste and passion of the day. We have an intellectual admiration and a pride in the Forth Bridge which only carries a railway conveniently and cheaply; what should we feel if it were also an ideal of perfect loveliness? But even then it would not excite the admiration caused by the Gothic cathedrals, embodying, as they did, the very highest aspirations, and offering the highest pleasures then known. There was the colossal structure, the very acme of skill of those days, with its lanterns, towers, and spires bathing in the sunshine, or peering through the mist, turned into mother-of-pearl by the moonlight, or cut out of ebony against the moonless sky. In its day the cathedral was the very ideal of beauty, full of illustrations of natural and scripture history, of ethics, of the sciences, of fables, and of every traveller's tale, and like nothing ever seen before. Inside it was refulgent with stained glass, and a gorgeous ceremonial, where plate, jewellery, and enamels, gorgeous robes and hangings were exhibited, and where imposing, brilliant, and solemn processions were seen, while the curling clouds of incense ravished the senses, and captivated the imagination. In it the ear was pierced with the sweet sounds of singing and music, and the highest eloquence of the dæmonstrated the passions or pictured the way to heaven, and where the contagious adoration of crowds carried the soul upwards, as on wings. On nocturnal festivals, where all these delights were heightened by a brilliant illumination, the

church must have suggested heaven, and the black shadows the abysses beyond.

Matchless as was Greek civilisation, dignified as was Roman, gorgeous as was the Saracen, we can hardly picture to ourselves any ceremonial of theirs so congruous and so striking as high mass in a newly-built cathedral of the thirteenth century. The earth was then held to be the centre of the universe, as man was the highest creature in it, with Heaven for his goal. When the rude and poverty-stricken worshippers were gathered in multitudes to offer their adorations in a building that was awe inspiring by its size and proportions and to them of superhuman skill, witnessing ritual as splendid as it was solemn, performed by holy men for their salvation, they must, when they flung themselves on the marble pavement to the elevation of the host, have felt themselves ascending to heaven to enjoy all this gorgeous pageantry and delight, without satiety and for ever.

THE ARCHITECTURAL ASSOCIATION: AN UNWRITTEN CHAPTER OF ENGLISH ARCHITECTURAL HISTORY.

A MEETING of this Association was held on the 5th inst. in the Meeting-room of the Royal Institute of British Architects, No. 9, Conduit-street, Mr. Bressford Pite, President, in the chair.

The minutes of the previous meeting having been read and confirmed, the following gentlemen were elected members:—Messrs. D. T. Hew, F. J. Corfield, O. S. Doll, S. A. Heaps, H. Withall, J. A. R. Inglis, G. L. O'Connor, Omrod, and W. N. F. Woodland.

The Chairman said that, in accordance with by-law 35, he desired to formally nominate Mr. H. Fellowes Prynne as Vice-President, to fill the vacancy caused by the resignation of Mr. John Begg. As no other nomination was made, the Chairman then declared that Mr. Prynne had been elected as Vice-President for the remainder of the session. He also announced that in order to fill the vacancy on the Committee caused by a previous appointment, he proposed to nominate the gentleman whose name was next on the election list last session, but who was not elected, viz., Mr. C. C. Brewer. As there was no other nomination, Mr. Brewer was then declared to be elected.

Mr. Banister F. Fletcher, Hon. Sec., proposed a vote of thanks to Mr. John Begg for a set of guide books which he had presented to the Library.

The Chairman, in putting the vote of thanks, which was agreed to, said that no doubt they would desire to add their hearty good wishes to Mr. Begg for a safe and prosperous journey to South Africa, and for his speedy return.

The Chairman then called upon Mr. Arthur S. Lower, M.A., to read the following paper, entitled "An Unwritten Chapter of English Architectural History":—

As the history of English architecture has not yet been written, no apology is due to any particular author for venturing to suggest a few unconsidered trifles, for which room might perhaps be found in such a work. But to an audience of architects, an apology for introducing a subject of this kind at the present day, seems very much needed. One is confronted at the outset with the question: Are not all such studies wholly useless and pernicious? Leaders of opinion confidently assure us that they are; and, knowing quite well the disesteem into which historical studies are at present fallen, I hardly dare to occupy your time with matters which so many architects desire to be not merely "relegated," but eternally consigned, to limbo. It is simply in obedience to the request of the honorary secretaries, binding us as a command on every loyal member of the Architectural Association, to provide a paper, which they specified to be "on a historical or scientific subject," that these notes are offered. I could think of no other subject upon my own out-of-date and very unfashionable hobby of English Gothic architecture; but, as thinking the duty, or, as I think I ought to say, declining the honour, seemed out of the question, I took encouragement from a passage in the President's opening address, where he had us, "study the mind in the building, through painstaking measurement and logical reasoning. Find out how and why every joint and form was made. The answer lies hidden in the building." This is just what for a long time I have been trying to do, and I am therefore at least acting on our President's advice, in bringing before you the results of some independent research into the history and characteristics of the Medieval archi-



King and Architect: from a Thirteenth Century Drawing.

ecture of England. Waiving then, for the present, the great question as to whether any such studies are to be recommended at all, and assuming, merely as a premise, that a young architect wishes, for some reason or other, to learn something of the old architecture of his country, how can we best assist him? I should like first to quote some old advice given on this subject, which no one here can ever have seen in print. The extracts are lengthy but have a bearing on what follows. "If you ask how you are to study architecture, you will probably be told to read up the whole history of the art in all countries, with formidable lists of names, dates, and dimensions. You will have recommended to you treatises on the orders, and styles, on rules of proportion and other arithmetical niceties; and will be further advised to read books on the principles of beauty and taste, and probably much poetical extravagance in addition. . . . However we may define architecture, we must agree that it is a practical art, confined by the requirements of utility, the properties of materials, and the laws of mechanics. Therefore in studying it, be practical; put aside all considerations derived from archaeology, sentiment, or association, and simply use your own eyes and your own common-sense; learn by observation and by reasoning. Ask the buildings themselves why they are as they are, and what is their meaning. Imagine yourself with the builders, asking what they are going to do, and wherefore. . . . So, when you criticise, you will neither praise a building because it is correct or classical or reminds you of something which you have admired elsewhere; nor will you condemn it because it appears new and strange, or, on the other hand, familiar and unoriginal; you will simply consider, is it good in itself, that is, is it well fitted for its purpose and well adapted to its position, are its materials well chosen and well put together, is it expressive of its object and its construction, does its design show everywhere a striving after beauty. If all this is the case, it is good architecture; but if one of these qualities be lacking, though the building may display the most costly and splendid materials, the highest mechanical skill, the most careful workmanship, the most accurate copying of some acknowledged masterpiece, the result, as architecture, is bad. . . . To criticise buildings, you must try to grasp the circumstances of their erection, and look at them from the point of view of a constructor. The disposition must be encouraged of thinking of a building as a thing composed of stone, brick, timber, and iron, erected for a definite purpose, and under particular conditions, and not, with the architectural writers of the last three centuries, as merely an affair of lines and conventional proportions and ornaments, quite independent of materials, use, or position, just as if it existed only on paper; nor, with some of our own day, as a thing whose essence is accidental picturesqueness, historic or romantic associations, or the superficial decoration of sculpture, painting, or heraldry."

This almost anticipates the new philosophy of architectural materialism, and as we hear so much nowadays against even the use, and not only the abuse, of hooks in connexion with architecture, I quote these passages from an unpublished paper which I read to an amateur society many years ago. The present subject obliges me to make many references to books, so I wish just to clear the ground, and put myself in order, so to speak, by explaining that, having gone through the phase myself, I quite appreciate the standpoint, and can thoroughly enter into the feelings of certain good friends of mine, fellow members of the Architectural Association, who not only object to any form of book-learning, but even declare, as one quite lately did, that all architectural books ought to be burnt. There is truth, of course, in the idea underlying this—all the books in the world will not make one architect; but the easy proof of this proposition does not negative nor even weaken another one—namely, that books may be useful to architects.

Returning to our imaginary student, we tell him, of course, to go out sketching and measuring, and not to neglect to take notes of construction and materials; every one will agree in this advice. He then surmounts, let us suppose, every technical difficulty, until we find him able to draw with the utmost accuracy and most thoroughly artistic touch any subject he may meet with; he has seen and sketched hundreds of buildings, and acquired quite a respectable acreage of details; he can freely reproduce from memory any portion of his sketch-book; he is, in short, a consummate draughtsman; but there is still something wanting. I am not speaking now of the faculty for design, but simply of that knowledge of the architecture of the past which we are presuming that he desires. Does he really understand these buildings? For all that he has done so far, he may be no more capable of seeing into the ideas and motives of the men who built them than the most prosaic and mercenary photographer. The difference between the two is not necessarily more than one of manual process; the mental attitude of each may be substantially the same. Unaided observation, accompanied by however great technical skill in recording, will not enable a man to read the riddles of ancient buildings. Whenever curiosity begins to be aroused as to how, or when, or why, some particular work was built; whenever, in short, the student wishes to go a stage further, and to know all about what he is sketching, he comes to feel the need of definite guidance; in fact, he has recourse to books. He requires them for several reasons: to learn methods of arranging, connecting, and utilising his own disjointed memoranda; to obtain many indispensable facts, which he could not possibly discover for himself; to bridge over gaps in his own experience; to become acquainted with principles and theories which may throw light on what he has observed, or direct him into fresh fields of inquiry. Books on the history of architecture are not, as is frequently asserted, fetters forged by malign opponents for the

enthrallment of art; nor are they simply labour-saving tools to assist lazy men in the mechanical business which they call their art. Rightly used, they are the means by which an architect may learn the true nature of his art, its difficulties, its qualities and powers, its grand possibilities. But architectural books lead us at once to the thorny question of styles. "Read a little history," the student is sometimes told, "but steer clear of anything to do with divisions of styles. All art is one; therefore all Gothic architecture is one, and it is criminal wickedness to attempt to divide it." Advice of this sort in many cases cannot possibly be attributed to any dislike or contempt for the kind of architecture in question. It is principally based, I believe, on a misconception, which it seems worth while trying to explain. In most branches of knowledge, if not in all others, it is generally agreed that subdivision and definition are requisite in order to render learning and teaching possible. "The orderly arrangement," I have seen it expressed, "and classification of its material is necessary to the true advance of knowledge." Of course if it has to be conceded that Gothic architecture is a thing by itself, not subject to the common rules of human experience, the argument that methods like those found necessary in other arts and sciences can be successfully applied to it, falls to the ground at once. But this those who talk about a one and indivisible style have still to prove. In the meantime I prefer to believe in the sound old Roman maxim, *Divide et impera*, which may be freely rendered, "By division you will become master." If we suggest, then, that for the sake of a more intimate acquaintance with the character of Gothic building, the learner should analyse it, should consider its component parts separately and in their relations to one another, instead of only gazing on it as a whole, beautiful but incomprehensible, we must consider the means at his disposal to enable him to grasp his subject. Directions, guide-posts, and landmarks innumerable await him; but unfortunately the greater number of them, and these the most conspicuous and most generally followed, have been set up on the wrong roads. This is, I believe, the real cause of the distrust now so strongly manifested in all definite study of Gothic. Many men have a vague sense that there is something inadequate, something unsatisfactory, in the orthodox teaching on the subject, and jump to the conclusion that therefore all teaching of it must be wrong and misleading. The idea of improving our present methods does not seem to any one worth a thought. As it is of no material disadvantage nowadays to an architect to know nothing about Gothic, the elder men either leave it alone, or go on, content with the notions about it remembered from their boyhood, thinking the whole subject so simple, so easily mastered, that everything which could possibly be known about it was long ago finally settled and laid out, cut-and-dried, leaving no room for further research or progress. But this attitude has had results for the younger generation. There are still men, even amongst the youngest of us, who take an interest in our inheritance from the middle ages, and there is besides a much larger, and rapidly growing body outside, who do the same, and who look to us for instruction and guidance. To these architectural students, craftsmen, and amateurs, we have nothing to offer but a confused, incomplete, and largely untrue account of our ancient architecture. Shoals of books, indeed, there are, but all of them, down to the very latest, are but echoes of the imperfect description of Gothic architecture composed, and to a great extent invented, by the antiquarian *dilettanti* of a hundred years ago. Perfectly true and correct echoes of the old voices they may be, as to that there need be no dispute; but the very important consideration, that in so many ways we have now the means of knowing more than even the cleverest of our great-grandfathers could possibly attain to, has, in the general treatment of this subject, been most strangely and sadly overlooked. No wonder is it, then, that an intelligent student, turning to the recognised authorities, and finding himself in a maze of unrel and contradictory statements, often quite at variance with the evident testimony of the buildings as well as with the authentic records of history, becomes utterly disgusted, and is tempted to say, "These things have nothing to do with architecture." Illustrations, of course, have been immensely improved, many new facts and descriptions have been added; but as to all matters of generalisation of principles and of application to practice, we are using a system which is demonstrably absurd, and which deserves to

to be obsolete. I speak from a considerable experience of the actual difficulties found in pursuing this subject, which evidently oppress even zealous and hard-working students, and these remarks are entirely prompted by the desire to do something, if possible, towards smoothing the path to a reasonable understanding of it. We have stayed marking time, while in every other branch of knowledge a great advance has taken place, and it is quite time that we should bring ourselves up into line. But the remedy is not to be found in general abuse of antiquaries. Their pioneer work has been of indispensable importance. The fault lies in our having yielded up to them the duty of commanding and directing, which we ought to have exercised ourselves. Hence so many of the generally received ideas about Gothic architecture come from laymen, not from architects, with the natural result that they are thoroughly amateurish, and completely ignore the one thing which we care most about—design. We have forgotten that the proper function of our antiquarian comrades is merely to heave the lead and accurately report the soundings for our information and guidance; and not, in any circumstances, to set the course or steer the ship. To descend from metaphor to details the lay mind—even in the case of the best educated and the cleverest men—seems incapable of thinking of architecture except only as a species of superficial adornment, applied in an ascending scale of ostentation. Every imaginable question in architectural design is reduced by the average Englishman to the single, and to him all-sufficient, one of comparative richness or plainness. Thus we hear Members of Parliament and other typical exponents of public opinion treating all buildings as necessarily falling under one or other of three heads; they must belong, that is to say, to what they term the "plain" or "cheap" style, to the "ornamental" or "expensive" style, or else to the intermediate one generally known as the "handsome" style. Imbued with such ideas our lay antiquaries when, unfortunately not content with collecting and verifying facts, they took to formulating systems, naturally classified and described all our ancient architecture according to the increasing quantity of ornament, which they supposed they could recognise in successive periods.

They were practically unanimous in their division of all Gothic work into early or plain, intermediate or more ornamented, and late or profusely ornamented. There was a vast amount of discussion as to the precise terms to be used to express these distinctions, and as to the particular dates at which one should be held to have merged into another, and almost by accident the designation of the latest style, which very nearly settled down into "Floral," has come down to us as the much more architectural "Perpendicular"; but the method all round was the same; not to study the differences of design in the buildings, and trace thence the divers principles which had governed their builders, not to study the social history of the nation and learn thence the various events which had influenced its modes of building, but to start with a hard and fast, ready-made schedule of three heads, and cut, cram, maim, and squeeze so as somehow to get it filled. It was reserved, however, for a later generation, almost our own contemporaries, to carry this tripartite system to absolutely symmetrical perfection, by overriding clear historical facts, and declaring the existence of three separate styles, each exactly contemporaneous with one century of the Gothic age. Com complaints of this kind may perhaps be called unreasonableness or hypercritical. The books in common use, one may be told, give us quite as near an approximation to truth as we need either expect or desire. To try, therefore, how far this easy confidence is really justified, I must ask you to consider, as briefly as possible, just one instance of irreconcilable difference between views generally accepted and plain facts of history. To quote from a very well-known manual: "The change from one style to another was not immediate: it generally took nearly half a century to effect the transition, and the last half of each of the five centuries was such a period of change or transition. Buildings of the last ten years of a century generally belong in style rather to that which follows." Passing on to particulars our authority further tells us:—"In the fourteenth century the general character is of the style called Decorated; the last half of it is the period of transition from the Decorated to the Perpendicular." Nothing could be more beautifully simple and regular; but nevertheless it used to be a great puzzle to me how, if all this were true, one never met with a "Decorated" building after the middle of the century, while, without

any premonitory signs of change, every building after that time was to be found designed or entirely different, indeed almost opposite, principles. No reaction in taste could by itself account for such a startling change, and from no architectural writer nor any general historian could an explanation of the mystery be obtained; indeed none of them seemed to recognise the fact. O after a good deal of search in the by-paths of history did I come across the clue, namely that the "Decorated" style, after an existence of only some five and thirty years, was suddenly cut short and literally killed by the *Black Death*, that awful pestilence which was near to depopulating England in the years 1348. Epidemics are disagreeable and unpicturesque subjects, apt to be avoided or lightly passed over by even the best historians, as this particular one has been until quite within the last few years. The *Black Death*, though it ravaged every corner of Britain, carrying off in a few months more than half the population—destruction compared with which even the "Great Plague" of 1665 sinks into insignificance, did not strikingly affect the general course of politics; on the surface, the current of affairs appears to flow on unchanged; but in the artistic, just as much as in the social history of England it forms a turning-point of immense importance. All the conditions under which building was carried on were suddenly and violently, and permanently altered. Time was not allowed, nor, perhaps, would you care to hear even a brief description of the effects of this visitation; but I believe that any one who will take the trouble to study the inner history of these few years will have no difficulty in learning both how it came about that the "Decorated" style never ran its natural course of logical development, and also what were the causes of the special characteristics of its successor.

The chapter of the history of English Gothic architecture which has never yet been written—the one which shall treat of the whole matter of the sole basis of design. No one, except an architect, can write this chapter, but only one, as far as I can discover, has ever fairly essayed it—refer, of course, to the late Edmund Sharpe. His description of Gothic building is the most architectural one which we possess, and is full of valuable suggestions; but hardly any one regards it more than a partial success, and it has certainly not succeeded in supplanting, as its author hoped, the popular amateur version. Sharpe made bold and original endeavour to place the study of Gothic on better foundations, but his work was doomed to failure, because it rested only on one particular section of design, and that not in reality the most important. In seeking a key to the understanding of Gothic architecture in window-tracery alone, and grouping all buildings in accordance with the one standard, Sharpe showed that, after all, it was, however unconsciously, still under the influence of the amateur school, who saw tracery, as they do to this day, the principal evidence of that comparative amount of decoration which they denominate "style." But if rush in where Sharpe failed, if he feared not, tread, I shall be in danger of the apt quotation of an ancient proverb. If any one is expecting me to say that I have got the missing chapter in a pocket, I fear he must be disappointed. But over there, in the lantern which our kind friend Mr. Wonnacott will shortly bring into action, I have collected some material which may suggest some one how it might be written, and will, any rate, lighten the dulness of my sermon. . . . This first slide is one which I have just had made from an MS. in the British Museum, and I do not know that the subject has ever been exhibited before. It is taken from Matthew Paris's "Life of King Oifa" (Cottonian MS. Nero D.1.). The author and illustrator of this work was, I may perhaps remind you, a Benedictine monk of St. Albans Abbey, who died a few years before King Henry III., and is said to have been equally distinguished as theologian, historian, artist, poet, and mathematician. The original is an outline drawing in brown ink, measuring about 9 in. by 5 in., so that the large figures are about 4 in. high. The subject is Oifa, King of Mercia, directing the building of St. Albans Abbey, at it is hardly necessary to say, the drawing illustrates a building-scene of the days of its author, and not of the remote period which he is describing. Its main interest lies in the fact that we have here an unquestionable contemporary representation of a mediæval architect, together with some important evidence as to his position and methods of work. It is worth while taking note of even the details of this drawing, because some of the most fastidious

able modern theories about Gothic architecture depend entirely upon the supposed non-existence of architects in the Middle Ages. It has quite recently been confidently stated, though apparently upon no better grounds than an *a priori* assumption, that "there never was no such person," or that, if there was, he was quite undistinguishable in any way from an ordinary mason. We have been told that he could never, like a degenerate modern architect, have been seen upon the works with his coat on—because he could not have possessed one, nor even in his shirt-sleeves, for a similar reason! Now the man before us, to consider his outward aspect first, is not of this sort. In all particulars of dress and general fashion, he bears a close resemblance to the king and his attendant. So far, too, from looking just the same as any one of the crowd of workmen whom we see engaged in their various handicrafts, he is unmistakably a man of learning and culture, whose work lies in designing and directing, rather than in simple manual labour. He is discussing, on very friendly terms, some point concerning the building with the king; the latter apparently has made some suggestion, but the architect is giving his opinion with no undue show of deference, while the courtier kneels in the background till the question is settled. Even were there no other signs to guide us, this drawing is enough by itself to suggest that a great Gothic building was not, as is so often pretended, a mere concretion of material, piled up by the unorganised and undirected labour of many similar units—exactly in the manner of a coral reef—but was, on the contrary, the actual creation of a single intellect, as truly and absolutely so as a play of Shakespeare or an oratorio of Mendelssohn. There is not in reality the slightest disparagement of the other workers who took part in raising such a building in saying that their work could not have come into being without an original mind to give the necessary impulse and control; it is no more than saying that the cleverest actors and the most skilful musicians depend after all for the opportunity of exercising their powers on the previous labour of the individual dramatist and composer. When we know that Matthew Paris not only witnessed important building operations in his own abbey, but was in great favour with Henry III., and present at his court during the erection of the Abbey Church of Westminster, we may readily imagine that in representing the legendary scene of Ofa's foundation of St. Albans, Paris drew upon his recollections of the frequent interviews he must have witnessed between Henry and the architect of the great church, in the building of which the king took such deep and constant interest. But notice also this architect's compasses and square—they denote more than that he is merely an expert in building—they mark the geometrician. This is a point we must return to, after looking at the other slides, views and details of buildings, selected for special reasons, which, for convenience sake, must be shown now. . . . To come back now to Matthew Paris's drawing. Here we may find the clue, without which we can never learn to see the mind of the medieval architect in his work. He was essentially a geometrician. In the great intellectual movement of the thirteenth century, no branch of learning, except theology, was more widely cultivated than geometry; and this science, both then, and for long afterwards, occupied an altogether higher position relatively to other intellectual pursuits than it does at the present time. Among the many side-lights which the recognition of this fact seems to throw upon the development of English architecture is one with regard to the vexed question of influence from the East. Most people have at some time felt, if they have not, through lack of tangible proofs, actually allowed, that Oriental suggestions must have played some part in the formation of English Gothic architecture. As an explanation of this, it has generally been loosely asserted that the English crusaders tried to reproduce at home the Saracenic architecture which they had seen and admired in the course of their campaigns; a supposition which, besides being unsupported by a shred of evidence, must seem to any one acquainted with the average military mind, absolutely incredible. But when we think of the highly-prized Arabic geometrical treatises then finding their way into every monastery and university (the latter being at the time thronged by lay scholars, in numbers almost impossible to realise), there is little difficulty in imagining how the subtle influence of books, written by men whom the most learned of Europeans revered as their intellectual masters, became the means by which Oriental inspira-

tions were grafted upon the rising tree of English architecture. Until we can form some idea of the influence of geometry during the middle ages, nowhere stronger, I believe, than in our own country; until we can partly realise the fascination in the study and exercise of it which then possessed every educated mind, lay and clerical alike, we shall never be able to understand the conditions under which our Gothic structures were designed. Geometry is the indispensable key to the thoughts of the men who built them; indeed, I will go so far as to say that, were I asked to define English Gothic architecture in the fewest possible words, my definition would be:—"A species of building wherein every part, from the greatest to the least, is dominated by the same geometrical motive?" I beg you to notice, however, that I do not say, simply, "dominated by geometrical motives," nor "by a motive," but "by the same motive." A great deal turns upon this. It will not be at all surprising to hear this definition objected to as being neither new nor true. It may be contended, on the one hand, that everything possible to be said about the connection of geometry with Gothic architecture has been already said; and, on the other, that true art soars far above the trammels of such a cold, hard, prosaic science. Both objections cannot be dealt with together. The former, of course the less important, may perhaps be sufficiently answered in a few words; but, to establish a case to meet the latter, which I expect would be fervently urged, would require the production of a large body of pictorial and other similar evidence, such as, unfortunately, I am unable to bring before you in the limits of the present paper.

But there may still be time to say a little about previous references to the relation of geometry to Gothic design. The mention of it at once calls up visions of plans and sections of churches, crossed over like maps by squares and triangles, with arguments on the supposed rules of their setting out, which have rarely succeeded in carrying conviction, chiefly on account of the apparently arbitrary and usually contradictory systems of measurement adopted by rival theorists. It suggests also that much ingenuity has been devoted to one particular class of geometric design by the illustration of the infinite variety of patterns producible from contained and intersecting circles. Nor will it be forgotten that some authorities have gone so far as to speak of a "geometrical period," though only as a short-lived minor division of English Gothic. We may be grateful for hints from all these sources, but they neither exhaust the subject nor give us the information for which we seek. It should be remembered that, owing to the general destruction of our ancient libraries, and the consequent dearth of direct home evidence, people have been implicitly relying upon certain works on proportion, which happen to have come down to us from German and Italian architects of the latter part of the fifteenth and of the sixteenth centuries, to explain the principles of English architecture in the thirteenth and fourteenth centuries! To arrive at an understanding of the actual manner in which Old English architecture was influenced by geometry, not for a limited time only, but from its birth to its decline; not through any one form or figure only, but through many; not vaguely and at random, but with a single order of forms dominating, as a key-note, each particular era in succession, and quickening inert matter by the inspiration of an intellectual force, we must discard many old methods, old prejudices, old associations. We must look for new facts in our own buildings, and for new light upon them from our increasing knowledge of our own social history. We must establish our principles solely upon the firm base of careful observation, instead of stubbornly dogmatising in the old, vicious manner, and mangling facts to make them square with unwarrantable theories. In doing this we may gain even more than truer and fuller knowledge of the past; we may find sure helps and great encouragement for the future.

The Chairman said that when he observed the title of Mr. Flower's paper some time ago he regretted that it did not define its subject more clearly, but now he was quite convinced that Mr. Flower had done the right thing. The paper was very suggestive, though at the same time he was afraid it would be difficult to discuss it. Mr. Flower's line was new, but there was something about it to his mind which carried a conviction of its truthfulness. He could not explain why he thought that, but it seemed to him that the theory was extremely probable. It seemed that a link was missing, as Mr. Flower had so characteristi-

cally described, in history books of architecture, and this link he hoped Mr. Flower had found. They had for some time been accustomed to talk about Medieval architecture as a sort of sanctified engineering, and some of them did not consider that any reflection was cast upon Medieval art in that definition. Mr. Flower had certainly carried that belief to a very practical point, as his studies had convinced him that the whole progress of that art, their national art, up to the time of the Renaissance, proceeded on geometrical lines, or a system of geometry applied to a particular building and existing for the furtherance of that building. He expected that an engineer would give them practically the same definition of the motive underlying any modern work of engineering. He proceeded upon a geometrical method, and certain scientific factors which were found mainly in his materials; and it seemed to him (the speaker) that his method was exactly the same. A more interesting prospect certainly was thus opened to them than the prospect of a barren geometrical investigation of works that were to them works of sentiment and romance, in the singularly beautiful way in which the aesthetic sense was combined with the geometrical engineering, as the essence of the evolution of their architecture. Oh, that they might learn the lesson, and be more geometric! and that engineers might learn the lesson, and be more aesthetic! He (the speaker) listened carefully to the opening of Mr. Flower's paper, and noted how carefully he dealt with the architectural history books, and also with their critics; and it seemed to him that Mr. Flower would undoubtedly have to write the new history of English architecture; and no doubt, in arriving at the conclusions which he had given them that night, he had collected the material necessary, at all events, for an efficient handbook to the proper and effectual study of a developing architecture. The portrait of the Medieval architect that he had discovered and shown upon the screen would no doubt mark that meeting as historic. They might think he was unduly exaggerating the importance of this discovery, but he believed that the point would receive, through the publicity it would gain in the press, the attention it deserved. To have unearthed from the British Museum a thirteenth-century architect addressing his client, and having in his hand, not a two-foot rule or a five-foot rod, or a bill of quantities, but simply a revolving calliper, was a discovery of no little importance. Similar testimony to that afforded by the illustration which Mr. Flower had exhibited was borne in the celebrated album of Wilars d'Honecourt, in the Library of Notre Dame, Paris, which was produced in facsimile by a French architect, and of which Professor Willis issued a translation. That book proved that architects existed as architects and as draughtsmen—there was no evidence of a draughtsman in the illustration shown that evening. The draughtsmanship in the album he referred to was interesting because it was geometrical, and because the geometry was carried to the extent of drawing the human form, and showed how to design the figure in triangles. The designer also sketched in a wiser way than we did. We sketched things as we saw them, while this travelling architect of the thirteenth century (about the same date as the architect exhibited that night) sketched as he thought things ought to be. That was vastly interesting; for instance, he sketched the west window of Laon Cathedral, not as it was, but as he thought it should be. In conclusion, he (the Chairman) would like to refer to a matter of some interest, and that was the way in which the Black Death removed the tenderness of our national architecture. After that the Deluge, the Perpendicular, and then no life, no feeling, "no nothing," until the Renaissance.

Mr. Paul Waterhouse, in proposing a vote of thanks to Mr. Flower, said he congratulated the Association upon the excellence of the paper they had heard that evening. It was very difficult to open the discussion upon it, however, since it was a paper by a specialist, Mr. Flower having devoted so much careful study to Gothic architecture. He felt that in suggesting more system in the study of Gothic architecture, Mr. Flower was doing them, as students, great service. They had long been accustomed to complain that the recognised divisions, chronological and formal, of Gothic architecture were misleading—in fact, that they hindered as much as they helped; and he supposed that the great difficulty in the study of the subject arose from the fact that Gothic architecture, when they were first led up to it, was chaos, and a young student could not make much

out of it; the only way was to divide it up, as Mr. Flower had said. It unfortunately happened that the first divisions were done by persons who had only a very partial view of the subject, and those divisions were taken up and elaborated by various antiquarians. Moreover, these divisions, even if they were of the best description, had in each student's education only a temporary purpose. Granted, for the moment, that the anatomy, the analysis of Gothic architecture, had been as good as it could be, Gothic architecture was so complex that these divisions must, after having first served to illustrate the subject, have tended to obscure it. It would be impossible to so divide the subject of Gothic architecture so that the divisions would not become, after increased study, a kind of obscuration. He thought that must be granted as inevitable. They knew to their cost how very much those conditions hindered. People imagined that the periods of Gothic architecture existed as clearly in actual fact as they did in text-books, and no one could do a greater service to students of Gothic architecture than to point out to them a higher consideration of the subject. The divisions should enable the student to approach the matter with a clearer set of ideas. It had often been a matter of astonishment to him that they were so unable to criticise a Gothic building. He knew hardly any one who had such courage in his convictions as to adversely criticise a building of earlier date than the fourteenth century, but it was inevitable that some buildings of that date which had survived could be criticised. In regard to the way in which first principles were laid before young architects, he believed that in the true evolution of an architect (by which he meant a designer), first principles should not come first. He believed that the first process of growth in an architect began by the study of everything that came within his province as an architect. Secondly, the canons of taste were not rules of proportions, or rules laid down by a Ruskin, but something in themselves which, the more powerful it was, the more difficult it was to define. That must be cultivated in every individual architect after the study. They would find springing up in themselves laws which were principles, by which they obtained the power of criticism—criticism of other buildings, and criticism of their own designs. As to the ancient architect, an illustration of whom had appeared on the screen, he did not appear to have any india-rubber, and he (the speaker) was inclined to think that india-rubber was one of the chief factors in design. Perhaps it would not be altogether incorrect to say that in many men design consisted in the power of mercilessly criticising their own productions, and there were many excellent designs which, instead of taking form at once, were rubbed into shape by india-rubber. He was not prepared to discuss at that time the question of whether the geometric principle was the great secret of Gothic design.

Mr. W. H. Seth Smith seconded the vote of thanks to Mr. Flower for a paper which, he said, represented a vast amount of work. Mr. Flower's paper might be described briefly as a scientific paper—that was to say, it was scientific in its historic method. The illustration which Mr. Flower had obtained from the British Museum was of quite exceptional value and, as the President had said, it would mark an epoch in the information which they had on the subject and would rather shatter the idea they heard so frequently expressed that in the Middle Ages there were no architects—an idea which was very popular just now, and which threatened great harm to young architects in their training. He thought the paper, and Mr. Flower's statement of the geometrical origin of Gothic architecture, brought into prominence the idea, which was now very often discussed and which appeared to the speaker to have very great weight, viz., that they as architects required much more scientific training—much more training in the direction of engineering science—and that they needed to have not only the artistic power, but also a thorough training in these principles upon which such a constructive art as theirs was based. The paper, which he imagined would be opposed very energetically by men like Mr. Ruskin, was, he hoped, only an instalment of a larger work by Mr. Flower on the same subject, and that they would have from him further papers which would lead them to study more scientifically the styles of English architecture.

Mr. A. H. Hart, in supporting the vote of thanks, said that he was a little unable to grasp the full meaning of Mr. Flower's thesis. He had told them that geometry entered very largely

into the designing of medieval buildings, but he (the speaker) would like to see that theory carried a little further. Did he understand the lecturer to think that geometry was responsible for the many beauties of medieval architecture? If that were so, a great deal was being attributed to geometry. In regard to the draughtsmanship of the Middle Ages, he had the opportunity recently of inspecting the original design for the west front of Orvieto Cathedral, and an interesting drawing it was. Not more was shown than was absolutely necessary to direct the workmen, and that only in a very sketchy way. Some parts of the front of the cathedral were entirely omitted: the metal work for instance—the lions and so forth—which added very greatly to the beauty, was not shown upon the drawing.

Mr. Banister F. Fletcher, in supporting the vote of thanks to Mr. Flower, said that the lecture concluded with the geometric idea, which had surely been well threshed out before in connexion with Gothic architecture. Any one who desired to know what had been written on the subject had only to refer to Billing's "Infinity of Geometric Design" and he would see how much geometry must have entered into the design of Gothic structures. It was a fact which he supposed every one would admit, but could it be stated on every page of an architectural history book? Mr. Flower had also taken exception to the formidable list of dates which were contained in some history books, but could a history of architecture be very well written without them? The Board of Examiners of the Institute asked for the dates, but if Mr. Flower, as one of the examiners, would get those gentlemen to eliminate dates from the examinations he would have a large following of students. As to the important point of the laws of mechanics in relation to Gothic architecture of the Middle Ages, it seemed to him that they must follow the history of architecture in the Gothic ages as a history of construction, the different forms which were evolved being nearly all traceable to constructive principles. Mr. Flower had done well to enforce that. It was not so much a question of design as of construction which architectural students ought to consider. As to the public understanding of design, he thought they did a little until last year, when he heard the west front of Canterbury likened to St. Paul's. As to the divisions of Gothic architecture, he agreed that it was ridiculous to refer to "Early English" and "Perpendicular," but what were they to do? A line must be drawn somewhere, for they could not talk about Gothic architecture as a whole—at least the student could not. They were told that the sub-divisions were absurd, but they must be mentioned in books. Sharpe, however, took one feature, the window, and he made the whole of his system depend upon that: whereas, as a matter of fact, the system of window tracery was almost entirely brought about by the system of vaulting. If Sharpe had taken the buttress and the vaulting, and made his system depend on that, he would have given a more satisfactory definition of Gothic architecture. He thought that Mr. Flower had overlooked the fact that the crusaders were the most intellectual men who went abroad, and that the engineers of the army were quite likely to adopt any Oriental features. For the intellectual study of English architecture, a good history of England should be read at the same time, and he would suggest a careful perusal of Green's "Short History of the English People." The speaker's pet idea was that engineering was a part of architecture, and that the more they got away from the true practical building the less likely were they to get a style which was essentially characteristic of their period. During the whole Gothic period, as far as could be understood, the men who built were practical men—they were not paper draughtsmen—and that was the true secret of all architecture. The true modern architect he regarded as an engineer. Mr. Flower had spoken against the triangulation of the English cathedral, but he had not ventured to put anything in its place. There was one matter which ought to enable Mr. Flower to get over his objection to text-books, and that was the article written by Viollet-le-Duc on "Construction." That was a most valuable discourse—a scientific, a builder's discourse—on the development of Gothic architecture. There were no divisions, and that would enable Mr. Flower to get over his objection to divisions into periods. The English translation lately published could be obtained from the Library. He could not help thinking that Gothic architecture was really the best architecture for any student

to study: whether he was going to design in Gothic or not, it was a study in construction. Any one who measured up a cathedral edifice from top to bottom, and reasoned the building out on paper, would find the work an architectural education in itself, even if he did not agree with the ideas or the principles of the style.

The vote of thanks having been put and carried unanimously,

Mr. Flower, in reply, said that, in regard to the suggestion that he should give a further instalment on the subject of his paper, he had no idea of doing so—at least, at present. In regard to Mr. Hart's remarks about geometry, of course a very hard view of geometry indeed could be taken. He (the speaker) would not say that geometry was a royal road to good architectural design, and he did not suppose that any Medieval architect rigidly insisted upon it. He did not assert that those architects were fully conscious of definite motive in what they were doing—the English, at any rate, for the French architects were more logical. But certain leading ideas were perceptible not only in tracery and in mouldings, but even in carved and painted work—no division that only regarded tracery would enable them to understand the preferences for particular classes of forms which seemed to have influenced those architects. But it was a subtle influence much more easy to feel and recognise than to rigidly define. Mr. Fletcher had criticised his remarks recommending students not to trouble themselves with historical data, but those remarks were contained in a paper written years ago, from which he had quoted: his views had been modified since. As to the text-books, why was it that the public took their views of English architecture so implicitly from Parker? Chiefly, he believed, from his prominent position as the bookseller and publisher at Oxford; he had done much excellent work as an antiquary, but were it not for these other causes his theories would never have attained such prominence. He did not desire to say anything against Mr. Parker—in fact, he admitted him very much as a man who knew a great deal, but he was not an architect. Another similar book was that by Mr. Bloxam, a country solicitor. He, too, was a most estimable man, and though there was no objection to such men writing on the subject, it became a serious matter when, upon the imperfect systems constructed by them, architectural students were instructed and even examined. He (the speaker) was well acquainted with Mr. Billing's books, but could not discover in them any principles except those relating to the use of circles. As to the architecture of the Middle Ages his view was that during a certain number of years men preferred to work mainly on circles; at another time on triangles, and at others on more complicated systems; but no one system could be got to include the whole of the Middle Ages. He was quite in agreement with what Mr. Fletcher had said in regard to the laws of mechanics, as well as with what he had said about the necessity of divisions. It was only a question of why and where they should draw their lines. One text-book, for instance, said that the flowing line began to be used after the middle of the fourteenth century, which was directly contrary to the facts. As to the crusaders, he did not agree with Mr. Fletcher, for many of those men could not even read or write, and a man who could not read or write had seldom much idea of form; he would be just the kind of man who, as Mr. Fletcher had told them, could see no difference between Canterbury and St. Paul's. As to Green, they must remember that his history was written more than twenty years ago, and they must seek newer authorities to get at the real facts of the great social changes which happened at the period they were discussing. The Black Death having carried away half the population, the only important works carried on for some years after were the royal buildings at Windsor, and for these William of Wykeham had to impress workmen from all over the country. The necessity of employing quartermen and hedge-carpeners to take the place of trained craftsmen, in consequence of the enormous mortality in the crowded cities and monasteries, was an architectural factor of considerable importance. It took England centuries to recover from the shock of this plague. He admired Pullan's work to some extent, but his principles of proportioning did not tell them all they wanted to know. He did not think that the sculptors and masons of the Middle Ages understood thoroughly the principles which it was interesting to try to trace in their work; but they had some sort

motive, or there would not have been so much illarity in their work all over England at the same time. He agreed with Mr. Fletcher thatallet-le-Duc's article on Construction should certainly be read by the student; he would include his Lectures on Architecture. The Chairman announced that the next meeting would be held on the 10th inst., when a paper would be read by Mr. W. H. Bidlake on The Architect and the Public. The meeting then terminated.

MAGAZINES AND REVIEWS.*

THE *Art Journal* is almost entirely devoted to letters and their works. The principal illustration is an etching, by Mr. David Law, of a portrait of "Souverain d'Italie," accompanying an article on the artist by Mr. Arthur L. Salmon. Cosmo Monkhouse continues his description (begun in the January number) of Mr. Arthur Benson's artistic treasures, the present paper giving an account of "The British Portraits" belonging to this notable collection. "A New Colour Printing," by Mr. Gleason White, describes a lately developed invention, employed in a factory at Deptford, for producing coloured printed fabrics on a very large scale and with wonderful mechanical exactness; the specimens illustrated are hardly satisfactory as examples of design, but there is no opportunity of judging in them of the actual colour effects produced in the new process. Mr. Lewis P. Day contrives a somewhat pessimistic article on "Art in Advertising," with some characteristic illustrations. He offers some practical advice on designing advertisements, but seems to be of opinion that the conditions of advertising are necessarily antagonistic to Art. "The better the picture," concludes, "the less it is suitable to advertise." Good pictures do not shout; and advertisement, when all is said, means shouting. It solves itself very much into a question as to who shall shout loudest, and so down the throat of his competitors." "Holheim's Porch," often and illustrated by Mr. G. Fidler, describes a pretty little fragment of architecture, standing by itself in the gardens of Wilton House, but formerly at the entrance to the mansion. Mr. Fidler gives, at some length, the grounds for its attribution to the great painter. His drawings are rather weak, and somehow convey an impression of the whole thing being cut in white plaster. An article, signed "B. B.," on the work of Tito Lessi, is illustrated by some excellent photographs of some of his best pictures, which go far to substantiate the opinion made for him of being "An Italian Dissonance." Mrs. H. M. Stanley gives some personal reminiscences of Bastien Lepage and his visits to London, of which some of the most interesting are the painter's observations on the particular "notes of colour" respectively characterizing Paris and London, and on the difference in the atmosphere of the English atmosphere. The new Central School of Arts and Crafts is criticised by "E. D.," some of whose remarks are worth consideration. "It is surely the greatest possible mistake," he says, "to shut out from them all those actually engaged in the particular branch of the industry taught." Distribution of labour "has, in great part, to account for the present unsatisfactory condition of things; and if, for example, trades like silversmithing are to be brought into line with the artistic movement of the day, the first thing to be done is to break down the trade barriers dividing them into half a dozen sections, each of whom knows nothing of the other is about. The real need among workmen (though they may not know it) is that they should understand something more about their handicraft than pertains to the small section to which they are confined in the factory. The London County Council seems to stand too far off in awe of the trades unions to do the work it might do with the funds at its disposal." The exhibitions of pictures by Lord Leighton and by Mr. Watts receive short notices, with illustrations of the "Procession of Cimabue's Madonna" of the one, and the "Chaos" of the other.

To the *Nineteenth Century* Prince Krapotkin contributes a comprehensive survey of "Recent Progress," which includes a summary of our present knowledge of the "North Polar Basin."

The object of these notes is to point out anything in the contents of the current magazines which is of special interest to our readers, with occasional brief criticisms on views expressed in such articles. When a magazine which has been sent to us is not noticed, it is because that number contains nothing that it is within our province to comment upon.

as modified by the results of the Nansen expedition.

In the *Contemporary* Mr. W. H. Dickinson, under the head of "The Water Supply of London," makes a vigorous attack upon the present water companies, which he contends ought to be abolished. He would not be content with any middle course of exercising fuller control over their administration, or of establishing a Water Trust; "the only logical solution of the question," he sums up, "is to place the water supply entirely in the hands of the proper representative bodies." Mr. Edmund Gosse, by his "Coventry Patmore, a Portrait," reminds us of an author, who, although he seldom touched on architectural matters, did so at times, in his prose essays, with a rare union of enthusiasm with discrimination. The poet's "ceaseless pre-occupation and daily delight" for several years in watching the growth of the church built for him by Mr. Basil Champneys at Hastings is graphically described; it is interesting also to notice the efforts which he made to get really first-rate statues into the churches of his communion, to supersede "the wretched Munich things Catholics now have to put up with."

"Vanishing Paris," in *Macmillan's Magazine*, is a doleful lament over the continuing process of "Hausmannization," which is reducing all Paris, says the anonymous author, "to a criss-cross of straight lines." It describes the havoc among the old associations of the Faubourg Saint Germain now taking place, owing to the construction of the new Boulevard Raspail, and gives some graphic descriptions of the fallen greatness of the once splendid mansions of the Rue Galande.

The *Gentleman's Magazine* contains an account by Mr. E. H. Parker of "The Emperor of Annam and his Capital," from which some idea may be formed of the general aspect of Hué, the capital, and other Annamese cities. There is also a full review of Miss Phipson's new work on "Choir Stalls and their Carvings."

In *Temple Bar* we find "The Dome and its Wanderings," by Mr. J. C. Paget, a popularly-written account of the geographical distribution and general history of domical building. Several of the most famous domed structures at Constantinople, Venice, and Agra, are described from personal recollection.

The *Fortnightly Review* contains a short article by Mr. H. H. Statham on "Leighton and Watts: two ideals in Art," comparing Lord Leighton's and Mr. Watts's use of the figure as a medium of expression in Art, and condemning Mr. Watts's tendency towards mere moral symbolism in some of his later pictures.

The *Cornhill* contains an article by Mr. E. T. Murray Smith on "Two Centuries of National Monuments"—to wit, those in Westminster Abbey; rather historical than artistic, but summing up with the opinion (in which we quite concur) that however some of these monuments may offend against art and good taste, we have to accept them as they stand; "One generation cannot lightly undo the knots tied by those before it." The *Cornhill*, under its new management, has not dealt much with subjects which come properly under our criticism, but we are glad to take this opportunity of expressing our sense of the varied interest of its articles since its new start, and we would particularly mention the series called "Pages from a Private Diary" as including much admirable and witty criticism on contemporary events, by an evidently shrewd and original mind.

"Chatsworth," in the *Pall Mall Magazine*, by Mr. A. H. Malan, with illustrations from photographs by the author, is evidently written for the sake of the photographs, and does not aspire to be more than a pleasant and appreciative chat about the principal "lions" of the place; the prints are mostly clear and good. "The Cathedral," written and drawn by Mr. G. M. Henton, is a little descriptive poem, in obvious imitation of Longfellow. The verses are interspersed with sketches from various places.

In *Knowledge*, Miss A. M. Clerke's "Sixty Years of Astronomical Research" is accompanied by a sketch-elevation of Vienna Observatory, described beneath as "An Ideal Establishment, such as we might have, but have not in England." The building, with three bold domes, and conspicuous telescope-apertures, looks both sensibly and gracefully designed and thoroughly appropriate to its object. Mr. W. H. S. Monck's letter on "Underground Cavities and Streams in Ireland" is of some geological interest.

The *Quarry* has several useful articles and notes in particular on "Variability of Building

Stones;" "The Bolsover Fire," and the effects of high temperatures on stone; "Slates and Slatings," a fresh and sensible treatment of an old subject; and "Tests of Sands for Making Mortars," translated from a paper by M. R. Feret.

The *Antiquary* devotes a good deal of its space to making common cause with certain Radical journals in their desire to "rescue" English cathedrals from their clerical guardians—a strange combination! In language by no means of the sober and temperate sort to be expected from such a quarter, for the sake of the possible preservation *in situ* of a certain quantity of old masonry, the entire destruction of a far older institution is demanded, and with a childish display of ill-feeling, a photograph (a very poor one, by the way) of the west front of Peterborough is reproduced, for the small satisfaction of printing below it: "Now in course of Demolition!"—a statement which can only be characterised either as foolish ignorance or direct untruth. Miss Sophia Beale begins a series of gossip, popular articles, entitled "Gleanings from French Churches."

Harper includes several interesting articles. Under the fanciful heading of "Hygiene in Manhattan," Mr. K. Wheatley gives a scientific and statistical account of the character, functions, and methods of the New York Board of Health. Mr. T. Hastings' "Architecture and Modern Life" is a thoughtfully written essay on some aspects of contemporary American architecture, dealing chiefly with the influence of French Renaissance models, which the author would like to see generally followed, but with freedom and discretion. "Poor Sir John Vanbrugh, one of England's greatest architects, whose charming floor-plan of Blenheim Palace will be admired for all time to come," comes in for some unusual and unexpected praise. "The Awakening of a Nation," by Mr. C. F. Lummis, has some capital views of Mexican cities.

In the *Century*, Mrs. Van Rensselaer's illustrated article on "Places in New York" is chiefly of social and ethnological rather than of topographical interest.

The same may be said of "London," in *Scribner*, by Mr. C. D. Gibson, the illustrations being devoted entirely to types of character from the streets. The works of Giuseppe Segantini, the Italian landscape painter, are described by Sig. Alfredo Melani; and in "The Field of Art" a description, with a sketch, is given of Tligner's newly erected monument to Mczart at Vienna.

The *Atlantic Monthly* contains Miss Robbin's account of the excellent work done by the "Village Improvement Societies," founded to plant trees, lay out parks, &c., in many villages and towns in New England. The decorative paintings just completed by M. Puvis de Chavannes in the Boston Public Library are described by Miss Waern. Under the title of "Two Interpreters of National Architecture," Mr. H. Van Brunt gives a careful and interesting review of the lately published biographies of J. W. Root and Charles Bulfinch.

The special issue of the *Engineering Magazine*, entitled the "Prosperity Number," is a well got-up number, devoted chiefly to topics of mechanical engineering. Mr. Dankmar Adler treats of "The Stimulus of Competition in Architectural Construction," regarding all advancement in architecture as the result of competition, first among individuals, and afterwards between communities, and calling on architects "not to fail to bear their part in the progress and work of the day, and in the competition and emulation to surpass one another, which lies at the foundation of human progress."

La Monde Moderne contains prettily illustrated general descriptions of Bucharest and Nice, and some good specimens of "picture-making" by photography from the exhibition of the Paris Photo Club.

La Revue Générale contains M. Arthur Verhaegen's concluding article on Trades Unions in Belgium, strongly advocating their legal recognition. A new illustrated work, "Les Grandes Cathédrales du Monde Catholique," by M. L. Cloquet, Professor of Architecture in the University of Ghent, receives very favourable notice.

In the *Architectural Record* the principal article is a somewhat profusely laudatory account of the works of Mr. H. J. Hardenbergh, a designer of "mammoth" hotels and "sky-scraping" blocks of offices. Mr. Goodyear continues his ingenious, if unconvincing, researches into the "constructive asymmetry" of medieval Italian churches. Some cathedrals of Provence are described in a well illustrated article by Mr. Barr Ferret, and other articles deal with "Corner

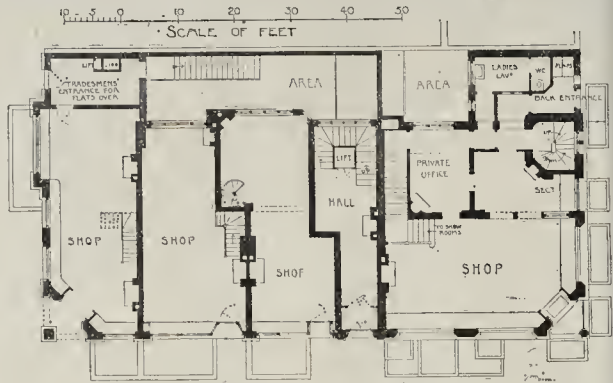
Houses in Paris," "The Villas of Rome," "Sicily," and "Modern Decoration."

The *Engineering Magazine* has a suggestive criticism of the architecture of American Government buildings by Mr. W. M. Aiken, the variety of types illustrated being specially interesting. Mr. G. E. Waring, Jun., discusses the "Relations of Street-cleaning to Good Paving."

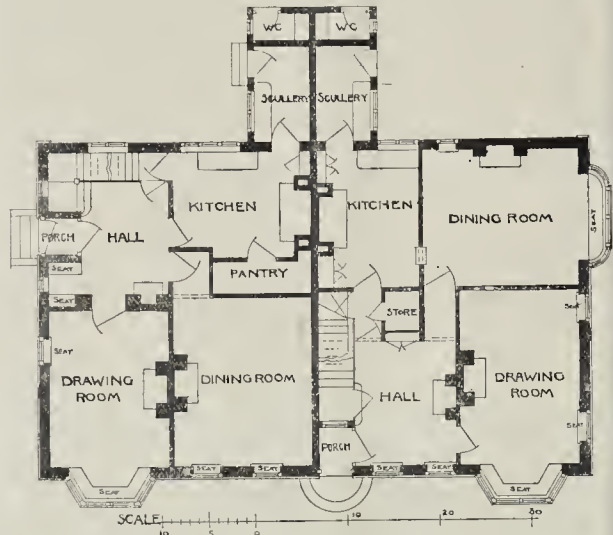
ARCHAEOLOGICAL SOCIETIES.

SOCIETY OF ANTIQUARIES.—A meeting of this Society was held on the 4th inst., Sir II. H. Howorth, M.P., V.P., in the Chair. Mr. James Harrison exhibited and presented a photograph of a stone shaft, surmounted by a small bowl, evidently a holy water stock, lately rescued by him from the churchyard, and now in the vestry of St. Andrew's Church, Charnmouth. Rev. Canon Church exhibited a remarkable thirteenth century wooden pix canopy, from Wells Cathedral, upon which Mr. W. H. St. John Hope read some descriptive remarks. The canopy is in the form of a cylindrical lantern of open tracery work and is about 4 ft. in height. Though much "re-fitted" it bears traces of having originally been richly painted and gilded. The top is surmounted by a hold cresting of leafwork, and retains the curiously arranged ironwork by which the whole was suspended with a swivel hook from which the pix depended. Mr. C. Lynam exhibited a cast of, and communicated a note on, a fragment of a pre-Norman cross-shaft lately discovered at Leek, Staffordshire. Professor T. McK. Hughes read a paper on "The Derivation of the Four Characteristic Implements of the South Pacific," namely, the battle-axe, the throwing-stick, the boomerang, and the patoo-patoo, and he showed, from actual comparison, there were strong grounds for believing that they had directly derived their present forms from the bones of cetacea.

BRITISH ARCHAEOLOGICAL ASSOCIATION.—The fourth meeting of the session of this Association was held on the 20th ult., at the rooms in Sackville-street, Piccadilly, Mr. C. H. Compton, V.P., in the chair, when a paper by Dr. Fairbank, F.S.A., on "Portable Altars" was read, in the author's absence, by Mr. Patrick, Hon. Sec., illustrated by sketches made by the author. A lengthy discussion on this very interesting subject followed, in which Mr. Dobson, the Rev. Cave-Browne, and others took part. On Wednesday, the 3rd inst., the fifth meeting of the session was held in the rooms in Sackville-street, Mr. Thos. Blashill, Hon. Treasurer, in the chair. A most interesting exhibition of prehistoric implements was made by Mr. G. F. Lawrence of Wandsworth, including a unique specimen of a weapon of stag's horn still retaining its wooden handle, thought to be of blackthorn, which was recently found in the Thames at Hammersmith. This must have been a very effective weapon, from the toughness of the horn and the pliancy of the handle, in a fierce hand-to-hand combat. In the course of his observations Mr. Lawrence remarked that in the Yorkshire pile dwellings, and in a few instances in the Thames, the leg bones of oxen and other large animals had been found which had been used in a similar manner, but the greater difficulty of fixing the bone in order to secure it to the handle must have made the use of the stag's horn more general. This example is supposed to be about 3000 years old. Mr. Earle Way exhibited two specimens of Cyprian pottery and a whistle, together with a pretty little model of a quern in soapstone, and a bronze bracelet from Egypt. Mr. Hoyle exhibited a translucent jade earring from New Zealand, about ten miles from Christ Church, the hole in which had been made by a stone instrument close to the edge, but yet without in any way injuring the jade. Mr. Patrick, Hon. Sec., read a short paper descriptive of the discovery of a Roman house at Burham, in Kent, upon the property of the Burham Brick, Lime, and Cement Company, which, by the Company's invitation and generous assistance, Mr. George Payne, F.S.A., of Rochester, and himself had recently had the opportunity of disinterring. The house is a small one, measuring about 60 ft. by 34 ft., but possesses a very perfect and unusual form of hypocaust. This consists of a system of horizontal flues cut in the chalk sub-soil, and running round all four sides of an apartment measuring about 18 ft. by 16 ft. These flues connect with a central and two radiating flues from the mouth of the furnace, the central flue being large enough for a boy to crawl through; the others varying in diameter from about 13 in. to 8 in. or 6 in., where they joined the wall flue. At intervals round the walls were



New Premises, Duke-street. Ground Plan.



Houses, Headingley, Leeds. Plan.

eight or nine recesses, in which vertical wall flues, ranged in pairs, carried the hot air and smoke to the roof. Some of these were found *in situ*, the remains of others lying in the bottom of the shaft. Remains of pottery, tiles, bones of animals, and portions of coloured plaster decoration, and one small bronze fibula, were found. The house appears to have been one of the smaller and less pretentious kind frequently met with along the line or in the immediate neighbourhood of the principal Roman roads in the south of Britain. The paper was illustrated by plans and drawings from sketches made and measured on the spot by the author, and by numerous photographs taken by Mr. Payne of the various features and phases of the excavations. The next meeting will be on February 17, when a paper will be read by Miss Edith Bradley on "London under the Monastic Orders."

ENGINEERING APPOINTMENT, LITTLE DON WATER SCHEME, SHEFFIELD.—On the 3rd inst. the Sheffield Water Committee met at the Town Hall to finally select a Resident Engineer to take charge of the work of the Langsett reservoir, in connection with the Little Don Water Scheme. There were originally thirty-two applicants for the post, and out of this number six attended before the committee recently, when the list was further reduced to two. The committee resolved to recommend the City Council to appoint Mr. Wm. Watts, of Oldham, at a salary of 1,200l. per annum.

Illustrations.

GATES, SHEFFIELD MUNICIPAL BUILDINGS.

THIS drawing represents the gates of the main entrance to the new Municipal Buildings. The work was carried out to Mr. E. W. Mountford's design by Messrs. W. Singer & Sons, of Frome. The upper portion is a fixed grille with the city arms painted in heraldic colours, and the gates slide into a groove in the wall. They were made in forged iron throughout. The gates, which will be opened by Her Majesty the Queen in May next have cost 3000l.

NEW PREMISES, DUKE-STREET, GROSVENOR-SQUARE.

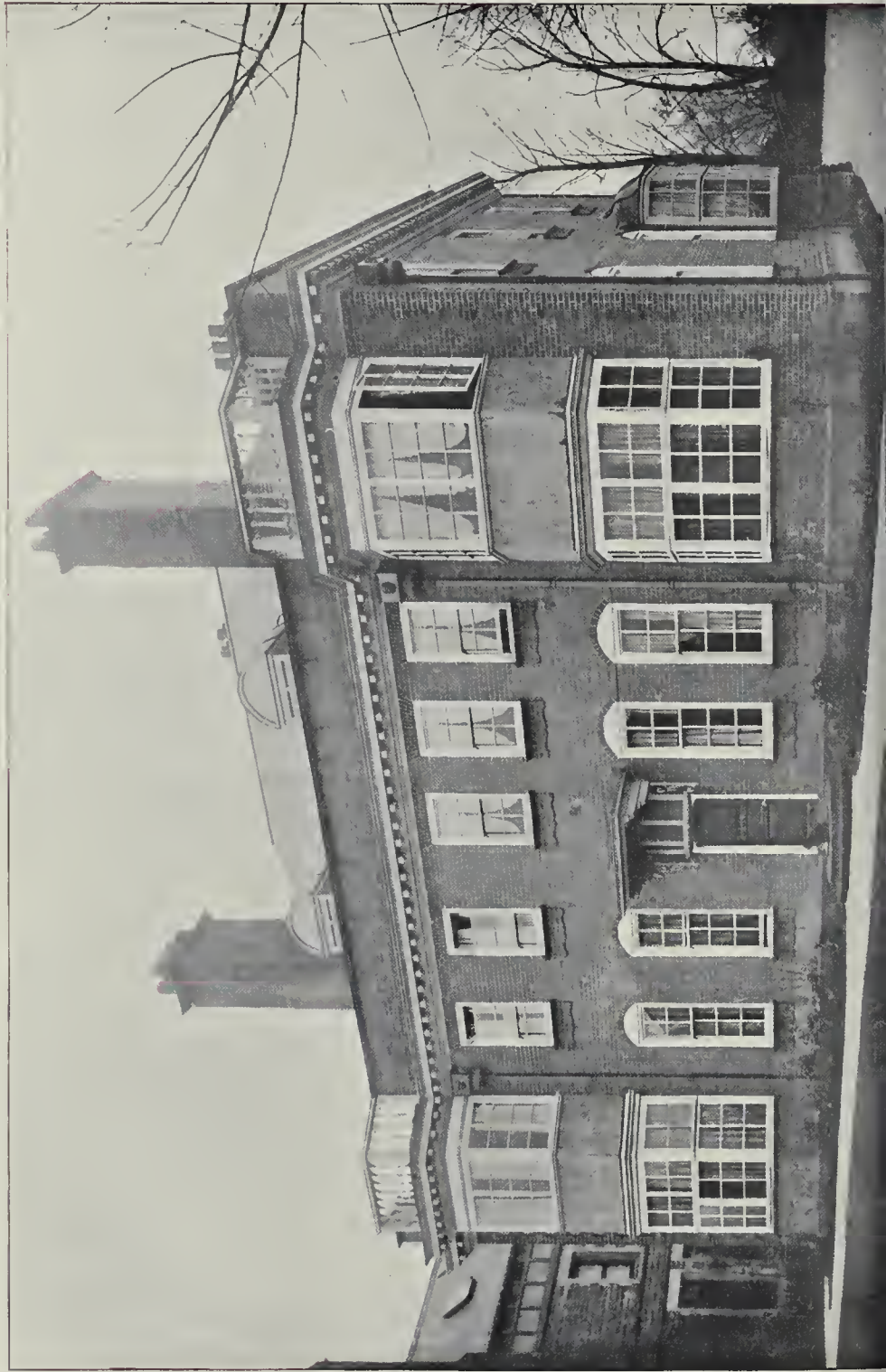
The drawing of this was made from the buildings by Mr. Richards.

The whole of the southern portion of the block was erected for Mrs. Kerr, and contains in the basement, kitchens and assistants' dining-room; &c.; on the ground floor, shop and office; and on the upper floors sitting-rooms and workrooms with dormitories and sitting-rooms for the assistants and servants.

The remainder of the block consists of shop on the ground floor and basement, with residential flats above.



THE BUILDER, FEBRUARY 15, 1897





THE BUILDER, FEBRUARY 13, 1897.



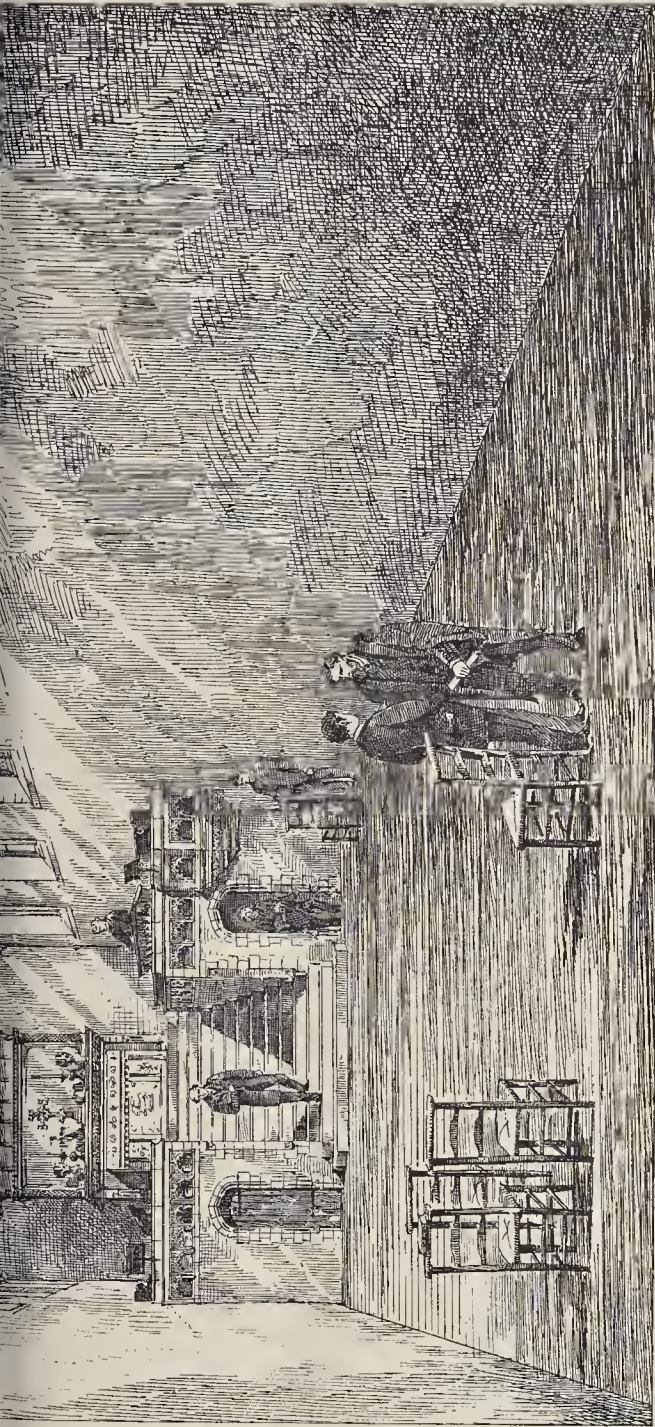
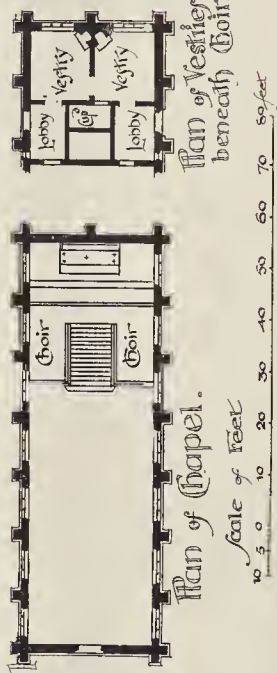


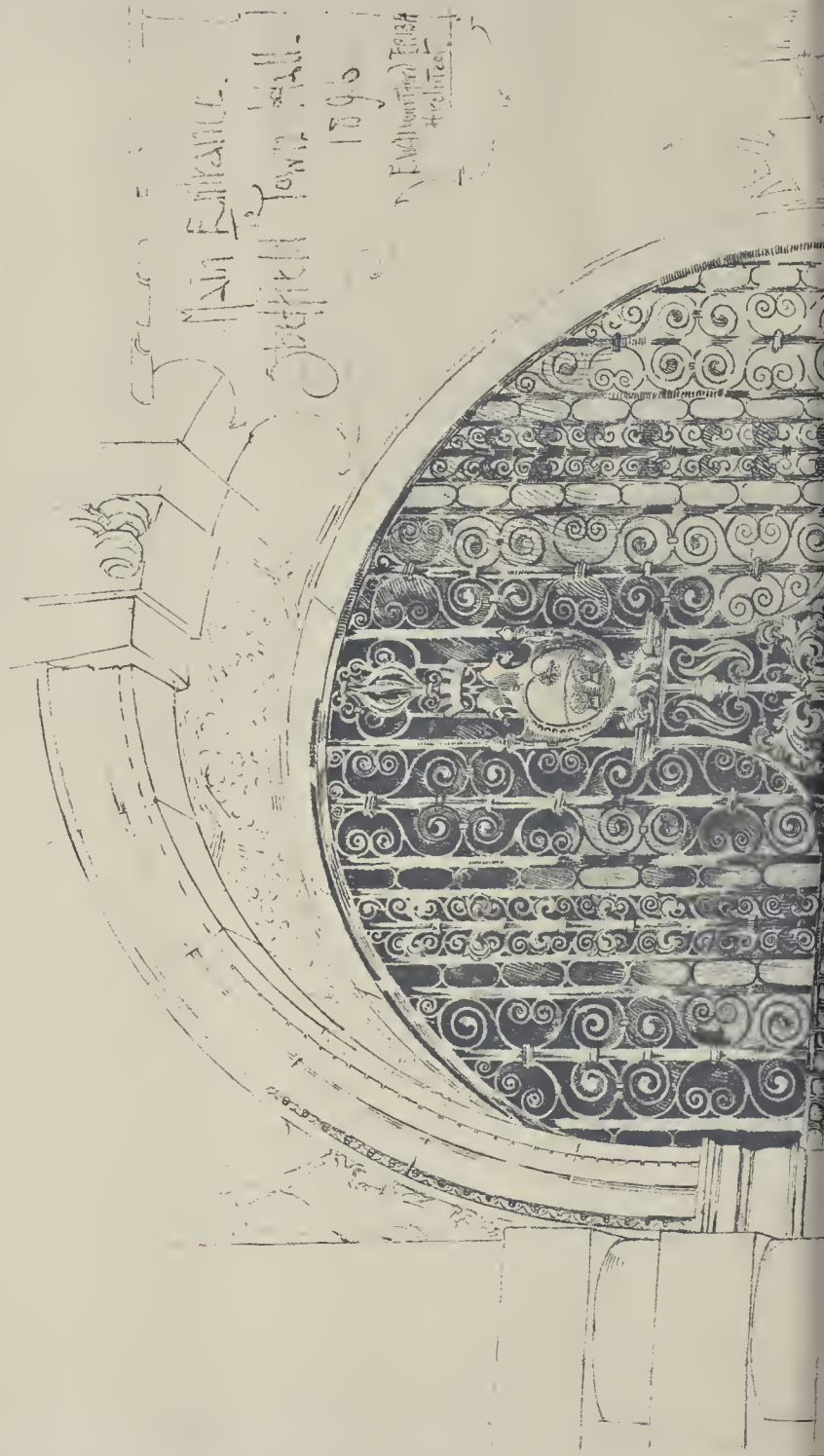
PHOTO LITHO BRACON & CO. 43, 45, 47, MARK LANE, E.C.

Design for Chapel.
 Berkhamsted School
 (King Edward the VIth)

Messrs Battisbury & Huxley
 Architects.
 29 John Street.
 Bedford Row.
 W.C.









141. PHOTO. SPRAGUE & CO. 345 EAST PARKING STREET, PETERSBURG, VA.

WROUGHT-IRON GATES, SHEFFIELD TOWN HALL.—DESIGNED BY MR. E. W. MOUNTFORD, F.R.I.B.A.

EXECUTED BY MESSRS. SINGER & CO



THE BUILDER, FEBRUARY 13, 1897.



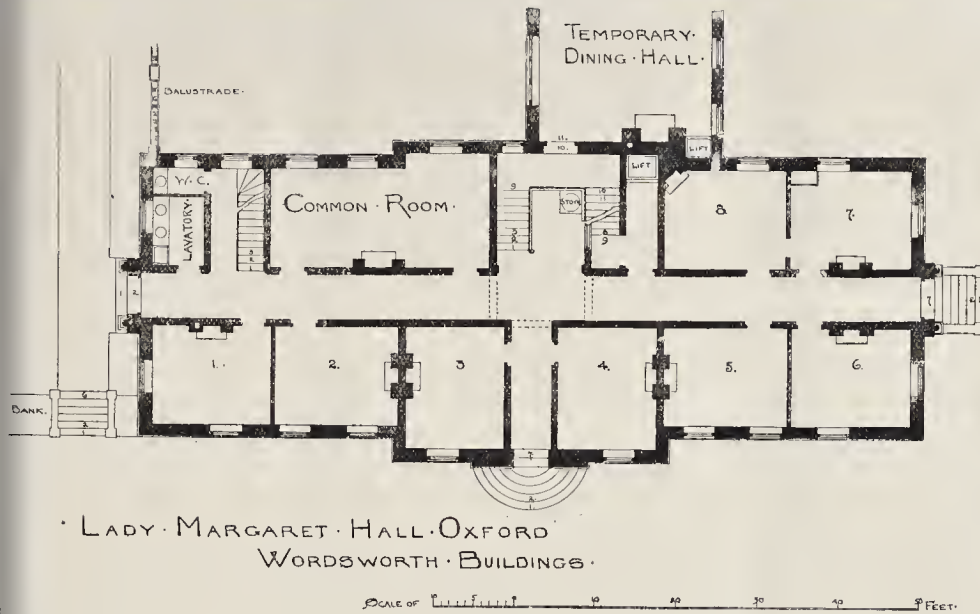


111-112 PHOTO SPRINGUE & CO. 4 & 6 EAST HANING STREET, FETTER LANE, E.C.

NEW PREMISES, DUKE STREET, GROSVENOR SQUARE, W.—MR. W. D. CARBÉ, F.R.I.B.A., ARCHITECT



WORDSWORTH BUILDING, LADY MARGARET HALL, OXFORD.—MR. REGINALD BLONFIELD, M.A., ARCHITECT.



LADY MARGARET HALL, OXFORD
WORDSWORTH BUILDINGS.

NOS. 2 & 3, SHIREOAK ROAD, HEAD-
INGLEY, LEEDS.

THESE houses were built in 1893 for Mr James Bedford. The main idea in planning them was to have two good rooms and a decent hall. All houses, of this size and rental, built in this district during the last eighty years, have aimed at three rooms, with the result that the rooms have been small, and the entrance reduced to the narrow passage with crowded stair so commonly seen. The halls in both cases have fireplaces, and are panelled up to the height of the doors. In No. 2 the panelling encloses the staircase, which has a door at the foot, so that one may smoke in the hall without fumigating the bedrooms. The houses are built of bricks, which were specially made thinner than usual in the locality, where they commonly measure 3 1/2 in. to 3 3/4 in. in depth. The roofs are covered with thick green slates.

The architect was Mr. Francis W. Bedford, of Leeds. Messrs. Wm. Thompson & Sons did the brickwork, and Mr. Banks Mawson the joiner's work.

THE ARCHITECTURAL ASSOCIATION
SPRING VISITS:

NATIONAL GALLERY OF BRITISH ART.

ON the 30th ult. the first spring visit of the Architectural Association was paid to the National Gallery of British Art, and a party of more than fifty members inspected the building now nearing completion, under the guidance of Mr. Sidney R. J. Smith, the architect.

A full description of the building appeared in the *Builder* for January 2. Some items of considerable interest were the large blocks of stone, weighing several tons, used in the architecture of the main pediment, and entirely supported by being joggled without any use of iron or girders, and the figure of Britannia on the apex of the pediment weighing some ten tons.

The chief feature of the building is the central octagonal sculpture-hall, covered with a glass dome with iron ribs, each rib being bolted down with anchor plates to the stone piers. The picture-galleries are all top lighted, with only one thickness of glass, and the effect appears to be admirable.

The drawings showing the various suggestions for the external treatment were an interesting study of the various methods of treating the same subject.

ADDITIONS TO HYDRO, CLIFTON.—Additions are to be made to the Clifton hydro, from the designs of Messrs. Harper, of Birmingham. The floors will be fireproof, on the Fawcett system.

COMPETITIONS.

BOARD SCHOOLS, SUTTON ST. EDMUNDS.—The following is the result of the competition for the new Board schools, for the Sutton St. Edmunds' School Board:—Accepted design, Mr. R. H. Holmes Hand, architect, Spalding; second, Mr. Gilbert S. Doughty, C.E., Pelham-street, Nottingham; third, Mr. Gerald McMichael, 21, Pershore-road, Edgbaston, Birmingham.

MOSELEY PRESBYTERIAN CHURCH.—At a meeting of the committee, the designs for a new church, lecture hall, &c., to cost 6,000*l.*, at the corner of Chantry-road, Moseley, were considered, and out of seven sets of designs submitted, those of Messrs. de Lacy Aherne and Arthur E. McKewan were placed first.—*Birmingham Post*.

ARTISANS' DWELLINGS, SUNDERLAND.—It is stated that Mr. Marten B. Perry, architect, of 17, St. Mary's-road, Walthamstow, in conjunction with Mr. Robert Angell, has been successful in obtaining the first premium in a competition for artisans' dwellings proposed to be erected by the Corporation of the Borough of Sunderland. The plans provide accommodation for 468 persons, at an estimated cost of 20,000*l.* There were in all fifty-eight sets of designs submitted.

ARCHITECTURAL SOCIETIES.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMAN'S SOCIETY.—At a recent meeting of this Society, a discussion took place on the paper on ventilation, read to the Society in December by Mr. Isaac Low. The meeting was presided over by Mr. J. Lockhead. The various systems in vogue were illustrated by means of a small model air-tight chamber, on which were fitted cowls of all descriptions for the demonstration of the natural systems, and by the use of a small fan the mechanical action of the system of extraction and propulsion was also very cleverly shown. Mr. Low, in referring to a recent letter by Mr. Keys, still adhered to his opinion that it is of great advantage to have school windows so constructed that they may be opened while the building is unoccupied, whatever system of ventilation is resorted to while the building is occupied. He held that there could be no gain in having a room shut up, almost air-tight, for say eighteen hours out of every twenty-four, and for over sixty hours at the end of every week, not to speak of holidays, and no one would think of keeping a fan running during these times, unless the power was running to waste otherwise. Mr. Keys' system, properly applied, provides an excellent means of keeping the rooms fresh during the short time they are occupied, but why allow them to stag-

With the exception of a low plinth in Portland one, the whole of the building is erected in red bricks, with fireproof flooring.

The builders were Messrs. George Trollope & Sons, and the architect Mr. W. D. Caröe.

The drawing was exhibited at the Royal Academy of last year.

DESIGN FOR CHAPEL, BERKHAMSTED SCHOOL, HERTS.

THIS design was prepared for the Rev. T. C. Fry, D.D., the head master of Berkhamsted school, by Messrs. Batterbury & Huxley, architects. In order that the chapel might accord with the existing ancient school buildings, erected by Dean Incent, and opened in 1544, late Perpendicular was chosen.

The raising of the sacrum and the choir was suggested by Dr. Fry, who wished to follow, to some extent, Pietro Lombardo's Santa Maria del Miracoli, Venice.

WORDSWORTH BUILDINGS, LADY MARGARET HALL, OXFORD.

THIS building is the south wing of a range of new buildings, of which the centre block and north wing are not yet built. The north and south wings are intended for students; and the centre block will contain main entrance hall and staircase, dining hall with kitchen and offices under and library over, and will be carried higher than the wings.

The site is beyond Norham Gardens to the north-east corner of the Parks, and extends from the road down to the Cherwell. Owing to the shape of the site, the buildings have had to be designed on an irregular plan; and as the sites lies below the roadway level, a causeway with a stone balustrade has had to be formed on the north side in order to get the drains into the town sewer.

The materials used are red brick, gauged brick, and Clipsham stone, tile roofs, and lead flats. A large skylight, inside the balustrade above the central part, lights the principal staircase. The south wing contains twenty-eight students' rooms, common room, lavatory, and bath rooms. An extension has been built on the north side, including temporary kitchen and offices and dining hall. This will ultimately form part of the central block.

The building has been erected from the designs and under the superintendence of Mr. Reginald Blomfield, architect, of London, at a total cost of 6,783*l.*, inclusive of electric lighting. The contractor for the works was Mr. J. A. Hunt, of Hoddesdon; electric lighting by Messrs. Hill & Co., of Oxford; carving by Mr. W. Aumonier.

nate during the longer time that they are unoccupied?

GLASGOW INSTITUTE OF ARCHITECTS.—The usual quarterly general meeting of this Institute was held in the rooms, 187, Pitt-street, on the 28th ult., Mr. John James Burnet, A.R.S.A., President, in the chair. The President referred to the fact that two of the members, Messrs. Honeyman and Leiper, formerly Associates of the Royal Scottish Academy, had now been elevated to full membership, and it was unanimously agreed that the hearty congratulations of the Institute should be sent to them. The Secretary reported that the prize drawings of the Royal Institute of British Architects would be on exhibition in the rooms of this Institute during the two weeks commencing 12th April next. It was agreed to hold an informal dinner in the rooms on March 3.

ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.—The sixth meeting of this Society was held on the 13th ult. at 56, Great Marlborough-street, Mr. W. Pywell in the chair. A paper was read by Mr. B. N. Southall on "Sham Construction and the Fixing of Facings," in which he traversed the most prevalent forms of false construction, and made many suggestions for improvements in the direction of truthful detail. In the discussion which followed, Mr. Brodie doubted whether exposed construction would be acceptable to the public; and Mr. Strange thought that the example of Nature, who never hides her construction, might safely be followed. Mr. Lander pointed out that although Nature may hide her construction, she does not deny it, as many buildings do theirs, and he thought a distinction should be made between concealment and a deliberate intention to deceive. Mr. Garbutt called attention to the dangers arising from the rust caused by condensation inside cast stanchions, and also to the inadvisability of casing steel joists solidly in concrete, as the expansion is liable to crack it. Mr. Herbert thought it difficult to know where to stop in one's criticism, as one might even abuse a plaster ceiling because it did not show the joists. He said he would like to see fireproof floors carried through to the outside face of the wall. He objected to cast iron which imitated wrought iron. Mr. W. C. Marshall, the Special Visitor, said he believed in all Mr. Ruskin said in his "Lamp of Truth," and could not understand why a lie represented in art did not bear the same moral culpability as a spoken lie. Some forms of deception, however, were generally accepted by all, such as gilding. He looked forward to the day when there should be a greater appreciation of iron forms, so that they need not always be concealed. He advised every one to cultivate truth in everything, however small. It came like writing fair—by practice. If every one would rise above the little facilities now so common, we might some day really "build in truth."

GLASGOW SCHOOL OF ART.—The first of a series of special lectures on "Hellenic Architecture" was delivered recently to the students of this school by Mr. William J. Anderson. Mr. Malcolm Stark occupied the chair, and introduced the lecturer, who had taken as his subject, "The Mycenaean Age in Greece." After a review of the formative influences of circumstances on the Greek character and genius, the lecturer said that to the book of the history of this race, which for our fathers opened with the Homeric Epics, there had been written a long preface and introduction. Researches in the Isle of Santorin, and Schliemann's work at Mycenae and Tiryns, had recovered in broken outline the story of a bygone phase of human life, which had some affinity with early Celtic civilisation of Europe, and which was, in greater measure than had been formerly believed, the direct precursor of Hellenic culture in its greatest period. Viewed as architecture as a whole, two different forms of practice would be observed: one, a timber style, employing stone for foundations, combining wood with stone in walls, and sheathing it with metal; the other, a stone style, in which wood forms were directly imitated, and which still made use of metal plates in its decoration, both being closely related, and probably cotemporaneous. Conjectural restorations of the palace of Tiryns, the domed tombs of Mycenae, with Chipiez and Clarke's restorations of the portal and the cupola, were shown by lantern, with details of ornament, including the frieze of Tiryns, of alabaster, inlaid with glass paste, which is so valuable for the light it sheds on the origin of the Doric entablature. To these structures it did not appear possible to assign a later date than about 1200 B.C. Perrot, indeed, dates them at 1450 B.C. But this early civilisation—so advanced in many respects,

and on the way to new inventions—was cut short and scattered by the Dorian migration, to begin its life over again, and in a fuller and larger way to work out its destiny. But the lecturer believed that the more this earliest period of Greek art was studied and explored the more we should discover what the arts of a later day owed to it, and how many of its principles and motives had survived. The dome construction, its decoration by metal plates, the use of the applied column and entablature, appeared again at Etruria and Rome, while the retreating faces of the architrave and inclined sides of the doorway, the fluted column, the triglyph frieze, the patera, rosette, palmette, and spiral—all were forms on which the later Hellenic would exercise his genius. So that it was not too much to say that in Mycenaean art we see the shoot appear above the ground, and that Hellenic architecture of the age of Pericles was essentially of the same root, the same plant in the same soil.

LIVERPOOL ARCHITECTURAL SOCIETY.—The fifth ordinary meeting of this Society for the present session was held on the 1st inst., in the Law Library, Union-court, under the chairmanship of Mr. Bradbury, the President. The paper read was by Mr. F. I. Thomas, and was entitled "Art Out of Doors," in illustration of which some sixty photographic views were shown by limelight. These had been selected so as to indicate the multiplicity of country seats throughout Great Britain in which architectural and horticultural art derive great attraction from their natural surroundings.

BRADFORD SOCIETY OF ARCHITECTS AND SURVEYORS.—The annual meeting of this Society was held recently at the Great Northern Victoria Hotel, Mr. James Ledingham, President, in the chair. Mr. W. B. Woodhead was elected President for the year, and Mr. Fairbank was re-elected Secretary and Treasurer. After the election of the Council the annual dinner was held.

NORTHERN ARCHITECTURAL ASSOCIATION.—A meeting of the members of the Northern Architectural Association was held on the 3rd inst., at the Art Gallery, Newcastle, Mr. F. W. Rich in the chair. The Chairman proposed the following resolution:—"The Northern Architectural Association, looking to the amount of public interest and criticism that has arisen respecting the proposed restoration of the western front of the Cathedral, Peterborough, desire to convey to the Dean and Chapter their appreciation of the course pursued by them in upholding and carrying out the advice of their architects, Mr. J. L. Pearson and Sir Arthur Blomfield, and however much the Northern Architectural Association may regret the circumstances that necessitate the pulling down part of the work, yet feel sure that in the hands of such an experienced and able man as Mr. Pearson there will be nothing done without cause." He said there had been a great deal of amateur criticism on this matter, and the more architects stood up against these innovations on the part of amateurs the better it would be for themselves. Mr. Reay seconded the motion, which was cordially agreed to. Mr. Frank Caws, of Sunderland, then read a paper on "The Probable Influence of the Technical Education Movement upon the Architect and his Work," in the course of which he said that architects should take deep interest in the technical education movement, because of the splendid opportunities it afforded for developing the talents of the young; and not from the merely selfish motive that it helped us to remain masters of the markets of the world; but because it tended to increase the happiness of men and women by increasing their knowledge and usefulness, and particularly by giving them a deeper insight and interest in their work, and so minimising the monotonous drudgery of their lives. Technical education could not long continue without thus raising the status and character of the worker, thereby inducing a general gain of intelligence, skill, and respectability in all trades and handicrafts. If the architectural profession would not remain hopelessly behind other crafts and professions; if architects would retain the proud position of masters of the technical arts—which the very name of architect implied—then they must bestir themselves and take advantage of the great opportunities the present moment afforded. How to do this Mr. Caws explained by showing how architects' pupils and students should devote the years of their apprenticeship so as to attain to the higher standard of qualification now called for. A hearty vote of thanks was accorded to Mr. Caws, after which the meeting terminated.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—The monthly meeting of the members of this Society was held at the School of Art,

Arundel-street, Sheffield, on the 9th inst., when Mr. John Slater, B.A., gave a lecture on "The Buildings of the Ancients." Mr. C. Hadfield (President) occupied the chair. Mr. Slater, at the outset, quoted the late Mr. Ferguson's remark that beauty in architecture consisted not so much in particular features as in appropriateness of design and elegance of detail. In the present century there had been many changes of style. Each successive period had found ugly and unsuitable what had been praised as fit and beautiful by its predecessor, thus showing the narrow-mindedness of those who posed as the directors of the public in matters of taste. It might not be uninteresting to go back to a time anterior to all the recognised styles, and see what kind of buildings were erected by the ancients, when the sole object was to meet the requirements of the people for whom the building was intended, and who obtained architectural effect by ornamenting their construction, and not by constructing their ornament. The first builders who attained to any great architectural skill were the Egyptians, in whose history four periods stood out as those of great architectural activity. These periods were the fourth dynasty, when the great Pyramids were erected; the twelfth dynasty, to which belonged the tombs at Beni Hassan; the period when Thebes was at the zenith of her power; and the period of the Ptolemies. Details were given of the construction of the Pyramids, showing that the most scientific precautions were taken to prevent the heavy superincumbent mass from crushing in the sepulchral chambers. In the tombs of Beni Hassan, it was noticeable how often wooden forms were reproduced in stone. In these tombs were to be found the prototype of the Doric column, as well as of the plan of the perfected Greek temple. The enormous temple of Karnak, with its hypostyle hall, was described, and so were the different forms of capitals found there. The great feature of the Egyptian temples was their solidity and massiveness, but relieved by the most elaborate and varied system of colouring, the granite columns having been coated with stucco before the application of the colour decoration. Crossing from Africa to Asia, different materials and methods of building were found, and dried and burnt bricks forming, in the absence of stone, the staple building materials. In consequence of the friable nature of these materials there existed for many centuries nothing but heaps of rubbish to mark the sites of some of the most notable buildings of antiquity. Quite recently, the most valuable and interesting discoveries had rewarded the exertions of explorers. No less than seven palaces of the Ninivite kings, whose dynasty lasted from B.C. 1250 to B.C. 625, had been exhumed, the most complete and interesting being that of King Sargon at Khorsabad, which was thoroughly explored by Messrs. Botta and Place. Here were discovered the most magnificent arched gateways of brick, arched covers to sewers and conduits, and enamelled encaustic tiles of different colours and patterns, which were as fresh and vivid as if they had only recently been taken from the kilns. The exact manner in which these large buildings were lighted was largely a matter of conjecture. The third great building people of antiquity were the Persians, whose supremacy in Central Asia dated from about the sixth century B.C. The rocky plateau of Persopolis was the site of the most magnificent palaces of the kings, and the ruins still existed to testify to their grandeur. In the recently-explored Hall of the Hundred Columns, the columns were of marble, the capitals being the well-known double bull's head, between which rested the beams supporting the roof. The height of the columns, 67 ft. 4 in., was more than double the height of the columns of the Parthenon. The bases of the Persopolitan columns were particularly graceful, and it was rather curious that this form had never been adopted by the Greeks. The curious and interesting domed building at Feruzabad and Sarvestan, the dates of which it was difficult to determine, were almost certainly the precursors of the Mohammedan mosques. From the wall decorations discovered by M. Dieulafoy, it was certain that the Persians, like the Assyrians, had arrived at a high pitch of excellence in the manufacture of glazed enamelled tiles. After alluding to recent discoveries in the district anciently called Phrygia, and to some curious examples of the exact imitation of wooden forms in stone, the lecturer concluded by saying: As the byways of the world become opened up to us, we are continually finding unexpected remains of building nations, and it is not too much to say that wherever over the whole face of the earth explorers have come upon the relics in stone

or brick of a remote civilisation, their wonder has been excited at the solidity, and in many cases the high artistic quality of the work. It appears to me that, despite all our modern resources and all the discoveries of science in these latter days, no one can study such buildings as I have brought to your notice this evening without having a little of his nineteenth-century conceit taken out of him; for truly all the remains testify that in energy and in intelligence, and in skill, there must have been giants in those days. The paper was illustrated by a number of large diagrams prepared by Mr. Slater. A vote of thanks was accorded to the lecturer, on the motion of Mr. E. Winder, seconded by Mr. Joseph Smith, and supported by Messrs. J. B. Mitchell-Withers, F. Fowler, T. Winder, E. M. Gibbs, C. Hadfield, and C. J. Innocent, and Mr. Slater briefly replied.

ENGINEERING SOCIETIES.

INSTITUTION OF CIVIL ENGINEERS.—At the ordinary meeting of this Institution on the 9th inst., Mr. John Wolfe Barry, C.B., F.R.S., the President, in the chair, the paper read was on "Cold Storage at the London and India Docks," by Mr. H. F. Donaldson, M.Inst.C.E. The author traced, from the commencement of the experimental stage in 1851, the progress in the accommodation of the frozen-meat trade in the Port of London. The work had been carried on first by the London and St. Katharine and the East and West India Docks Companies, and subsequently by the London and India Dock Joint Committee, which came into existence in 1889—in the construction of receiving-chambers at the Royal Victoria Dock, and later, at the South West-India Dock. The first experimental chambers at the Royal Victoria Dock had been constructed in 1851, but they were discarded, and improved buildings, insulation and machinery had been adopted in 1887. These buildings consisted of two floors, each about 10 ft. high, arranged with chambers on each side of the engine-room, which was placed in the middle. One end of the buildings abutted on the quay on which the meat was discharged from vessels. They were further supplied on each side with platforms generally used for receiving meat from the quay, and for discharge into railway wagons of meat for despatch to the various centres of consumption. The end remote from the water-side was provided with a platform for the delivery of meat into carts for transport into the meat market, or for delivery by road. The side platforms were also supplied with small lifts by which the upper chambers were charged, curved rails being fitted at the top to automatically discharge the load when the ram of the lift arrived at the end of its stroke. The flooring of the ground floor was a few inches only above the normal level of the ground or rail-level. Entrance to the chambers was obtained through small doors opening into lobbies at the level of the ground floor, from which ordinary insulated doors opened into the chambers, and by these means the rise of temperature through the opening of the doors to the outer air was reduced to a minimum; the coldest air remaining in the trough or tray, between the sill-level of the entrance door and the ground-level. The lobbies were so arranged that two chambers could be entered from one outer door. The meat was received and delivered through porches, about 4 ft. 6 in. above the ground-level and 1 ft. 6 in. above platform-level, made of two sizes, one inside the other, the larger offices being used for quarters of beef, and the smaller for frozen sheep. An account was also given of the construction of stores at the North Quay, West India Dock, and at the cold store, which had been built and equipped at West Smithfield. The total storage capacity now in use by the London and India Docks Joint Committee was, at the Royal Victoria Dock, 926,604 cubic feet; at the South West-India Dock, 50,000 cubic feet; at the North Quay, West India Dock, 378,613 cubic feet; and at West Smithfield, 305,717 cubic feet.

THE INSTITUTION OF JUNIOR ENGINEERS.—At the last meeting of this Institution, held at the Westminster Palace Hotel, the Chairman, Mr. H. Bloomfield Vorley, presiding, an interesting lecture on "Comparisons of Similar Structures, Large and Small," was given by Professor Archibald Barr, D.Sc. of Glasgow. The lecturer first enunciated the general principles regarding the loads which similar structures can bear with like severity of stress, and showed their application to pistons, cylinders, boilers, beams, bridges, roofs, columns, shafts, &c. He then dealt with com-

parisons of similar structures with respect to rigidity, illustrating them by reference to shafts, beams, bridges, test-specimens, &c. Similar structures with regard to suitability for bearing their own weights, were then treated, and applications to tanks, ships, &c., shown. The influence of size upon the design and proportions of structures was considered, and illustrations given taken from nature. Comparisons of similar objects with respect to their suspension in water and in air, formed the next section of the lecture, and in this connexion the flying-machine problem was investigated. Similar machines, with reference to inertia stresses, were then compared. At the conclusion of the lecture, on the proposal of Mr. S. Boulding, seconded by Mr. E. King, a cordial vote of thanks was passed to Professor Barr.

THE DWELLING HOUSE.

ON Thursday evening last week, at the London Institution, Dr. G. Vivian Poore delivered a lecture on "The Dwelling House," illustrated by lantern slides.

The lecturer stated at the outset that he intended to deal with his subject from the physician's point of view, and not from the architect's. The first plans exhibited showed a five-storied London house, before and after it had been altered in accordance with modern notions of plumbing. Generally speaking, there were necessary or unavoidable defects about most London houses, owing to the limited area of the land upon which they were built, but in the country those defects could be generally avoided. In the London house the cubic contents of the house bore an undue proportion to the land upon which it stood. Speaking of the staircase of the London house, the lecturer said that one of its defects was that unless the staircase was efficiently ventilated it served as a channel for the conveyance of the air from one part to another, which sometimes was not at all desirable. There was nothing more important in a dwelling house than the perfect ventilation of the channels of internal communication. If those channels were properly ventilated fresh air could be got for the rooms in the house; but if they were not they then served for the drifting of foul air from one room to another. Another difficulty in regard to the London house was as to the supply of light and air laterally. The lecturer also referred to other defects in the London house, such as dark underground basements, absence of back doors for delivery of goods or removal of refuse, ill-ventilated staircases and close "areas" shutting in the gullies leading to the sewer, insisting that, although such defects might be inevitable in London, they should never be imitated in the country. Great height not only increased the risk from fire but increased the labour of service, because moving vertically involved twenty times the labour of moving horizontally. The risks from infectious diseases were greatly increased by these high houses which were getting daily more common. Modern methods of sanitation gave a fatal facility for over-crowding, which was certain eventually, if not checked, to do more harm than the sanitation had done good. In country places where it was possible to give adequate area to a house, it was most important to ensure the thorough ventilation of the staircase and passages. In dwelling-houses, as in hospitals, all sanitary offices should be shut off by a ventilated lobby from the main structure, and the lecturer showed plans by which the staircase might be made to fulfil this purpose. The question of aspect, the advantages and disadvantages of a cellar beneath a house and the great importance of a wholesome larder were points which received attention. The lecturer next considered plans by which the sanitation of an isolated house might be made independent of the Local Authorities, and he showed plans of "filtration gutters" by which domestic slop-water might be easily purified. Overcrowding was the greatest of all sanitary ills, and was often fostered by sewage schemes. A plan was shown of an estate of nine acres lying between two newly sewered suburban roads, which had, as was usual in such cases, been bought by a so-called building society—and in which 177 houses, with a population of over 1,200 was contemplated! These societies were a cause of sanitary ruin, æsthetic ruin and financial ruin; they encouraged artisans to begin life with a mortgage round their necks, and occasionally landed them in the clutches of a professional usurer. Some of the model by-laws of the Local Government Board were not suited for country places, and

regulations as to air space round dwellings, which might be beneficial in towns, became mischievous suggestions when printed and circulated in the country. Again, the London Building Act placed no adequate check upon enormous structures, and "open spaces" (bought at great cost) were definitely made an excuse for the abolition of private curtilage to houses. These large buildings were common in the centre of London, and it was curious to note that the "Strand Registration District," which was the pulpit from which we had preached sanitation to the whole world, and which was exceptionally well provided with open spaces was, next to the City of Liverpool, the most unhealthy registration district in the country. So-called "lungs," in which the blood only circulated occasionally on a Sunday, were no compensation for a lack of space and light and air in the dwelling. The cost of the dwelling-house was steadily increasing. Taking a concrete example in Marylebone—it was shown how the rates had risen 87 per cent. in twenty-three years, and how the whole of the obligatory charges—rent, rates, taxes, and water—amounted to over 22 per annum per square yard of occupied land. Would this upward tendency of the rates ever cease? Increase of cost of the dwelling inevitably led to over-crowding, and every addition to the rates increased the cost of the dwelling. Looking at the physical and moral harm which resulted from over-crowding, every increased tax on the house ought to be very seriously considered. Schemes of ostentation and so-called philanthropy which fell heavily on the householder in the form of rates, did harm rather than good. Some outlet ought to be left for private generosity. Very little was done to check over-crowding. On the contrary, the jerry-builder was fostered at the expense of the ratepayers. Modern sanitation was largely based on a mischievous, lop-sided socialism, which was doing incredible harm. No improvement could take place unless it were found possible to encourage the sanitary well-doer. If the man who built a wholesome isolated house and completed his sanitation on his own premises was merely "rated up" and practically fined for doing so, no improvement was possible. The lecture concluded with sundry suggestions for the equitable adjustment of sanitary rates.

THE CLERKS OF WORKS' ASSOCIATION: ANNUAL DINNER.

THE fourteen-h annual dinner of this Association was held on Monday in the King's Hall, Holborn Restaurant, Mr. Beresford Pate, President of the Architectural Association, occupying the chair, supported by Professor Roger Smith and Messrs. W. Fie, H. E. Crosswell, H. D. Searles-Wood, W. H. Sath-Smith, J. E. Drower, T. B. Whitney, Stanton W. Preston, J. Shepherd, Stanley Clarke, Bosfield, and others.

The usual loyal and patriotic toasts were proposed from the chair, the "Army, Navy, and Reserve Forces" being responded to by Col. Sergt. J. Atchison. The Chairman, in speaking of the Navy, said that whatever other nations might think of our domestic, ecclesiastic, or monumental architecture, they had a profound admiration for our beautiful naval architecture.

Mr. J. Brady, editor of the *Clerks of Works' Journal*, in proposing the toast of "The Architects and Surveyors," said that architects of late years had been doing a great deal for their Association by coming to them when in need of clerks of works, and to both architects and surveyors that Association felt much indebted. The toast was coupled with the names of Professor T. Roger Smith and Mr. J. E. Drower.

Professor Roger Smith, in replying for the architects, said he had often thought of the large amount of thought and labour which was represented in connexion with every building. They had granite from one quarter of the world, stone from another, and iron from another; but beyond that each building represented a large amount of thought, and he sometimes wondered, after the building was completed, where all the thought and labour had gone. In the carrying out of their work architects were helped to a large extent by clerks of works. The question of the cost of a building having been thought out before the clerk of works came upon the ground, those gentlemen should do all they could to help keep reasonably within the limits which the employers set as to cost. Clerks of works might also render great service to architects and the undertaking in looking ahead. The clerk of works should keep his architect well posted up,

not merely in the work of the moment, but in prospective work.

Mr. Drower, in a humorous speech, responded for the surveyors, and in doing so referred to the Architectural Association—a body in many respects one of the most extraordinary in the kingdom, and which was doing a vast educational work for architects, which in nearly every other country would be carried on by the State. In his opinion the Clerks of Works' Association could to some extent be compared with that Association, since it was a self-helping body, and self-relying, and their main principle was education and the laudable desire of keeping up the status of their vocation.

Mr. F. Dashwood, secretary, then proposed the toast of "The Worshipful Company of Carpenters." To the Carpenters' Company a debt of gratitude was owing by the trade for its important help in matters of education. At one time he thought that nothing could compensate for the old-time system of apprenticeship, but having for some time seen the character of the work carried out by the young men who attended the schools of the Company, he had no hesitation in saying that in some cases the character of their work was even better.

Mr. Stanton W. Preston, Clerk to the Company, in response, said that there were twelve so-called great Companies, the rest being minor Companies, and the Carpenters' Company was one of the latter. He thought that he had some reason to be proud of the work which his Company was doing, and he believed that this work took the place, as far as anything could, of apprenticeship. Besides their workshops at Great Titchfield-street, there was the Institute at Stratford. In reply to the last speaker, he would say that the Company had no intention of admitting amateurs into their classes—for one reason, because they had no room.

The toast of the evening, "The Clerks of Works' Association," was then proposed by the Chairman, who referred to his early acquaintance with clerks of works, and with their Association. He had watched with considerable interest the growth of their Association. The sentiment which drew men of the same avocation together was a very worthy one, which nearly always resulted in good to the community. No one that evening had any doubt that the idea of clerks of works associating in a body, in which they could combine for their own mutual benefit and for the cultivation of a higher standard of efficiency, was one which had been justified by the results. He therefore desired to cordially invite any clerks of works who had not yet united themselves to that Association to consider the very great advantage that would accrue to them by joining men who had set before them a high standard. He was very much struck by one note in the constitution of their Association, viz., to "neutralise as far as possible the disadvantage of enforced isolation under which many clerks of works labour." He had never before realised the truth of those words. A clerk of the works occupied an exceedingly isolated position. This fact was a complete justification for the existence of that Association. A clerk of works had to think and decide for himself, and had to be a man of rapid thought, but at the same time his position was an enjoyable one, since he was not troubled by the responsibilities either of the architect or of the contractor. He believed that the Association consisted of men strong in mind and strong in hand, and men who were trustworthy, and who were not only self-reliant, but upon whom others could rely—they were men of experience and common-sense which could not be achieved by university training, and could scarcely be tested by examination. That common-sense was of great value to architects as well as to the community. Clerks of works were an ideal embodiment of the handy practical man.

Mr. W. S. Woolacot, President of the Association, in reply, referred to the comparatively small membership of the Association, which was a subject of regret. If a clerk of works possessed anything like the qualities which the Chairman had bestowed upon him, he should most certainly be better paid. The London County Council had recently raised the wages of their clerks of works by half a guinea per week, and he thought that a further increase might very well be made.

Mr. E. W. Nightingale proposed the toast of the visitors. They had twenty architects as guests that evening, besides others. He was glad that the architects were taking more interest in their Association than they ever did before.

The toast was responded to by Mr. T. D. Whinney.

Other toasts were "The Press," proposed by Mr. J. E. Peacock, and coupled with the name of our representative, who responded; "The Hon. Treasurer" (Mr. J. Oldrid Scott), proposed by Mr. P. J. King (Vice-President), and responded to by Mr. J. Spooner; and "The Chairman," proposed by Mr. J. Plowman. The proceedings then terminated.

SANITARY INSPECTORS' ASSOCIATION.

A MEETING of this Association was held at Carpenters' Hall, on Saturday last, when the newly-elected President, Sir John Hutton, filled the vacant chair of the late Sir B. W. Richardson, and a paper was read by Mr. Billing, on the subject of "Meat Inspection." In the discussion which followed on the usual resolution of thanks, Messrs. West, Young, Alexander, Thomas, Montem (Portsmouth), Crigg, Tidman, Raymond, Munro, and Sir John Hutton took part. A suggestion was made that the Technical Board of the London County Council should help Sanitary Inspectors, whose duty it had now become to inspect meat offered for sale to the public, to educate themselves in this difficult branch of their duty. The President agreed with one of the speakers who pointed out that a Sanitary Inspector should scarcely be expected to have the experience necessary for the new duty put upon him, or to be able to spare the time from his multifarious duties to acquire that experience.

A vote of thanks to the lecturer was agreed to, and Mr. Billing briefly replied.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, Sir Arthur Arnold, Chairman, presiding.

Tower Bridge Southern Approach.—On the recommendation of the Improvements Committee, it was agreed that, in connexion with the formation of the new southern approach to the Tower Bridge, the Council do take such steps as may be necessary to acquire from Mr. Lafone, at the sum of 14,500*l.*, the vacant land (having an area, including the approach road, of about 48,170 square feet) situated near the line of the proposed street, and at present having approaches from Tanner-street and Newham's-row.

Housing of Lunatics.—The Asylums Committee stated that their Sub-Committee, appointed to report as to the expediency of adopting a better and less expensive method of housing and treating pauper lunatics, and to consider the systems adopted in the principal European and American cities, had come to the conclusion that it was impossible to proceed further in forming any definite or practical opinion as to the merits of the modern continental system of the housing and treatment of lunatics without personal inspection of some of the asylums where special methods other than those obtaining in this country were in vogue, and that for this purpose it would be desirable for three members of the Sub-Committee, with two expert medical officers, to visit the various asylums at Paris, Berlin, Leipzig, and other continental cities. The Council were asked to authorise the expenditure of 150*l.* for travelling and out-of-pocket expenses. After some discussion, an amendment to refer the whole matter to the General Purposes Committee for consideration and report was agreed to.

Proceedings with regard to Dangerous Structures.—The Building Act Committee reported as follows, the recommendation being agreed to:—

"We reported on January 26 last that the High Court had on December 26 reversed a decision of the magistrate at the Thames Police-court dismissing a summons for recovery of expenses incurred in respect of a dangerous structure, as he held the opinion that it was necessary, under Section 103 (r) of the London Building Act, for the Council itself to consider each intimation that a structure was dangerous, and to authorise service of notice upon the owner and other proceedings if necessary, and that the case had been referred back to the magistrate to be heard on the facts. The case was again before the magistrate on January 13 and 27, when he raised another point, namely, that by reason of Section 103 the Council could not recover any expenses unless it had obtained an order under Section 107 (1). The point was argued at some length, but the magistrate eventually dismissed the summons on the ground that the Council could not recover expenses when, as in this case, the owner did the work upon receipt of a notice, and consequently no order was obtainable. This point was not included in the special

case stated by the magistrate for the decision of the High Court, as it was understood that, although the question was raised, the magistrate took the Council's view upon it. This not being so, as shown by his recent decision, we think it essential that the matter, which affects a very large number of cases of the course of each year, should be submitted to a High Court. We have accordingly directed the Solicitor to get a case stated, and we recommend that the Solicitor be instructed to take the necessary measures for obtaining a decision of the High Court upon the point above referred to."

Higgate Archway.—Major Probyn, Chairman of the Improvements Committee, stated, in answer to a question by Mr. Westacott, that the Council would shortly be in a position to proceed with the reconstruction of Higgate Archway.

Water (Purchase) Bills.—The Parliamentary Committee submitted for approval the agreement on the Water (Question with Surrey, Croydon, Kent, Essex, and West Ham).

Mr. McKinnon Wood first moved:—"(a) That the agreement with the County Council of Surrey be approved and sealed, and that, subject to the approval of Parliament, such clauses as may be necessary to give effect thereto be inserted in the Bills relating to the Lambeth and Southwark and Vauxhall Water Companies, and that the clause arranged with the Corporation of Croydon be approved, and subject to the approval of Parliament, be inserted in the Bill relating to the Lambeth Company." He pointed out the serious consequences to the whole question of the purchase of the Water Companies if the just claims of the outside authorities were not fairly dealt with. He did not see how the Council's Bill could be expected to pass the House of Commons if opposed by the Companies and the Home Counties.

Sir John Lubbock, M.P., moved, as an amendment, "That it is undesirable to break up the water area until after the fullest inquiry; and further, that in the opinion of the Council it is not just to the ratepayers of London that the outside authorities should have the option of determining whether they will join in the purchase of the undertakings of the Water Companies, after the price has been fixed; and that it would be equitable that they should be bound by the results of the arbitration, in the same manner as the County of London."

The Earl of Onslow, in seconding the amendment, said the agreements grossly neglected the interests of London. Parliament would now see in all its nakedness the Progressive scheme of spoliation, as by it London was to bear the cost of purchase, and then hand over the most remunerative parts of the area to other bodies.

Mr. McKinnon Wood, in reply, said that the agreements simply provided that the outside authorities should go on as customers of the Council, or buy out at a fair price the right to supply their own areas.

On a division the amendment was rejected by 57 votes to 47, and the recommendation of the Committee was agreed to.

The next proposal, to arrange an agreement with the Kent authorities, was taken back.

The Council then, on a division, agreed by 51 votes to 44:—"(c) That the Council accept the memorandum set out in Appendix B, substituting for the 6th clause a provision to the effect that the necessary clauses be adjusted between the Councils of the Counties of Essex and London and the County Borough of West Ham." By this vote the London County Council agree to purchase the East London Water Company; an Essex authority to have the option of taking over an apportioned part of the East London undertaking; and the County Borough of West Ham to elect whether it will join London or Essex or have an independent portion of the undertaking transferred to it.

It was further resolved that petitions be presented against the East London Water Bill, the Kent Water Board Bill, and the New River Company's Bill.

Proposed Incorporation of Westminster.—Mr. Costelloe brought forward a report of the Local Government and Taxation Committee dealing with a petition which has been presented to Her Majesty in Council, praying for a charter of incorporation of the City of Westminster. The committee recommended the Council to pass the following resolutions:—

"(a) That while the Council does not object to a charter being granted for the incorporation of any suitable area in London, for the purpose merely of the change of the corporate name and the substitution of the name of the mayor and council for the existing name of a vestry or district board, provided that this can legally be done in the manner proposed,

the Council will strenuously oppose any transfer of powers by any such machinery, or any such transfer by any other machinery to a particular area, without the simultaneous consideration of the whole subject of powers and areas in London.

(b) That a communication in accordance with the above resolution be sent to the Privy Council."

There being a prospect of a long debate on the report, Mr. Costelloe consented to postpone its further consideration for a week. There was, however, much opposition to any adjournment, and a considerable body of Progressives demanded a division, with the result that the adjournment was carried by 44 to 43.

The Council then adjourned.

THE LONDON COUNTY COUNCIL INQUIRY.

The special inquiry into the organisation of the Works Department of the London County Council was continued at Spring-gardens on the 27th ult. Sir Arthur Arnold presided.

The examination of Mr. Ward, the Chairman of the Works Committee, was continued by Sir Godfrey Lushington and completed. The witness said with regard to work executed before the institution of the Works Department that the work done under the direction of the Engineer, Mr. Binnie, was of the highest character; but he could not say the same of the architectural work. He instanced Bishopsgate-street Fire Station as a case in which a great deal of money had had to be spent on sanitary work within a few years of its erection. One of the advantages of the Works Department was that it secured low tenders from contractors, because contractors knew if they sent in excessive tenders they would not be accepted, but the work would be done by the Department. Pressed to mention other Corporations which executed building work by direct employment, Mr. Ward stated that the Great Eastern Railway Company were building many stations, and that the London and North-Western Railway were following in the same direction. Liverpool, Birmingham, and Glasgow had all executed or were carrying on large operations in the construction of waterworks. He did not admit that the Works Committee had been instituted for the protection of workmen.

In reply to Sir G. Lushington, Mr. Ward said the Committee might be regarded as a builder. It was true that it did less work than a contractor, and that its manager did rather less than a contractor's manager would do. The Committee did not claim to have any authority over the Architect or the Engineer, and it had no right to call upon either to attend the Committee.

The examination of the Chairman of the Committee was completed by Dr. Longstaff, who elicited the opinion that certain great evils in the system were largely due to open tendering, and that tendering from a selected list of builders would be very much better. He did not think that such a method of tendering would do away with the necessity of the Department, because the tenders of contractors would, in that case, at once jump up. The witness reiterated his opinion that the work of the Engineer had always had a high reputation, and his complaints against the building and sanitary work at the Bishopsgate-street Fire Station, which although only erected in 1884, had already cost from 500l. to 1,000l. to remedy the defects. There had no doubt been a great advance in sanitary matters in the meantime, but no one could justify such work as had been done there. The joints had not been properly made and the result was a constant escape of sewer gas. Matters had now been improved, but bad work was still done, although he admitted that the inferior work was usually done by jobbing contractors and not by the original builders.

At the close of the examination, Dr. Longstaff asked: Are you not helping the strikers and taking a side against the employers when you agree to await the result of a strike and to pay the new rate of wages?—I don't think so.

Is it not substantially an agreement in favour of the workmen? Don't you think this will have a tendency to make the men, while continuing in the employment of the Department, ready to support a strike going on in another place?—It may have that effect.

Mr. Edward White, the next witness, said, in reply to Sir Arthur Arnold, that he had been Vice-Chairman of the Works Committee for a year, and had had considerable experience as a builder. In answer to the question whether there was any difference in the work of the Department and that of contractors, the witness said a fair comparison might be instituted between Binstead

Asylum, executed by an outside contractor, and the temporary buildings at Colney Hatch, executed by the Department, which were similar in design and construction. The work carried out by the contractor was very satisfactory, that of the Department was of a very inferior character. The cost, too, of Colney Hatch he set down at 23,482l., or about 6,000l. above the estimate. Questioned with regard to the refusal of contractors to tender, Mr. White said he did not think there existed any ring in the ordinary sense of the word, but he thought there was an agreement amongst the best firms not to submit to certain vexatious conditions, such as the examination of their books, which was among the conditions exacted. He thought no contractor would object to the examination of his time-sheets, which must be the very best evidence they could have, and that the examination of books was not necessary. Money was not saved by the Department through these conditions, but the effect was all the other way. With regard to the cost of management (20,000l. for the past year), he thought it very excessive, and that the capital employed was out of all proportion to the work done. He thought it would be an improvement to reduce the number of the members of the Works Committee, but in his opinion it would be better to abolish it. He would give a competent manager full power over the works, subject only to a financial committee. He should have a proper buyer, but should not be controlled by the Council. A competent manager might with advantage tender with contractors, because, like the builder, he would consider values only, and not be guided by tenders, however low. He knew of no other public body that undertook building works, though there were many that undertook engineering, or what he would call municipal works. By municipal works Mr. White afterwards explained he meant the construction of streets, roads, sewers, main drains, and other works of the same character, which would be designed by the engineer. Such works could be better or as well done by the Department as by a contractor, but jobbing works should be done by contractors. The system of the School Board was very satisfactory, the metropolis being divided into twenty districts, and clerks of works being appointed for each. He considered a monthly return of the cost of works in progress an absolute necessity. If they had had such a return in an undertaking where they had dropped 2,000l., they must have found it out. No monthly return was ever presented to the Committee when he became vice-chairman. He had brought the question forward on more than one occasion, but was always "pooh-poohed," the proposal being described as worse than useless—misleading. At the last meeting such a return was presented, and he (the witness) asked certain questions upon it, the answers showing that, until completion, the Committee had no idea whether jobs were costing too much or too little. From a builder's point of view such returns were extremely important. Asked with regard to the stock of timber, the witness thought the stock was not too large; but many of the purchases had been badly made, and there had been a good deal of waste in consequence. In regard to the question of interference by members of the Committee, he said he himself had never interfered, but there had been an advantageous intervention in the case of works at Shore-ditch, on account of a threatened strike of non-union men. He advised that a notice that no difference would be made between the two classes of men should be put up, and since then there had never been any difficulty.

In reply to Sir G. Lushington, Mr. White drew a strong contrast between the methods of the Committee and the methods that would be adopted by the ordinary builder. A builder would never listen to a complaint from a discharged workman. He would insist upon periodical returns. If a builder found out that a job was going wrong and he could not find any special cause for it, he would think the foreman was not doing his duty and would demand an explanation at once, but this could not be done without regular periodical returns. He had found, eventually, that the rules did contain a clause requiring such returns, but a copy was never sent to him or other members of the Committee, and the rule was never acted upon. They had been carrying on important works for two and a half years without these necessary reports being demanded during the progress of any works. This seemed to him like the work of amateurs. He was afraid that when workmen were employed by a public body they did not see the importance of doing as much work as when employed by contractors. He had read the very

flourishing report given in evidence by Mr. Jacobs, and he compared the cost of the works, of which that witness had been foreman, with the estimates, finding in each case a loss where the works were completed, and what must necessarily prove to be a loss in works not yet completed. If he had found such a state of things on a job in which he, as a builder, was interested, he would have tried another foreman.

The further examination of the witness was adjourned until Friday, January 29, when, before the examination of Mr. White was resumed, a document was put in by the Clerk to the Council, giving the replies of the Corporations of Manchester, Liverpool, Birmingham, and Glasgow to questions which the Clerk had been instructed to make as to the systems adopted by them in carrying out works. Similar questions were also answered by the engineers of the Great Eastern, London and North-Western, and seven other leading English railways. In the case of both classes of corporations structural works appear, as a rule, to be given out to contract, the principle of direct employment being applied, generally speaking, only to the work of maintenance. The main drainage works of Manchester are executed by contractors; while in Liverpool all work of an extensive character is done by contract under the supervision of the Surveyor, and in Glasgow a similar practice is in force. Birmingham carries furthest the principle of direct employment. The following reply from the London and South-Western Railway Company may be taken as the type of the answers from all the railway companies: "The general practice of the company is to execute all works by contracts, taking care to employ only firms of experience and ability."

The examination of Mr. E. White was resumed by Dr. Longstaff, who elicited details with regard to the opposition of the witness and some other members of the Committee to certain jobs being undertaken. He advised that the Committee having lost its manager and being in a disorganised state, a proposed orphan asylum should not be undertaken, because, under the circumstances, it was sure to result in a loss. Attention had been frequently called to defective woodwork at Westview cottages. On examination he found the doors coming away from their hinges through the absence of the blockings which were necessary to enable the 2 in. screws used in the jamb linings (rebated 1½ in.) to bite effectively. Only the plain part of the screws was in the wood. When asked why he had neglected to put in proper blockings, the manager answered that no blockings were shown in the drawings. The witness said he had never seen such work. Blockings were never shown in drawings. It was the business of all artisans to know when they were required to be used. With regard to defective plumbers' work, the witness said he had seen "the museum." He called attention to the D-traps which, though now disused, were considered proper ten years ago. They were very good, but they had, of course, not the nice finish of new work. With regard to soil-pipes, it would have been considered sufficient a few years ago to put the end of one pipe into the head of another and finish off the joints with red lead. It was not bad work for the time, though it might seem so now when there had been a great advance in sanitary work. He was much opposed to open tendering. Some firms would not tender for jobs in competitions thrown open to all, because it encouraged a kind of dishonesty in the less scrupulous contractor. It had been stated by Mr. Burns that a ring had been formed to prevent contractors from tendering, but he had no knowledge of such a ring. Builders of the better class refused to tender under the conditions imposed, and the Committee was compelled either to go to builders of a lower type or to do the work themselves.

In reply to Mr. Beachcroft the witness justified the use of the phrase "boss of the Committee" he had applied to Mr. Burns. He had refused to take the position of chairman of the Committee when it was offered, because he was dissatisfied with the way in which they were carrying out the works. He felt that great disasters were ahead, and he considered it better to be in opposition. As vice-chairman he was never consulted by the chairman, and had no more share in the business of the Committee than an ordinary member. There was a general antagonism between the two parties on the Committee, the circumstances of one of the numerous disagreements being detailed by the witness. He had repeatedly, he added, asked the Council not to undertake more work because it had its hands already full. In another dispute which led to the decision to make no

difference between union and non-union labour his opponents had predicted a revolution—a general turn out of the workmen—but the only revolution had been a peaceful one, for they had never had any trouble since.

In reply to further questions, Mr. White gave explanations in great detail regarding his investigations of monstrous overcharges in the cases of Manchester square and Westminster Fire Brigade stations. He had made a calculation which showed that on jobs completed last year, but not yet reported, there would be a loss of 20,000l. Exact figures were given with regard to each work in order of date, and the grounds of the assumption as to the amount of the loss were fully stated. Mr. Beachcroft: Are you satisfied that nothing further will be discovered in the nature of "bogus entries?"—Well, I have received a letter from a former employee of the Department who holds a different opinion, and who offers to give evidence.—The letter, signed W. B. Fullwood, now Engineer to the City of London Lunatic Asylum, was read. The writer offered to point out where the first false entries were to be found and indicated the existence of a duplicate set of books. Only one set had been seen by the Comptroller.

In reply to Dr. Collins, the witness described the Works Committee as "the most imperfect piece of machinery that could be devised for carrying on a large business." The examination of Mr. White was not concluded when the Committee adjourned to Wednesday, February 3.*

Correspondence.

To the Editor of THE BUILDER.

LONDON WATER SUPPLY.

SIR,—As a matter of public interest we have thought it our duty to call attention to the present action of some of the London Water Companies in serving notices on owners of houses to take out their three gallons flushing cisterns, and to substitute two gallons cisterns.

Although the Water Companies' Regulations only permit a two gallons flush, the Regulation has not been hitherto strictly enforced, at any rate, not in the better class of houses.

As experienced sanitarians, we have been in the habit of recommending three gallons flushing cisterns, being satisfied that a two gallons flush is not sufficient to clear the closet trap and drain however perfect their construction, and it is also well known to us that most of the so-called two gallons flushing cisterns do not discharge more than a gallon and a half.

We consider that such a retrograde movement should not be allowed to pass unchallenged, as it is a serious menace to the health of the metropolis, and we, therefore, take this means of making known our views on this important point.

There are other matters in which sanitary engineers are at variance with the Water Companies, especially in the district served by the New River Company, such as the provision of automatic flushers for urinals and drains in clubs, banks, &c., where their use is, from a sanitary point of view, of paramount importance.

It is, therefore, quite time that the public should be impressed with the absolute necessity of placing the water supply of the metropolis in the hands of a body of men who will formulate regulations more in consonance with the advance of sanitary science rather than perpetuate the antiquated powers at present vested in the Water Companies.

It is hardly necessary to say that, in making this public statement, we are exclusively actuated by a desire to see the health of London advanced.

HENRY CARTER, C.E.,
The Sanitary Engineering Co.,
65, Victoria-street, Westminster.
EDWARD TIDMAN, C.E., F.S.I.
The London and Suburban Sanitary
Survey Association.
34, Victoria-street, Westminster.
G. MAXWELL LAWFORD,
Assoc. M.Inst.C.E.
13, Victoria-street, S.W.
BANNER SANITATION CO.,
Manager, A. E. Hubert, M.S.E.
24, Craven-street, Strand, W.C.
February 6, 1897.

"EXPERT EVIDENCE."

SIR,—Will you please allow me to correct the very inaccurate statement of your correspondent,

* We are again compelled to hold over the remainder of our report of this Inquiry.

Mr. Harvey Dyball, in this week's issue of your journal?

Being the "fellow" alluded to, I beg leave to inform Mr. Dyball that I can prove my evidence to be correct from scientific data.

If he would take the trouble to test my statement, he may be wiser after his experiment than he is at present.

His whole letter is a garbled statement of my evidence, and does not contain one single fact.
February 5, 1897. T. L. FEARON.

The Student's Column.

SPECIFICATIONS.—VII.

CARPENTER.—(continued.)

Quarter Partitions.—Frame the quarter partitions on first floor with head sills and braces, 4½ in. by 3 in.; posts, 4½ in. by 4 in.; quarters and puncheons, 4½ in. by 2½ in.

The trussed partition over drawing-room to be framed with queen post truss as sketch (give sketch in margin showing in single line the timbers forming the truss), with tie beam 7 in. by 4½ in., and the remaining timbers shown in sketch, 4½ in. by 4 in. Put 1½ in. by ½ in. wrought iron straps 30 in. long to feet and 24 in. long to heads of queen posts, with gibs and collars, and 2 in. bolts 14 in. long, with head, nut and washer to feet of principals, fixed solid through tie beam.

Ceiling Joists.—Put 4½ in. by 2 in. ceiling joists over bedrooms on first floor.

Trap Doors.—Trim for trap doors where indicated on plans; one over bedroom corridor 2 ft. 6 in. by 2 ft., and one on roof 2 ft. 9 in. by 2 ft. 3 in.

Cupola roof.—Construct the octagonal roof of cupola over vestibule as shown in detail drawing, with principal ribs at angles 7 in. by 2½ in., intermediate ribs, 5½ in. by 2½ in. These ribs to be fitted up to curve with stuff of 2½ in. thickness, spiked on. The principal ribs to be bolted to curb 6 in. by 4½ in., with ½ in. wrought-iron bolts. Posts of lantern to be 6 in. by 4½ in. wrought and worked to sunk faces. Head and braces 4½ in. by 4½ in. Rafters 4½ in. by 2 in. Finial out of 4½ in. by 4½ in. turned and moulded, and with turned ring out of 2 in. cross-tongued, and fitted to finial. Head to be scarfed at angles, and bolted to posts with 8 in. coach screws. Balusters to be out of 2½ in. by 2½ in., turned and moulded, and spandrels out of 2½ in. wrought, cross-tongued shaped, and moulded on lower edge and framed to posts and heads with oak dowels to balusters. Sashes to lantern to be 1½ in. ovolo moulded fixed sashes, with shaped heads. Ceiling joists under cupola to be 4½ in. by 2 in.; plates, 4½ in. by 3 in. Put 1½ in. wrought and cross-tongued apron lining with moulded condensation gutter out of 4½ in. by 2 in. The moulded cornice above sashes of lantern to be out of 7 in. by 1½ in., bracketed, and screwed to framing.

Dormers.—The dormers on main roof to be formed with front of 4½ in. by 4½ in. wrought, rebated, and twice moulded posts, 4½ in. by 4 in. wrought, rebated, and moulded head, 6 in. by 4 in. oak sunk, weathered, rebated, and throated sill. These dormers to have rafters ¾ in. by 2 in., plates 3 in. by 3 in., ceiling joists ¾ in. by 2 in., ridges 5½ in. by 2 in., hips and valleys 7 in. by 2 in., cheeks to be framed with studs 3 in. by 2 in. The roof and cheeks of dormers to be covered with inch rough boarding and felt, as described according to the plan adopted for main roof, see p. 129 ante) and to have deal moulded cornice out of 4½ in. by 2 in. nitred at angles, and screwed to framing. The casements to be 2 in. ovolo moulded with sash-bars 1½ in. wide, hung with 3 in. wrought-iron butts, to open outwards, and to have 12 in. japanned iron casement stay-bar with stub-plates and japanned iron cock-spur fastening. Edges of casement and sides of frame to be throated to form water-stop. Bottom rail of casement to be splayed, rebated, and throated. Finish inside with 1½ in. by 3 in. moulded architrave, and 1½ in. rounded window board 6 in. wide, tongued to oak sill. Window back to be formed with 3½ in. by 2 in. ashlar for plastering.

Verandah.—Construct the verandah as shown on detail drawing, with all visible and exposed woodwork of carefully-selected Riga fir of "best middling" quality, wrought with a clean finished surface. Posts to be 5 in. by 5 in., with 4 in. by 1½ in. moulding planted on, and ¾ in. by 7 in. chamfered plinth. Heads to be 5 in. by 4 in., and the curved filling pieces to be 2 in. thick, cross-tongued, cut to shape, and moulded on edge. The posts to have 5 lbs. lead sealings and

dowels of inch wrought-iron barrel, 4 in. long, mortised into posts and stone bases. The roof over verandah to be constructed with 4½ in. by 2 in. rafters, 1½ in. pitching piece, 5½ in. by 3 in. hips, and to be covered with 1½ in. by 1 in. tiling, set out to ¾ in. gauge for tilting. The eaves to have spruoked pieces out of 18 in. by 3 in., and feet of rafters to be cut to shape, as shown in detail.

Fencing and Gates.—Put at back of site open pale fencing, 4 ft. 6 in. high from ground, with oak posts 9 ft. apart, one pair of fir aris rails out of 3½ in. by 3½ in. and 3 in. by 1 in. sawn deal pales, 2½ in. apart, with pointed ends, and stand 2 in. clear of ground at bottom. The oak posts to be cut out of trees not less than 9 in. diameter, the parts below ground to be left full size and charred, and every third post to be set in concrete block at least 6 in. wider each side than heel of post. The remaining posts to be well rammed. The fencing and posts to be twice tarred with Stockholm tar at completion.

Put at sides of site oak pale fencing 5 ft. 6 in. high, with 6 in. by 4 in. posts, two aris rails out of 4½ in. by 4½ in. and gravel board 9 in. by 1½ in., filled in with cleft oak pales lapped and nailed to rails. The feet of posts to be well tarred in gas tar before fixing.

(N.B.—Alternative treatment of feet of posts is specified in this and preceding clause for the sake of example. With oak posts the first method is generally preferable.)

Put to openings in . . . 2½ in. framed, ledged, and braced oak dwarf open gates with cut and moulded horns to stiles put together with white lead, and pinned with oak trenails. The gates to be hung with a pair of purpose made wrought iron strap hinges 24 in. long, with ornamental heads to detail to 5 in. by 5 in. wrought and rebated posts with turned and moulded finials out of 6 in. by 6 in. and 15 in. long dowelled to posts. Each gate to have strong wrought iron purpose made gate latch to detail.

Summer House.—Construct the rustic summer-house as shown on drawings with oak sill, 6 in. by 4 in. laid on 6 in. bed of cement concrete, sides constructed of larch saplings, average 3 in. diameter, halved where shown on drawings to cross each other, put together in white lead, and pinned with oak trenails. The roof to have 4½ in. by 2 in. rafters, 4½ in. by 2 in. collars dove-tailed and spiked to rafters, 9 in. by 2 in. ridge and hips, and 4 in. by 3 in. plate. Under side of rafters and collars to be lined with inch matched and V-jointed boarding in half batten widths. The roof to be covered with thatching of oaten straw, 18 in. thick, properly tied and secured. Put around sides of summer-house, internally, 1½ in. elm seat with 2 in. shaped elm brackets and inch elm skirting board around. Provide for flooring lattice grating of 1½ in. by 1 in. teak battens, halved and pinned with 1½ in. meshes, and formed in sections about 6 ft. superficial each, as shown on plan, and to have framed and curved teak beams 1½ in. thick under edges of each section.

There are, of course, many other structures which come within the carpenter's province in special cases which must be dealt with separately, but the specimens already given should serve as a sufficient guide to the student.

OBITUARY.

MR. S. D. BUTTON.—Stephen Decatur Button, perhaps the oldest practising architect in the United States, has just passed away in his eighty-fourth year. Born in Preston, Connecticut, during the exciting times of a war with England, and at a moment when the naval exploits of Commander Stephen Decatur proved victorious over the English, the infant son of Roswell Button (then serving with his regiment of Militia as one of the defenders of the Port of New London) was named after the hero of the hour. Passing his early boyhood on his father's farm, he was apprenticed at sixteen to learn carpentry with his uncle, a prominent builder in those days; here he thoroughly acquainted himself with practical building construction, learned geometry, and industriously studied the "five orders." At the age of twenty-one he went to New York, and became assistant to George Purvis, a Scotchman from Edinburgh, who had been a pupil with Cubitt Bros. of London, and one of the four or five qualified architects at that time settled in the United States. The style of design most in vogue with them was that which was being mainly upheld in England by Sir William Chambers and his pupils. In America at this period it was quite customary for the architect to design and to undertake the contract for building his work, therefore upon leaving Mr. Purvis, Mr. Button in this way planned and erected many private houses, churches, and other public buildings in the States of Pennsylvania, New Jersey, Florida, and Georgia. When about the age of thirty-

one he won in competition the State House at Montgomery, Alabama, and spent two years in superintending its erection, returning north in 1838 to Philadelphia, to settle there and practise his profession as an architect. In that city he designed many of its most important business buildings. Railroad offices, ferry-houses, markets, banks, insurance buildings, theatres, museums, churches, office buildings, and many fine residences, also large hotels at several fashionable seaside resorts, besides county asylums, city halls, churches, schools, and residences in various towns and cities of the adjoining States, Pennsylvania, and New Jersey. During all this busy life, and notwithstanding the lack—natural in a comparatively young, unsettled country—of public appreciation for the art of architecture, Mr. Button laboured continuously, with a genuine enthusiastic love for his profession, above all sordid considerations, and though his design was more influenced by the Italian Renaissance than by the Gothic styles, still his church buildings displayed good, simple effects gained by fine proportion without over-elaboration of detail. Enthusiastic himself, he was the source of enthusiasm in others; his numerous pupils and assistants, who in the course of fifty years have done service with him, are now widely spread through the prominent cities of the States, all spontaneously testify to the kindly, helpful spirit invariably manifested towards them as students, and bear witness to a character in their master singularly generous, cheerful, and inspiring. Not a few mechanics and craftsmen owe their successful, advanced positions to his guidance, encouragement, and even substantial assistance, freely bestowed to influence their efforts in their younger days. Mr. Button, on entering upon his eightieth year, with his courteous manner, his genial sympathies, and his youthfulness of spirit preserved up to date, elicited from his professional brethren in Philadelphia, and from pupils in other cities, a mark of honour and esteem in the form of an elegantly illuminated address on vellum, as follows: "Presented to Stephen Decatur Button, June 8, 1892, by hrother architects, desiring to congratulate him on entering the eightieth year of his age, as an expression of their respect for an honourable career extending over half a century, and remarkable for many important public works, executed with integrity before clients and fellow-citizens, joined with an unassuming, courteous bearing, a self-abnegation combined with generous helpfulness, and an ever ready counsel for his younger associates, to whom he has endeared himself as a model of right-minded and faithful dealing." Mr. Button was an industrious student of geology, and his large collection contained many valuable specimens. He possessed a library of fine architectural works, which he some time ago presented to the Philadelphia Chapter of Architects, of which society he was the oldest member. He leaves a son, William G. Button, a civil engineer, and a daughter, Maria Button, an artist of considerable ability.

MR. JOHN FAULKNER.—Mr. John Faulkner died in his seventy-fourth year on the 7th inst. at his residence in Strangeways, Manchester. He had been connected with electric science for upwards of sixty years. He was one of the first to introduce a perfect system of conductors for the protection of buildings from lightning. His "electric kite" was applied in early days to high steeples and tall chimneys. One of his earliest applications of electricity was made in connexion with signals and bells for coal mines. In 1875 he invented improved electric magnetic telegraph sounders and bells. One of these sounders was adopted by Professor Bell in his earliest telephonic experiments and was first exhibited at the Centennial Exhibition at Philadelphia in 1876.—*Manchester Guardian*.

GENERAL BUILDING NEWS.

METHODIST CHAPEL AND SCHOOL, ARMLEY, YORKSHIRE.—Memorial stones were laid recently of a new Methodist chapel and school at Armley. The cost of the projected buildings, including land, is estimated at £377. Mr. W. S. Braitwaite is the architect, and Mr. Walter Lolley is carrying out the brick and stonemasonry work. The chapel will have a tower at the north-west corner, and is intended to accommodate 410 persons. A school 52 ft. by 28 ft., with four class-rooms, preaching-room, minister's vestry, and caretaker's house, is to be added. The buildings will be of brick with stone dressings.

INFECTIOUS HOSPITAL, KEIGHLEY.—The infectious diseases ward block containing the laundry machinery and disinfecting apparatus, a mortuary, and a porter's lodge. The work of laying out the grounds is in progress, and there yet remains the building of the typhoid fever block. The buildings have been erected from the plans of Messrs. J. Judson & Moore, architects, of Keighley, and Mr. R. Armistead, of Bingley, has acted as the surveyor to the Hospital Board.

MOUNT FLORIDA SCHOOL, GLASGOW.—This school is being erected for the Catholic School Board, and it will accommodate 1,200 scholars when finished. There are cookery and piano rooms in addition to all the others, with a janitor's house in the basement. The school is Classic in design, and is two to three stories in height. The architect is Mr. Barclay.

CHURCH SCHOOLS, LEWES, SUSSEX.—New Church schools at the Pells, Lewes, were opened recently. There are two blocks of buildings, one block being the boys' and girls' schools, which are under one roof, while the other is for the infants. The entrance to both schools is by stone porches, and immediately inside of the porches are provided cloakrooms. The accommodation for the girls comprises a room about 43 ft. long by 20 ft. wide, and also a class-room. The boys' school is divided from the girls' school by a glass-panel door, and is of the same dimensions as the girls' school. It has also a class-room. There is accommodation for about 100 boys and 100 girls. The infants' school is on the south-west side of the main entrance, and is about 63 ft. by 22 ft., with accommodation for 210 children. There are two class-rooms leading from the main room. The architect was Mr. R. Creed, of London; Messrs. Stewart & Sons, of Wallington, were the builders.

PRIMITIVE METHODIST CHAPEL, NEW BROMPTON.—The trustees of the P. M. Chapel, New Brompton, Kent, have approved of sketch plans for a new chapel and Sunday schools to be built upon a site where the existing iron church stands (Gillingham-road), and have instructed their architect (Mr. E. J. Hammond, New Brompton) to proceed with plans and specification forthwith.

ADDITIONS TO ASSAY OFFICE, BIRMINGHAM.—Additions are being made to the Birmingham Assay Office. Messrs. Ewen and J. Alfred Harper are the architects. Mr. Breyden is the builder, and the floors are fireproofed on the Laxew system.

BUILDING IN ABERDEEN.—Plans of new buildings representing a total value of about 9,000l. were submitted to the Plans Committee of the Aberdeen Town Council at its meeting on the 29th ult. One of the plans was that of a school to be erected in St. Swilkin-street, in connexion with the Convent of the Sacred Heart. The cost of the school will be about 1,000l.

CHURCH INSTITUTE, OTTERY ST. MARY, DEVONSHIRE.—The opening of the new hall of the Ottery St. Mary Church Institute took place recently. The hall is 60 ft. by 30 ft., rising to a height of about 26 ft. The contract was entrusted to Mr. F. Williams, and the architect was Mr. E. G. Warren, of Exeter.

BUILDING IN BLACKPOOL.—At the meeting of the Blackpool Building Plans Committee, on the 29th ult., 78 plans were gone through, 43 being approved and 35 disapproved.

CONSTITUTIONAL CLUB, OVENDON, YORKSHIRE.—The Halifax Corporation have passed plans prepared by Mr. J. F. Walsh, architect, Halifax, for a new Constitutional Club, which it is proposed to erect on a plot of land on Park Lodge Estate, Ovendon. Advantage is taken of the natural fall of the ground to form a lower floor level to Campbell-street. This space will be occupied by a caretaker's house, a public entrance to the club rooms, supper room, smoking kitchen, servants' lodges and gents' men's cloak rooms and retiring rooms, heating apparatus, and bath room for the use of the members. The assembly hall is approached by a flight of steps from the lower level, with an extra entrance on the north side of the room, and also from the club premises. The assembly hall is 36 ft. by 68 ft., and will provide sitting accommodation for over 500 people. It will be fitted with a spring dancing floor, a platform, and the usual retiring rooms. The supper room is 25 ft. by 36 ft., and will provide accommodation for upwards of 100 people. The club entrance is in the centre of the site in Whealey-lane. The club premises proper consist of a reading room, 30 ft. by 20 ft., a committee room, and a bar 12 ft. square, on the ground floor. On the first floor there will be a billiard room, a game room, with lavatories and conveniences. There will be a hall and vestibule at the members' entrance.

DRILL HALL, GLASGOW.—The new drill hall and headquarters of the 1st V.B. Highland Light Infantry were opened on the 22nd ult. by General Chapman, commanding the Scottish District. The halls are situated at the corner of Hill-street and Rose-street. They have been built from designs prepared by Mr. Horatio K. Bromhead. The most prominent feature of the structure is the corner tower, in which is provided a house for the caretaker. The main entrance to the halls, which is from Hill-street, leads by an inclined plane of easy gradient to the drill hall situated on the upper floor. The hall measures 100 ft. by 120 ft. long. The walls are pierced with loopholes, and light is supplied from the roof. The roof is constructed of steel. On the ground floor there is a concert hall measuring 68 ft. by 40 ft., with retiring rooms adjoining. In the western section of the building, entered from Rose-street, are club-rooms, gymnasium, and reading-room. The east front is devoted to the officers' quarters, which have a separate entrance from Hill-street. Accommodation is also provided on this floor for the sergeants' mess, staff-sergeants' room, armoury, and quartermaster's office, and in the

basement are the quartermaster's store, &c., as well as a range for Morris tube practice.—*Glasgow Herald*.

REPAIR OF METHODIST CHURCH, BELFAST.—Falls road Methodist Church, Belfast, has just been reopened after undergoing repair. The builders are Messrs J. Lowry & Sons, and the work has been carried out under the superintendence and from the plans of Messrs. J. J. Phillips & Son.

BANK, COCKERMOUTH, CUMBERLAND.—The directors of the Carlisle and Cumberland Bank, Limited, propose erecting a new bank in Main-street, Cocker-mouth, opposite the Globe Hotel, and have accepted tenders for the erection of the new premises. Mr. George Dale Oliver, Carlisle, is the architect.

VESTRY, TYLORSTOWN.—The memorial-stones of a new vestry at Tylorstown, in connexion with Hermon Baptist Church, Pontygnait, were laid recently. The vestry, which cost 1,100l., has been erected by Messrs. E. Davis & Sons, Treherbert. The architects were Messrs. Griffiths & Jones, Tonypandy.

SANITARY AND ENGINEERING NEWS.

SEWERAGE SCHEME, NEWPORT PAGNELL.—The Newport Pagnell Rural District Council have instructed Mr. D. Balfour, of Newcastle-on-Tyne, to prepare a scheme of main sewerage and sewage disposal for the town of Newport Pagnell, Buckinghamshire, to obviate the pollution of the rivers Ouzel and Ouse.

WATER SUPPLY, DOUGLAS.—A few months ago Mr. Hill, water engineer, was instructed to report on the water supply of Douglas, with a view to provide means for an extended supply, if, in his opinion, it should be found necessary. Mr. Hill's report has been received. He lays it down that, in view of the increasing population of the town, an increased water supply is absolutely necessary. He suggests two alternate schemes for the purpose of extending the supply. One is the construction of a reservoir at the lower end of Ballacottier stream, Onchan. He estimates that the reservoir could be constructed at this place to hold 105,000,000 gallons for 47,000l. to 48,000l. The other scheme is to construct a reservoir in West Baldwin valley. That site is admirably adapted for a reservoir, with a broad base, and he estimates that one could be constructed here to hold 300,000,000 gallons at a cost of about 49,500l., or only 1,500l. more than the cost of the suggested reservoir at Ballacottier, while its capacity would be nearly three times greater. The engineering difficulties in connexion with West Baldwin scheme are much less than those of the Ballacottier scheme, inasmuch as the retaining embankment at West Baldwin would not be more than quarter the length of that which would be required at Ballacottier. The great difficulty with regard to the West Baldwin scheme arises from the enormous pressure which would result from the height of the reservoir above the town, and the engineer suggests, as a means for getting over this difficulty, that a main should be laid over West Baldwin, and join the existing main at Parkfield, the residence of Mr. Hercin, the height of which above the town is only 200 to 300 ft. *Liverpool Mercury*.

WYLES'S PIPE-JOINT.—This is a patented method of jointing iron, earthenware, and other pipes, but as the only novelty consists in tapering the spigots of the pipes, and in making the sockets slightly conical, we fail to see that it will prove of much service. In the case of pipes with thin walls, the taper could only be of the slightest, and in any case, the advantage gained by tapering the spigot is not manifest.

ELECTRIC LIGHTING NEWS.

ELECTRIC LIGHTING AT WALLASEY.—The supply of electric light for the district of Wallasey was inaugurated on the 29th ult., when the electrical station in Seaview-road, Liscard, was formally opened. The new electric light works adjoin the S. Z. de Ferranti, Limited, pumping station, and the District Council have economised the mechanical power in their possession, so that the existing machinery can be utilised for providing the supply of electricity to the district. The scheme was suggested by Mr. J. H. Crowther, the engineer and manager of the council's gas works. The contractors for the work at the new station were—for engines, alternators, and switchboard, Messrs. S. Z. de Ferranti, Limited, Hallowood and London; for cables, Messrs. the British Insulated Wire Company, Limited, Prescott; and for buildings, Mr. John Gourley, Liscard and Liverpool.

PROPOSED ELECTRIC LIGHTING OF PUBLIC STREETS IN LEEDS.—The Lamp Committee of the Leeds Corporation are contemplating lighting the principal thoroughfares in the central parts of the city by electricity. They propose to place arc lamps on the poles that are to be used to support the overhead wires for the electric system of tramways. It has also been suggested that the requisite electrical current for lighting should be obtained from the central generating station at Crown Point.

ELECTRICITY AT SOMERSET HOUSE.—Somerset House, it is stated, is to be lighted throughout by electricity. A scheme of installation, involving a total expenditure of 8,000l., has been sanctioned by

the Treasury; and the Estimates of 1897-8 will provide for a payment on account of 2,500, for that portion of the work scheduled for completion by the end of the next financial year.

FOREIGN.

FRANCE.—The President formally opened last Sunday the new Rue Réaumur, which was decreed as of "public utility" as long ago as 1864, but the completion of which was not decided on till 1892. The work has been carried out by M. Henri Marchal, an engineer of the "Ponts et Chaussées," who is specially attached to the municipal service of Paris. The jury in the Ecole des Beaux Arts competition of the First Class, for which the subject was "a suite of reception-rooms," has awarded First Medals to M. Wolf, pupil of M. Redon; M. Seré's pupil of M. Kaulin, and to M. Paul Guadet, pupil of M. Guadet and Paulin. Among 700 projects in connexion with the 1000 Exhibition, brought forward by private speculators, the Committee has licensed eighty-four, most of which are panoramas of one kind or another: one is for a sliding railway (iron), and one for a moveable platform or sidewalk. The Louvre has just acquired a Christ, carved in wood, by Alonso Cano, and one of his finest productions. A committee has been formed to erect a monument at Paris to the poet Alfred de Vigny. The crematorium at Père Lachaise is at last to be completed, as well as a columbarium or repository for urns, in connexion with it. M. Formigé is the architect. A competition has been opened by the municipality of Brunoy (Seine-et-Oise) for a new Hotel-de-Ville. Sixty-one designs have been sent in, and will be on view till the 20th. M. Rioulet, architect, of Grenoble, has been elected president of the Société Nationale des Architectes de Dauphiné. The National Fine Arts Exhibition at Bourges is to open on May 15, to remain open for one month. The thirteenth exhibition of the "Union Artistique" of Toulouse will be open from February 25 to March 5; and the tenth annual exhibition of the Fine-Art Society of Lyons will be open from March 4 to May 2. The "Union Artistique du Nord" will open, at Lille, from April 1 to July 1, an exhibition of industries and arts applied to the habitation.

GERMANY.—Messrs. Kayser & von Grossheim have received the first premium in the competition which has been held at Berlin for a new Royal Academy of Arts and an Academy of Music. The value of this premium is 4000. A premium of equal value, and bracketed with the first, has been given to Herr Adolf Hartung, of Berlin. The next two premiums were given to Baurath Eggart and Schwechten respectively, and there were also a number of minor premiums. There were thirty-two candidates.

MISCELLANEOUS.

LEEDS SLUITS.—The sub-committee of the Leeds Corporation, which was specially appointed a short time ago for the purpose of making recommendations as to the best manner in which to deal with the property in the "insanitary areas" of the city, met at the Leeds Town Hall on the 1st inst., and discussed details connected with the scheme for dealing with the property situated in what is known as the York-street area. According to the Housing of the Working Classes Act, the Corporation are bound to provide dwellings for the inhabitants—or, at any rate, a certain proportion—whom they displace by the demolition of the insanitary dwellings. In the present case the Corporation are compelled to provide housing accommodation for 2,000 persons. The Act does not stipulate that this provision shall be necessarily made within the area that is being dealt with but it must be within a reasonable and convenient distance. Many members of the committee favoured the idea of having a number of the tenement houses that will be required erected on the Ivy House Estate, a site belonging to the Corporation, adjoining the East End Park, and a distance of about three-quarters of a mile from the present terminus of the York-road tramway. It was pointed out that the Highways Committee had already decided to extend the tramways in the direction of the park, and with such tramway facilities, it was thought the Local Government Board would not raise any objection to the proposal. Whether that be so or not, the sub-committee have resolved to obtain the opinion of the Local Government Board on the subject. As to dealing with the property in the condemned area, the committee appointed two sectional committees for negotiating with the property owners affected by the scheme, together with valuers. A third sectional committee was formed to consider how best to deal with the licensed property in the area. The Engineer to the Committee (Mr. Carter) was instructed to visit Barrow and Manchester, to inspect the tenement dwellings that have been erected by those Corporations, and to report thereon to the next meeting of the sub-committee.—*Leeds Mercury.*

CASELS' WASH-BASIN RANGE.—This is a water-saving lavatory range for schools, reformatories, &c. It consists of a trough, in the bottom of which are formed a number of small basins just large enough to admit of emersing the hands freely. A copper pipe, passing below, is connected to the

bottom of each basin by a brass inlet. When, at washing time, the attendant turns on the water supply, it fills each basin and overflows all round the rim into the trough, whence it is discharged by a grated outlet to the drain. The basins being so small, the water in them is quickly changed by the supply from the bottom, while the constant overflow at the top of the basin carries off at once all the soapy and dirty water. One basin in a range can be fitted with a separate supply valve for occasional use by individuals. As long as the general use of the lavatory is confined to stated periods, under the management of an attendant, this seems to be a good system for such places as reformatories and lower-class schools and factories; but it presupposes attendant having control of the water-supply.

MASTER BUILDERS' ASSOCIATION DINNER, SHREWSBURY.—The fifth annual dinner in connexion with the Shrewsbury and District Master Builders' Association was held at the Lion Hotel recently. Mr. H. Farmer presided, in the absence of the President, Mr. K. Price, and Messrs. Gethin and T. Morris occupied the vice-chairs. After the usual toasts had been honoured, Mr. T. S. Harris proposed the toast of the town and trade of Shrewsbury. Mr. J. A. Lea responded. Mr. Morris proposed the health of the President and Vice-Presidents, and said that there was no dearth of trade in the building trade, which brought more business into the town than anything else. Mr. Farmer replied. Other toasts followed.

SURVEYORSHIP APPOINTMENT.—A meeting of the Batley Corporation was held at the Town Hall on the 4th inst., the Mayor (Ald. Nettleton) presiding, when a resolution of the General Works Committee, to appoint Mr. Oscar J. Kirby as Borough Surveyor, at a salary of 2500 per annum, subject to his resigning the office of Waterworks Manager, was confirmed after a long discussion.

MASTER BUILDERS' ASSOCIATION, TUNBRIDGE WELLS.—A meeting of the builders of Tunbridge Wells, Southborough, and district, convened by circular, was recently held in the Committee Room of the Town Hall, Tunbridge Wells, when there was a large attendance, presided over by Mr. C. M. Strange. It is stated that it was unanimously decided to form a Master Builders' Association, and some twenty-eight firms were enrolled. Mr. Mansfield (Messrs. G. Mansfield & Son) was elected President; Mr. C. J. Gallard, Vice-President; Mr. J. Jones (Messrs. Soper & Jones), Hon. Treasurer; and Mr. E. J. Strange (Messrs. Strange & Sons), Hon. Secretary. The committee was constituted, as follows:—Messrs. G. Mansfield, W. E. Judd, W. B. Jury, T. Hudson, and C. M. Strange, and they were deputed to frame a code of rules for the Association.

BRISTOL MASTER BUILDERS' ASSOCIATION DINNER.—On the 2nd inst. the annual dinner of the Bristol Master Builders' Association was held at the Royal Hotel, College-green, under the presidency of Mr. C. A. Hayes. The loyal toast having been proposed by the President, Mr. G. Huntley proposed "The Mayor, High Sheriff, and Corporation of Bristol." He regretted the loss which the local Association had sustained in the last year by the death of Mr. W. H. Cowlin, one of their members who was in the Municipal Council. They had known the Sanitary Committee do much of the work which used to be done by the builders, but he believed it would be for the benefit of the ratepayers if the work were done by contract. In putting the Sanitary Committee in competition with the builders, there should be no extraneous pressure put upon contractors that would not be put upon the Sanitary Committee, and all fair charges should be put down against the Sanitary Committee.—The High Sheriff (Mr. J. C. Godwin) responded. The High Sheriff also spoke to the toast. He said that he believed there was much of the work done by the Sanitary Committee which ought to be done by the master builders; but he did not sympathise with the demand that everything should be done by the builders. The Committee must make roads and drains and other matters in the interest of the public.—Mr. L. Walters gave "The Architects, Engineers, and Surveyors." Mr. Frank Wills responded. Mr. J. Holman (Vice-President of the Chamber of Commerce) proposed "The National Association of Master Builders." He saw that among the matters that was most essential for uniformity of contracts, and a question which came before them, and he was glad they attempted to bring it into their business. He had found arbitration very much quicker and far less costly than an appeal to the law courts. Mr. A. Krauss, in responding to the toast, said that during the last twelve months they had had few strikes in the building trade, and in Bristol none. The few differences that did arise there were speedily settled by their Conciliation Board. They all looked forward each year for less strikes and lock-outs. It gave him much pleasure to tell them that the next half-yearly meeting of the National Association of Master Builders of Great Britain would be held in Bristol. His Worship the Mayor had already placed at the disposal of the Association the Civil Courts for the business proceedings, and he trusted they would have a very successful meeting.—Mr. W. Church also acknowledged the toast. He said that the President of the National Association had spoken about the ruinous competition

that was going on between master builders, and cut-throat efforts for the job they would get. They could only come to some understanding between themselves to prevent that ruinous competition which was going on. The meeting would be of great advantage to them all.—Mr. E. G. Clarke proposed "The Bristol Master Builders' Association." The President (Mr. Hayes) returned thanks, and he said their Association to assist as far as possible in settling disputes in the best manner with the workmen. In the past year there had been three disputes in various trades, and they were settled amicably, which prevented no trouble. Mr. W. H. Brown proposed "The Kindred Associations." Mr. E. W. Wooster (President of the Bath Master Builders' Association) in acknowledging the toast, said the building trade had become flourishing of late years, and a good deal accomplished by their Associations. Mr. E. J. Mercer (Secretary to the Bath Master Builders' Association) responded, and adverted to the advantage of being federated with the National Association. The High Sheriff proposed the health of the President, and Mr. W. Church, the new Vice-President, was subsequently inducted to the vice-chair, and he acknowledged the honour done him. Mr. E. Cowlin proposed "The Builders' Merchants," and Mr. Arthur Lea responded.

PLYMOUTH, &c., MASTER BUILDERS' ASSOCIATION DINNER.—The President (Mr. R. G. Jenkin) presided at the annual banquet of the Plymouth Stonehouse, Devonport, and Neighbourhood Master Builders' Association, held at the Royal Hotel, Devonport, on the 3rd inst. The loyal and patriotic toasts having been delivered, "Our Municipalities" was given by the Chairman, who observed that they took a very keen interest in their municipalities, their movements, and their working, for they found what went on within the inner chambers affected them very much. He associated with the toast the name of Mr. A. B. Pilling, the new Town Clerk of Devonport. Mr. Sowerby gave the toast of "Success to the Master Builders' Association and the Building Trade." Mr. E. Pile replied on behalf of Devonport. Mr. H. Kerswilland Mr. Turpin also acknowledged the toast, and pointed out that it was only by combination and standing shoulder to shoulder, as the men did, that they would secure success. Mr. W. G. Wakeham, C.C., submitted "Trade and Commerce," and Mr. J. Cole and Mr. T. Dennis responded. Mr. N. Coles gave the health of "The President." The Association had been formed fifteen years, and this was the first occasion on which a President had been elected outside Plymouth. Referring to the labour difficulty looming in the distance, the speaker said they did not want any strike to take place in the Three Towns. If the building trade was stopped, almost every business suffered. With regard to the erection of working men's dwellings, he maintained that that matter should not be undertaken by public bodies, but builders, they had their living to get, and if public bodies took up building it was taking away the living of the builders. The houses built at Prince Rock would not pay 2 per cent. on the outlay. No one could turn out work so cheap as a contractor, and, as an illustration of this, he said that two jobs cost the Plymouth Corporation 2000 above the contract price (he Mr. Coles) sent in. He strongly advocated an arbitration clause in their future contracts. The President acknowledged the toast, and, referring to the labour dispute, said that in the negotiations that had so far proceeded, the men had behaved themselves in a very decorous and proper manner. They showed every sign of being wishful to compromise and meet the matter in such a way as to avoid a strike. But there were principles upon which they (the master builders) did not intend to deviate or give way. The toasts of "The Visitors" and "The Press" concluded the list.

CAPITAL AND LABOUR.

PETERBOROUGH CARPENTERS AND JOINERS.—There is an agitation among the carpenters and joiners of Peterborough for an advance in wages. The members of the trade consider they are entitled to an advance on the same grounds as those on which the bricklayers of the city obtained concessions last year. No strike is intended at present, but a petition will be made in a week, which in a few instances, it is stated, has already been granted by employers.

LABOURERS' WAGES, WOLVERHAMPTON.—At a meeting on Monday last week the members of the Wolverhampton Master Builders' Association agreed to concede an advance of 3d. per hour to labourers, to take effect on April 1 next.

LEGAL.

CONTRACTORS IN THE DIVISIONAL COURT.

THE case of Murdoch and Cameron v. the Mayor and Corporation of Bournemouth, came before Mr. Baron Pollock and Mr. Justice Bruce, sitting as a Divisional Court of Queen's Bench on the 27th ult., for judgment, it being an appeal from the decision of the Official Receiver, sitting at Bournemouth, in an action arising out of the alterations and enlargement of the old pier at Bournemouth. The facts of the case sufficiently appear from the judgment.

Mr. Baron Pollock said that the learned Referee decided principally in favour of the defendants in the action which was brought by the plaintiffs, who are a firm of contractors carrying on business at Glasgow, to recover a considerable sum of money, being the price of work and labour done under a contract to enlarge the old pier at Bournemouth. The contract contained certain clauses which were not initially found in contracts of such a nature. It was provided that the materials should be of the best quality, and if they became, during the term of maintenance defective, or damaged, so as to be imperfect in the terms of the contract, such portion should be forthwith remedied, and the work re-executed in an approved manner. The contract therefore provided for what was to happen during the term of maintenance. The contractors were also to guarantee the stability of the work and to maintain the works for twelve calendar months. The contractors had pleaded that damage had been done to the works by what was known as an "Act of God," but, said his lordship, although the winds and waves were unusually severe, these were nevertheless matters within the contract, and the learned Referee was right in negating this defence. The defendant denied that the works were properly done and that the materials were insufficient, and the learned Referee found that there was due to the plaintiffs from the defendants in respect of the work 1,666*l.* 18*s.*, but that there was due to the defendants from the plaintiffs upon the counterclaim 1,800*l.*, leaving a balance due to the defendants of 133*l.* 10*s.* His lordship came to the conclusion that the learned Referee's decision was right, and that his judgment ought to be affirmed.

Mr. Justice Bruce concurred. Their Lordships slightly varied the learned Referee's order as to costs. The plaintiffs, under the order, were given the costs of the claim, and the defendants the costs of the counter-claim; but their lordships now decided that as regarded paragraph 17 of the counterclaim there should be no costs on either side.

A stay of execution was granted for fourteen days, pending an appeal; but Mr. Baron Pollock remarked that he did not encourage the appeal, as he considered the case a very clear one. His lordship further said that the storm of wind had been, no doubt, responsible for a good deal of money, but the storm of law would probably be responsible for more.

PARTY WALL DISPUTE AT HOUNDS-DITCH.

The case of *Crux v. Bell* came before Mr. Justice Romer in the Chancery Division on the 22nd ult., it being a motion by the plaintiff to continue an *interim* injunction to restrain the defendant from pulling down or interfering with the party wall between Nos. 113 and 119, Houndsditch, until an award had been made under the London Building Act, and otherwise than in accordance with that award.

The defendant, who appeared in person, asked for an adjournment so as to enable him to instruct Counsel and his solicitor. He said that he had taken up the award and paid all the fees. The plaintiff had delayed him for months. The award was only made at three o'clock the previous afternoon, and at half-past three o'clock he took it up and paid the fees.

His Lordship: You only intend, I gather, now to proceed in accordance with the award.

The defendant replied that that was so, but the plaintiff had delayed him for months. The award was only made at three o'clock the previous afternoon, and at half-past three o'clock he took it up and paid the fees.

His Lordship: I will give you further time, but you must undertake not to deal with the wall, except in accordance with the award. Will you undertake until the trial of the action, or until judgment or further order, not to deal with the wall, except in accordance with the award?

The Defendant: Yes, my lord. His Lordship: Well then, I will make the costs of this application yours in the action.

The Defendant: Then we can simply proceed with the building in accordance with the award?

His Lordship: Yes. Mr. Terrell represented the plaintiff.

A MOOT POINT UNDER A LOCAL IMPROVEMENT ACT.

The case of the Mayor, &c., of West Hartlepool v. Robinson came before Mr. Justice Stirling in the Chancery Division, on the 30th ult., for reserved judgment, it being an application by the plaintiffs, who sought to establish and enforce against certain lands belonging to the defendant and abutting on two streets known as Murray-street and Sandringham-road, two charges for sums of 27*l.* 16*s.* 6*d.* and 32*l.* 3*s.* 4*d.* in respect of paving and sewerage the two streets. The charges were claimed under the provisions of the West Hartlepool Extension Act, 1870, the questions at issue turning upon the construction of that Act, which, however, is substantially in the same terms as the Public Health Act, 1875. The defendant, in the year 1878, was the

owner of the land in question, which formed part of the Lynfield Estate, which was, down to quite recently, occupied by him for residential purposes. The owners of the immediately adjoining land on the south were, in 1878, desirous of developing their property for building purposes, and applied to the plaintiffs' predecessors in title (the West Hartlepool Improvement Commissioners) to sanction a scheme for that purpose. They submitted a plan showing a proposed road 36 ft. wide, half on the land of the applicants and half on that of the defendant. The proposed scheme was sanctioned, and a road was made called the Sandringham-road, but in the first instance only 18 ft. wide, there being an agreement between the defendant and the Commissioners that he would thereafter contribute a sufficient quantity of land on the north to give a street 36 ft. wide. In January, 1890, the Corporation made an order for the paving and sewerage of the roads in question being 18 ft. wide, notice of which was served on the defendant and the other owners; but none of the owners executed any part of the works, and the Corporation proceeded to do them themselves. The Borough Surveyor apportioned the cost of the works, the above-mentioned amounts being charged against the defendant; and on his refusing to pay, the present summons was taken out. It appeared that the defendant had afterwards thrown the agreed portion of his land into the road, making it 36 ft. wide, and that he had done the necessary work of paving, &c., of that portion of the road; the claim in dispute being for the apportioned cost of making the 18 ft. of road which was not upon his land at all. The most material defence raised was that the order of the Corporation was inoperative, inasmuch as the defendant had no means of obeying it without committing a trespass by going upon land which did not belong to him.

His Lordship, in giving judgment for the plaintiffs, said that the statute had imposed on persons whose lands abutted on a street certain duties, for the discharge of which it was necessary that they should enter on the street, and those duties were imposed irrespective of the circumstance whether those persons were or were not the owners of the soil of the street. Acts done in discharge of those duties could not, in his Lordship's opinion, constitute a trespass.

Mr. Buckley, Q.C., and Mr. Druce appeared as counsel for the plaintiffs; and Mr. Graham Hastings, Q.C., and Mr. Strachan, Q.C., for the defendant.

LEEDS LIGHT AND AIR CASE:

ACTION BETWEEN BANKS.
The case of the London and Midland Bank v. the National Provincial Bank of England, Limited, was mentioned to Mr. Justice North in the Chancery Division on the 31st inst., it being a motion by the plaintiffs to restrain the defendants from building a new bank in Park-road, Leeds, opposite the plaintiffs' premises, so as to interfere with the plaintiffs' light and air.

Mr. Bryce, Q.C., for the defendants, said that his clients were anxious to complete their building by putting the roof on it. This would only necessitate going 4 ft. higher which could hardly injure the plaintiffs, and they (the defendants) would undertake to pull down whatever was ordered by his Lordship at the trial, if any pulling down were ordered.

Mr. Clode, for the plaintiffs, said that the defendants had given an undertaking over that day not to build any higher, and he should ask that that undertaking be continued until the motion was effective or until further order.

After some argument his lordship ordered the case to stand over till the 12th inst., the defendants in the meantime to continue the undertaking not to build any higher, the plaintiffs also giving an undertaking in damages in case the defendants should be proved to have suffered any.

Order accordingly.

MEETINGS.

FRIDAY, FEBRUARY 12.
Institution of Junior Engineers (Westminster Palace Hotel).—Paper on "The Construction of High-class Bridge and Girder Work," by Mr. J. A. Macpherson. 8 p.m.
Royal Institution.—Professor John Milne, F.R.S., on "Recent Advances in Seismology," 9 p.m.
Institution of Civil Engineers (Students' Meeting).—Mr. H. W. Baker on "Cooling Reservoirs for Condensing Engines." 8 p.m.

SATURDAY, FEBRUARY 13.
London and Provincial Builders' Foremen's Association.—Annual Dinner, Holborn Restaurant, 7 p.m.
Edinburgh Architectural Association.—Visit to Broughton School.

MONDAY, FEBRUARY 15.
Royal Institute of British Architects.—Mr. H. E. Milner on "The Garden in Relation to the House." 8 p.m.
Society of Arts (Cantor Lectures).—Mr. C. F. Cross, F.R.S., on "The Industrial Uses of Cellulose." 11 p.m.
Sanitary Institute (Lectures for Sanitary Officers).—Introductory lecture, on "Factory Legislation," by Dr. A. Wynter Blyth. 8 p.m.
Leeds and Yorkshire Architectural Society.—"An Architectural Student's Rambles between Wakefield, Doncaster, and Selby," by Mr. K. A. Easdale. Illustrated. 7.30 p.m.

Northern Architectural Association.—Mr. D. H. S. Cramage, M.A., F.S.A., on "A Medieval Abbey." 7.30 p.m.

TUESDAY, FEBRUARY 16.
Painters' Company.—Annual Dinner, Carpenters' Hall. 6.30 p.m.
Royal Victoria Hall, Waterloo-road.—Mr. P. Gaskell on "Some Old Pictures in the National Gallery." 8.30 p.m.
Institution of Junior Engineers (The Westminster Palace Hotel).—Lecture II. of Special Course of Six on "Dynamo Design, Construction and Working," by Mr. F. A. Nixon. 8 p.m.
Institution of Civil Engineers.—Paper to be further discussed:—"Cold Storage at the London and India Docks," by Mr. H. F. Donaldson. 8 p.m.

WEDNESDAY, FEBRUARY 17.
Society of Arts.—Mr. Everard R. Calthrop on "Light Railways." 8 p.m.
British Archaeological Association.—Miss Edith Bradley on "London Under the Monastic Order." 8 p.m.
St. Paul's Ecclesiastical Society.—Mr. W. H. St. John Hope, M.A., on "The Plan and Arrangement of a Christian Abbey." 7.30 p.m.
Liverpool Engineering Society.—Mr. E. W. Pierce on "Principles of the Law of Rating as affecting Engineering Works." 8 p.m.
Northern Architectural Association.—Mr. H. Barnes on "Architectural Epidemics." 7.30 p.m.
Edinburgh Architectural Association.—Mr. H. F. Kerr on "Elgin Cathedral." Illustrated. 8 p.m.
Edinburgh Architectural Society.—Paper by Mr. A. Muirhead. 8 p.m.

THURSDAY, FEBRUARY 18.
Society of Antiquaries.—(1) Rev. G. B. Savage on "Ancient Burial Customs." (2) Mr. Grazebrook on "Medieval Surnames and Their Various Spellings." 8.30 p.m.
Royal Institution.—Mr. J. W. Gregory, D.Sc., F.R.G.S., on "The Problems of Arctic Geology." II. 3 p.m.
Sanitary Institute (Lectures for Sanitary Officers).—Dr. H. Manley, M.A., on "Sanitary Law: English, Scotch, and Irish; General Enactments Public Health Act, 1875; Model By-laws, &c." 8 p.m.
Institution of Civil Engineers.—Students' visit to the Locomotive Works of the Great Eastern Railway Company, Stratford. (Train leaves Liverpool-street at 3.5 p.m.)
Devon and Exeter Architectural Society (Plymouth, &c., Branch).—Mr. G. H. Fellowes Pyne on "Screens, their Treatment and Symbolism." With lantern illustrations. 7.30 p.m.

FRIDAY, FEBRUARY 19.
Architectural Association.—Mr. W. H. Bidlake on "The Architect and the Public." 7.30 p.m.

SATURDAY, FEBRUARY 20.
Institution of Junior Engineers.—Visit to the Metropolitan Fire Brigade Headquarters, Southwark Bridge-road, S.E. 3 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

470.—**FIRE GRATES:** *J. D. Hannah and Another.*—In order more effectually to warm rooms by fire grates, inventor provides the back, and preferably also the sides, of grate with an air-chamber, of such shape that the fire in the grate rests against it so as to heat the contained air. At suitable position in such air-chamber one or more radiating pipes are fixed, to allow heated air to escape into room. The supply of air to chamber's means, well replenished through opening in lower part of chamber.

2,744.—**LOCKS OF WINDOW SASHES:** *H. G. Lazenby.*—Invention relates to improvements in the locks of sliding window sashes, more particularly to the kind adapted to be mortised into the pulley-styles of window frames, and to engage with the sashes by means of bolts which enter recesses in the style of the sashes. Instead of making the bolt of the lock to operate by means of a motion or protrusion from and reaction into the lock case, and accomplishing the locking of the sashes by means of a rotary motion in a plane parallel to the face of the pulley-style.

2,872.—**ADDERS, STEPS, TAPSELS, &c.:** *L. Seeger.*—In order to render ladders, &c., more convenient, rigid, and safe, inventor connects two or more lengths of steps near the ends by suitable hinges or bolts. One length of these steps he provides two semicircular metal rings, with indents at convenient angles to admit a bolt or spring catch, &c., and on the other length suitable staples or caps for these rings to pass through, having bolts or spring catches to engage in the indents of the rings.

2,979.—**GRATING FOR INTERCEPTING TRAPS:** *W. H. Reading.*—Invention consists in the adaptation of a spring impelled bolt placed in the recess in the frame part of trap, so as to automatically lock cover when drain is closed. Bolt is unlocked for opening cover by a key.

3,745.—**FLUSH-RULES, LEVELS AND CLINOMETERS:** *A. M. Phelps and Another.*—In order to obtain a means of determining the perpendiculars of a building or structural work, inventor constructs an instrument formed of a parallel strip of wood, &c., and cut a plummet line dependentially across its centre. In place of this line they attach a metallic plate having two projecting ends; to the centre of plate is pivoted a metallic pendulum, consisting of a long pointer extending upwards, and a short pendulum rod extending downwards, which is weighted so as to cause the centre of oscillation with the pointer, the ends preventing it oscillating too far either way.

4,110.—**CONES FOR WATER-CLOSERS:** *S. T. Baster.*—In order to water-closet "cones" have been made of sheet-rubber and canvas. In place of this inventor employs a mould of internal shape of the "closet cone," and dips it in a bath of rubber solution till sufficient substance is obtained, strips of canvas are then cemented around this and it is dipped again. Inventor thus obtains a similar article with the canvas embedded in its substance, and, therefore, not liable to split.

4,151.—**GRINDING-POROS:** *T. Smith.*—In order to secure ventilation and obviate down draught, inventor forms in pot (preferably a square one) at two opposite sides and different heights, openings, consisting of a series of vertical slots, this being done in the manufacture. Pivoted baffles-plates are hinged immediately below these openings, such plates being so bent and disposed that the inrush of down currents of air are turned outside by one or other of the plates. From the manner in which plates are hinged they offer no impediment to the brush in sweeping chimney.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Table with columns: Nature of Work, By whom Advertised, Premiums, Designs to be delivered.

CONTRACTS—Continued.

Table with columns: Nature of Work or Materials, By whom Required, Forms of Tender, &c., Tender to be delivered.

CONTRACTS.

Table with columns: Nature of Work or Materials, By whom Required, Forms of Tender, &c., Tender to be delivered.

PUBLIC APPOINTMENTS.

Table with columns: Nature of Appointment, By whom Advertised, Salary, Applications to be in.

Those marked with an asterisk (*) are advertised in this number. Competitions, p. iv. Contracts, pp. iv, vi, viii, ix, & x. Public Appointments, pp. xvii, & xxi.

NEW APPLICATIONS FOR LETTERS PATENT.

JANUARY 25—1915, H. Waddington, Water-closet Seats—1925, H. H. Hastings, Gas fittings—1971, E. Gulliford, Shop Window Finings.

PROVISIONAL SPECIFICATIONS ACCEPTED.

179,837, W. Hearn, Discharging Water from a Cistern—173,395, L. Higginson and J. Walker, Floor Cramps—21,002, R. Owens and Others, Automatically Flushing Water Closets—24,314, L. Ormond, Ventilating Houses, Iron and Wood Chaperls, Store Rooms, &c.—23,571, R. Birdie, Detachable Cover for Preventing Down Draught, in and Rain from, descending Chimney Flues—R. Wood and S. Richards, Draught and Dust Excluders—20, D. Euston, Drain Wells, leading to, and E. Abbott, Device for Drain Wells, leading to, Preventing Window-Sashes from Rattling—68, E. Gypson, Skylight Frames, &c.—72, W. Norris, Chimney Tops—83, C. Cockson, Doors, Windows, &c.—73, W. Coors, Chimney Cowls—97, G. Bray, Gas Lights—222, W. L.

Starley, Nails.—224, J. Brindley, Machinery for Making Ceramic Tiles.—229, T. Kemp, Junctioning and Sweeping Inlets to Drain Pipes, Bands, and Junctions.—253, H. Hawgood, Sash Fasteners.—258, S. Banks, Water Closets.—743, G. Chisholm, junior, Lavatory Basins.—502, J. Verdin, Door Handles.—983, N. Lynn, Heads or Cows for Chimneys, Ventilating Shafts.—1,220, W. Peel, Chimney Cows or Pots.—1,299, C. Erlinghagen, Sheet-iron Corrugated Roofings.—1,345, J. Thomson and Others, Dies for Brick-making Machines.—1,414, J. Richardson, Moulds for Brick-making Machinery.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months. 3,354, W. McCormick, Siphons.—4,894, J. Jobbins, Starting of Siphons of Flushing Tanks.—5,949, E. Coddling, Intercepting Traps for Drains and Sewers.—18,714, H. Bouty, Artificial Stone.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT. January 19.—By DRIER & Co. (at Wellmg). Wellmg, Kent.—A Freehold Building Estate, containing 41 or 37, 359. 1,6165 Stratford.—Abbey-lane, a profit rental of 55l. for 71 yrs. 180 By OSBORN & MEEGER (at Braintree). Wethersfield, Essex.—Russell's Farm, 113 a. (including timber) 1,734 "School Green" Farm, 35 a., f. (including timber) 321 By WARNER, SHEPARD, & WADE (at Leicester). Leicester.—Humberston Gate, "The Bell Hotel," 1,359 yds. f. 16,000 By BAILEY & SON (at Newark). Newark, Notts.—23, Castlegate, f. 1,500 North Collingham, Notts.—Enclosures of land, 22 a. 2 r. 7 p. 1,645 Sutton-on-Trent, Notts.—Enclosures of land, 3 r. 33 p., f. 2,046 By DUNCAN & KLIMPTON. Shepherds' Bush.—25, 28, and 29, "Eden-lane," pt., 123 yds., g.t. 127, 128 (at Norwood). Norwood.—24, 25, 28, 30, and 34, Eagle Hill, f., r. 867 85

By ALBERCROMBIE & EDMUNDS. Willesden.—10 to 6, Cooper-rd., f., r. 1,724, 125. 51,060 By JOHN SMITH (at Whitehall). Ennerdale.—"Bankhouse" farm and 45 a., f. 3,070 By P. W. TALBOT & Co. Maryborough.—20, Carburton-st., ut. 33 yds., g.t. 410 Kenlis Town.—51, Hawley-rd., ut. 34 yds., g.t. 61, 62, r. 401. 375 By MESSRS. SPELMAN (at Norwich). Catton, Norfolk.—10 to 6, Grove-ter., f., r. 507, 145. 563 By WYATT & SON (at Chichester). Chichester, Suss.-x.—Clay-lane, a freehold house and 1 a. 0 r. 0 p. 400 By G. J. KIRKMAN (at Barnard Castle). Bowes, Yorks.—"Sleighthouse and Hargreaves Farms," 323 a. 3 r. 34 p., f.; also moiety of 1,392 a. 2 r. 10 p. 8,030 By SEXTON & GRIMMEY (at Colchester). Fordham, Essex.—"Fletcher's and Idon" f. and c. 775 Three enclosures of land, 18 a. 0 r. 5 p., c. 285 Five enclosures of land, 8 a. 0 r. 8 p., c. 210 By W. W. REED & Co. Old Kent-rd.—91 and 93, Trafalgar-rd., ut. 123 yds., g.t. 74, 148. 155 172, 14, 15 and 18, Jurdin-rd., ut. 24 yds., g.t. 174, 138. 520 Barnes.—721, White Hart-lane, ut. 84 yds., g.t. 74, r. 45. 460 Hackney.—Clapton-sq., f., g.t. 65a, reversion in 99 yrs. 1,980 Holloway.—75, Sussex-rd., ut. 54 yds., g.t. 61, 68, r. 341. 395 By C. W. DAVID. Canonbury.—4, Alwynsq., ut. 391 yds., g.t. 141. 400 By G. 65a, ut. 4, 453 yds., g.t. 167, 108. 800 Caledonian-rd.—47, Bingfield-st., ut. 44 yds., g.t. 181, 4 381. 150 Contractors used in these Lists.—F.g.t. for freehold improved ground; l.g.t. for leasehold ground; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; s.t. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard &c.

PRICES CURRENT OF MATERIALS.

Table listing prices for various materials including timber, iron, and other building supplies. Columns include item names and prices per unit.

GREAT YARMOUTH. For additions, &c., to the "Queen's Hotel," for Mr. J. W. Nightingale.

Upper Kitchen, &c. ... Mr. A. J. Lacey, architect. ... J. Chapman & Son ... C. W. Beech ... J. Downing & Sons ... W. Cork, Green Yarmouth ... Carret & Wright ...

HASTINGS. Accepted for additions, &c., to engine and boiler house, Waterworks road, for the Corporation.

Mr. T. H. Palmer, C. E. High Street, Hastings. ... H. Ditch, High Street, Hastings. ...

HERTFORD. For the supply of 600 tons broken granite road metal for the Corporation.

Mr. J. H. Jevons, Borough Engineer, Town Hall, Hertford. ...

LONDON. For rebuilding shop, High-road, Streatham, for Messrs. Purchase & Petham.

Messrs. Saville & Martin, architects. ... Gough & Co. ... Godwin & Son ... Mitchell, S. E. ...

LONDON. For repairs to the s.s. "Basillette," for the London County Council.

Robert Amor & Co. ... John Stewart & Son ... Robinson & Dodd ...

LONDON. Accepted for the execution of certain specified work of painting and repair to the watchboxes, fencing, &c., at Clapham Camp.

Wandsworth Common, Blackheath and Maryon Park, for the London County Council. ... Clapham Common. ... Wandsworth Common. ... Blackheath. ... Maryon Park. ...

LONDON. For repair of roads and paths in parks, for the London County Council.

Gravel, per cubic yard. ... Hoppin, per cubic yard. ... Brockwell Park. ... J. Smith & Sons. ... J. E. Woodhams. ... W. Langridge. ...

LANGHOLME. Accepted for the supply and erection of laundry machinery, drying, &c., for the new Hospital, Langholme, for the Managers.

Messrs. Ainsley & Wood, architects, London. Mr. J. Kinsland, C.E., Engineer, Westminster. Harpes Twelvethree, Ltd., Southwark-street, London. ...

LLANDILO. For building a residence for Mr. R. Shipley Lewis, Mr. David Jenkins, architect.

Mr. J. M. Thomas, architect. ... Thomas Bros., Llandilo. ... Henry Price. ... David Evans. ...

LLANDILO. For building a post-office. Mr. David Jenkins, architect.

Co. Manwaring. ... Thomas Bros. ... Henry Price. ... David Evans. ...

LLANDILO. Accepted for building a pair of semi-detached villa residences, for Mr. William Jenkins Canton. Mr. David Jenkins, architect.

Thomas Bros., Llandilo. ...

LLANCONEN (Cardiganshire). Accepted for building a farmstead for Mr. Yeter Evans. Mr. David Jenkins, Llandilo, architect.

David Evans, Llynwmedd, Llanyfyllter, R.S.O. ...

LOS WITHIEL (Cornwall). Accepted for the erection of four dwelling houses, for Messrs. Laddick. Mr. Wm. J. Jenkins, architect, Bodmin.

Bassett Bros., Lostwithiel. ...

LONDON. For furniture at the Dudding Hill School, for the Wiltshire School Board. Mr. G. E. T. Laurence, architect, 381, Queen Victoria-street, E.C.4.

The Bennett Furnish. ... Ingham, Ingram. ...

LONDON. For furniture at the Leopold-road School, for the Wiltshire School Board. Mr. G. E. T. Laurence, architect, 381, Queen Victoria-street, E.C.4.

The Bennett Furnish. ... Ingham, Ingram. ...

LONDON. For alterations to circle, steps, &c., and furnishing, at the London Pavilion, for the London Pavilion Limited, from plans and specification prepared by Mr. Harry Percival, architect, 25, Buckingham-street, Adelphi, W.C.2.

Atkinson & Co. ... Campbell Smith & Co. ...

LONDON. Accepted for the erection of a block of residential mansions in North-street, Belgravia, London, S.W. Mr. E. J. Sadler, architect, 25, Saffrey-street, Strand, London, W.C.2.

Stevens, Easton, & Co., Ltd., Bristol. ...

MANCHESTER. Accepted at a schedule of prices for the execution of street works, Northumberland-road, and Durwen-street, for the Stafford District Council. Mr. Royle, Surveyor, District Council Offices, Old Trafford.

Northumberland-road. ... Durwen-street. ... M. Naylor & Sons, Hulme. ... Wm. Clack, Hulme. ...

MORTLAKE. For making up road, draining, and new fencing, for Sir Frederick Wynn, at Worpole road, Mortlake. Mr. J. S. Baines, architect, 27, Queen-street, City.

Mr. J. S. Baines. ...

OUNDLIE. For the erection of a house, out offices, &c., West-street, for Mrs. Hanes. Mr. J. G. Stabile, architect, North-street, Peterborough.

Mr. J. G. Stabile. ...

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us not later than 10 a.m. on Thursdays. N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

AYR (N.B.). For the construction of 6 1/2 miles of sewers, &c., for the Commissioners. Mr. J. Egleston, C.E., Town Chambers, W. G. Flett, £1,000 0 0. Brannagan & Co., £2,338 4 1/2. ...

BATLEY. For the erection of boundary walls, Smithies Moore lane, for the Corporation. Mr. Hy. Dearden, Borough Surveyor, Town Hall, Batley. Quantities by Borough Surveyor:— James Farley, Brnotham, £1,763.

BELFAST. For the execution of road and sewerage works, Hampton Park Estate, for Mr. Isaac Hampton, Messrs. Forman & Ason, C.E., 15A, Donegal-place, Belfast. ...

BRADFORD. Accepted for the erection of stables and coach-house, Motte-yard, for Messrs. Emulsion & Clarkson, architects, 7, Exchange, Bradford. ...

BURBLEM (Staffs.). For laying pipe sewer, &c., Moorland-road, for the Corporation. Mr. F. Batty, Borough Surveyor, St. J. Horell, £335 1 1/2. Buck ...

CHRISTCHURCH (Hants.). For alterations, &c., at workhouse, Elmfield. Mr. Edgill H. Burton, architect, Brankton Park, Bournemouth. ...

DALHOUSIE (N.B.). Accepted for extending Newton-Linn Hospital. Mr. H. Jordan, architect, 12, Canale-street, Edinburgh. ...

DEVONPORT. For new shop fronts and structural alterations at No. 16, Marlborough-street, for Messrs. Pote & Son. Mr. H. G. Luff, architect, Devonport (accepted). ...

DEVONPORT. Accepted for new shop fronts, Marlborough-street, for Mr. C. E. Waycott. Mr. H. G. Luff, architect:— W. J. Oliver, £2,575 15.

DOVER. For a pair of semi-detached villa residences, Barton road, Dover. Messrs. Worsfold & Hayward, architects, Dover:— Worsfold & Farnham, £1,717 17 1/2. Parsons (accepted). ...

DUNDEE. For the erection of a new Police Station at Camberwell for Mr. Receiver for the Metropolitan Police District. Mr. J. Dixon Butler, Architect. Quantities by Mr. W. H. Thayer. ...

LONDON. For alterations to shop and premises, for Messrs. ...

LONDON. For the erection of a new Police Station at Camberwell for Mr. Receiver for the Metropolitan Police District. Mr. J. Dixon Butler, Architect. Quantities by Mr. W. H. Thayer. ...

LONDON. For the erection of a new show room, for Messrs. ...

LONDON. For alterations to circle, steps, &c., and furnishing, at the London Pavilion, for the London Pavilion Limited, from plans and specification prepared by Mr. Harry Percival, architect, 25, Buckingham-street, Adelphi, W.C.2.

MANCHESTER. Accepted at a schedule of prices for the execution of street works, Northumberland-road, and Durwen-street, for the Stafford District Council. Mr. Royle, Surveyor, District Council Offices, Old Trafford.

MORTLAKE. For making up road, draining, and new fencing, for Sir Frederick Wynn, at Worpole road, Mortlake. Mr. J. S. Baines, architect, 27, Queen-street, City.

OUNDLIE. For the erection of a house, out offices, &c., West-street, for Mrs. Hanes. Mr. J. G. Stabile, architect, North-street, Peterborough.

PELAW-ON-TYNE.—For erecting the Station Hotel, Pelaw-on-Tyne, for Mr. John G. Joicey. Mr. J. W. Frazer, architect, Newcastle-on-Tyne.

Bradley & Shipper	£2,038 7 6	J. B. Scott	£2,569 18 0
R. S. Harbottle	2,038 7 6	W. H. Brown	2,479 3 0
Cowper & Henderson	2,519 5 10	J. C. Hope	2,475 0 0
Wainfield & Henderson	2,531 0 0	T. & R. Lamb	2,468 4 3
T. Lumsden	2,531 0 0	F. H. Mannes	2,445 0 0
J. White	2,456 0 0	I. Henri	2,416 0 0
		G. H. Hodgson, Sunderland	2,395 0 0

* Accepted.

PETERBOROUGH.—For the erection of a steam laundry, exclusive of machinery, for the Park Sanitary Steam Laundry Company. Mr. J. G. Stalder, architect, North-street, Peterborough.

E. J. Nichols	£1,750 0 0	J. Wendock	£1,450 0 0
Furniss Bros.	1,680 0 0	D. Gray	1,450 0 0
W. Bridgford & Son	1,600 0 0	W. Jennings	1,390 10 12
Watson & Lucas	1,540 0 0	Hicks Bros.	1,370 0 0
W. Kove	1,498 7 0		

[All of Peterborough.]

ROTHERHAM.—For the erection of six houses, Gerard-road, Mosses, Hutchinson & Sons, architects, Howard-street, Rotherham.

Masonry and Brickwork	£1,730	Wm. Thornton & Son	£730
Joinery	1,730		
Plastering	1,730	J. Jenkinson	350
Roofing	1,730		
Painting	1,730		
Gilbings	1,730		

[All of Rotherham.]

RUGBY.—For the construction of streets, sewers, &c., Lawford Gardens Estate (Contract No. 2), Mr. T. W. Willard, surveyor, Rugby. Quantities by the surveyor.

John Macbay	£2,355 18 4	J. Ford	£1,936 17 3
R. Leach	2,310 0 0	W. T. Hall	1,934 0 0
J. S. Freeman	2,275 0 0	W. Young	1,950 0 0
W. Hitchman	2,172 0 0	A. Jewell, Market Harborough	1,875 0 0
F. Benham	1,993 0 0		
J. Porter	1,985 0 0		

* Accepted.

SUTTON.—For making roads, &c., Malor House Estate, Sutton Surrey.

W. Gibbs	£2,343 12 3	A. Bullock	£2,122 12 6
W. Langridge	2,295 0 0	W. Whelton	2,143 0 0
C. Atkins	2,320 0 0	W. Jenner, Sutton	2,073 16 0
S. Savanah	2,220 0 0		

* Accepted.

TAVISTOCK.—For the erection of a pair of semi-detached villas, residences, for the Tavistock Land and Building Company, Ltd. Mr. Wm. Spire, architect, Tavistock.

Alfred Dennis	£1,700	H. B. Tuge, Horshambridge	1,729
E. Luke	1,700	A. Andrews	1,775

* Revised and accepted.

LONDON SCHOOL BOARD TENDERS.
The following lists of tenders were submitted by the Works Committee of the London School Board at the meeting of the Board on Thursday:—

DEODAR ROAD (West Lambeth).—Removing three iron buildings and offices from Page's-walk and re-erecting them on this site.

James Milton	£1,288 9 4	W. Harbrow	£865 0 0
T. Craycs	98 0 0	Croggon & Co., Ltd.	775 0 0
Humphreys, Ltd.	97 0 0		

* Accepted.

FLEET-ROAD.—Erecting manual training centre, &c.—

F. G. Minter	£1,340 0 0	Extra amount required for building brickwork in cement	£235 0 0
D. Charteris	1,315 0 0		38 0 0
Parkins & Co.	1,291 0 0		24 0 0
E. Lawrence & Sons	1,279 0 0		21 0 0
McCormick & Sons	1,256 12 5		9 0 0
Lacey Bros.	1,259 0 0		27 0 0
G. Neal	1,254 0 0		25 12 4
Cowley & Drake	1,246 0 0		25 12 0
E. T. Foley	1,249 0 0		20 0 0

* Recommended for acceptance.

MARLBOROUGH-ROAD.—Reconstructing offices and drainage and sanitary work.

Foster & Dickson	£1,825	W. Akers & Co.	£1,354
W. Davis	1,551	W. Hammond	1,351
G. Foley	1,551	Lacey Bros.	1,339
F. G. Minter	1,497	E. Treggs	1,333
T. Chissey	1,495	Simpson & Co.	1,330
Lilly & Lilly, Ltd.	1,487	R. A. Verbury & Sons	1,330
Ferries & Co.	1,385	Cowley & Drake	1,265

* Recommended for acceptance.

SCAWFELL-STREET.—Providing and fixing boiler.

C. Davis	£2,165 0 0	H. L. Price, Lea, & Co.	£79 0 0
J. C. & J. S. Ellis, Ltd.	91 0 0	Bullock & Co.	77 0 0
J. F. Clarke & Sons	91 0 0		

* Accepted.

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The Builder.

VOL. LXXII. No. 282.

FEBRUARY 20, 1897.

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Competition Design, Liverpool Technical School and Museum Extension. By Mr. H. T. Hare, A.R.I.B.A., and Mr. Thomas Davison, A.R.I.B.A.....	Double-Page Ink-Photo.
Competition Design, Liverpool Technical School, &c.; Detail Elevation. By Mr. H. T. Hare, A.R.I.B.A., and Mr. Thomas Davison, A.R.I.B.A.....	Single-Page Photo-Litho.
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The Insulation Resistance of an Electric Installation.



WHEN the wiring of a building is completed, it has to pass certain tests before the public supply company will switch on the current. What these tests are can only be vaguely guessed at, as the supply companies talk learnedly in their rules about insulation resistance, and yet when the consumer tries to find out what electricians mean by the insulation resistance of the wiring of a building, he will find out that it is a vague expression used in different senses by different people. He will probably be told by the consulting electrician that it is a measure of the resistance to leakage flow between the house mains; this is the favourite definition, and, being the simplest, is strongly adhered to by youthful electricians, who think they understand it. How this is measured is clearly described in a well-known work on electrical engineering, published recently, and which has been most favourably reviewed by the electrical Press:—

"All that is necessary in testing the insulation resistance of any circuit, is to connect the + and - mains (the insulation resistance between which is to be measured) to the terminals, turn the handle, and the needle at once points to the number of ohms representing the insulation resistance."

Is it to be wondered at that most youthful electricians, whether they be wiremen or apprentices of a consulting engineer, imagine that they know all about insulation resistance?

Again, if the consumer watch the inspector of the supply company (direct current, suppose) he will notice how careful he is to measure the resistance between each house main and the earth, and if this is below a certain value he will refuse to switch on the current. Insulation resistance to the supply company thus seems to mean the resistance to leakage current flowing from either main to the earth, and so back to the central station. Insurance company's inspectors, if they turn up at all (which is a very rare event), seem to follow on the lines adopted by the supply company.

The consumer is thus led to think that what supply companies mean when they say,

for example, that the insulation resistance should average seventy-five megohms per lamp, is that the resistance to leakage flow from both the house mains together should be greater than $\frac{75}{x}$ megohms, where x is the number of lamps. He also learns that the test is done with a Goolden testing set, consisting of a small hand dynamo, which generates a pressure of 200 volts in order to satisfy the regulations of the Board of Trade, and an Evershed ohm-meter.

It is to be remembered that all this time the intelligent consumer is only guessing, as he is unable to get any definite information from the secretary of the supply company, and electricians and electrical books are hopelessly contradictory. He may think he has found it at last in a new copy of fire office rules, but on turning up this he finds that the insulation resistance has to be measured when all current-consuming and current-producing devices are turned off; and so he gives up the hunt for a definition, and regards electricians as a slippery and unsatisfactory kind of people.

Yet the theory of insulation testing is very simple, it is only the interpretation of what is meant by it in specifications that offers any real difficulties. To illustrate the theory we will consider a simple case. Consider a building wired to receive current from a direct current supply company. Let A and B fig. 1 (see next page) be the terminals of the two house mains, and let X, Y, and Z be the resistance between the main A and earth, the two mains A and B, and the main B and earth respectively. It will be noticed that current can flow from A to B in two ways, either directly through the resistance Y or through X to earth, and then from the earth through Z to B. Hence, if we measure the resistance between A and B by the ohm-meter we do not measure Y, but the joint resistance of Y and X+Z in parallel, *i.e.*, $\frac{Y(X+Z)}{X+Y+Z}$. This will be seen by the inspection of fig. 2, which is a diagrammatic representation of fig. 1.

It is customary to measure the resistances to leakage by an ohm-meter; and as these resistances are very high, they are expressed in megohms (a megohm—a million ohms). To do this one terminal of the ohm-meter is connected to A (say), and the other to E, a convenient water-pipe or gas-pipe being, for all practical purposes, in good electrical

connexion with the earth; and the handle of the machine being turned, the needle then points to the resistance between the points A and E. This is usually assumed to be the leakage resistance of the main A to E, *i.e.*, X; but from our diagram we see that it really reads $\frac{X(Y+Z)}{X+Y+Z}$ and if Y+Z is small, it may be something very different from X.

In order, therefore, to determine X, Y and Z, we should need to measure the resistances between A and E, A and B, and B and E respectively. We should then have three very difficult algebraical simultaneous equations to give us X, Y, and Z. We need hardly say that a foreman wireman does not puzzle his head trying to solve them, but assumes that his three measurements give him X, Y, and Z directly. For many practical purposes this is sufficient, but to the contractor and the consumer a knowledge of the values of X, Y, and Z is important. To find these values we can get over the mathematical difficulties by taking the following measurements:—

I. Measure the resistance a between A and E, when B is connected directly to earth by a wire. We have,

$$\frac{1}{a} = \frac{1}{X} + \frac{1}{Y} \quad \dots \quad (i)$$

II. Measure the resistance b between A and E, when A and B are joined by a piece of wire. We get

$$\frac{1}{b} = \frac{1}{Z} + \frac{1}{X} \quad \dots \quad (ii)$$

III. Measure the resistance c between B and E, when A is put directly to earth. Then

$$\frac{1}{c} = \frac{1}{Y} + \frac{1}{Z} \quad \dots \quad (iii)$$

From the equations (i) (ii) and (iii) we easily deduce that $\frac{2}{X} = \frac{1}{a} + \frac{1}{b} - \frac{1}{c}$

$$\text{Or } X = \frac{2abc}{bc+ca-ab}$$

Similarly $Y = \frac{2abc}{bc-ca+ab}$ (iv)

$$\text{And } Z = \frac{2abc}{-bc+ca+ab}$$

For example, suppose we find that the readings for the three operations, I, II, and III, are $3\frac{1}{2}$, $1\frac{1}{2}$, and $\frac{5}{8}$ megohms respectively, then by formulæ (iv), the insulation resistance of the main A to earth is 10 megohms,

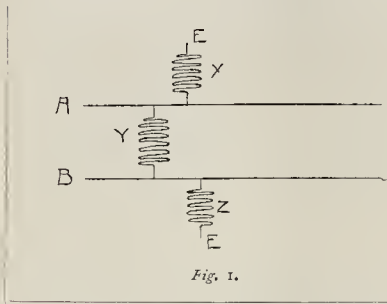


Fig. 1.

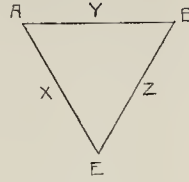


Fig. 2.

the insulation resistance of the main B to earth is 1 megohm, and the insulation resistance between the two mains is 5 megohms. The ordinary test would have given the insulation resistance of A as $3\frac{2}{3}$ megohms, of B as $\frac{1}{3}$ megohms, and between A and B as $3\frac{1}{10}$ megohms.

It may be objected that the finding of the accurate values of the insulation resistance is a matter of very little importance, and is hardly worth the slight extra calculation involved. But this is a quite erroneous view to take of the matter, although it is the usual one. The numerical example worked out above shows that the numbers ordinarily given may be 200 or 300 per cent. out, and this is a matter of great importance when the current is taken from a company supplying on the three-wire system. Most electricians think that the pressure between the middle wire of this system and earth is very small, and would be surprised to hear that it is often eighty or ninety volts. We have had no practical experience with a five-wire system, but should not be much surprised to hear that the pressure between the middle wire and earth often approached 200 volts, and in this case the pressure between one of the outer mains and earth would be getting on for 400 volts. Surely it is important that the house main, which is connected on to the high-pressure supply main, should have a high insulation resistance. It is unnecessary to urge the necessity of good insulation when there is a 200 volt system of supply, as the company's officials are painfully nervous about the possible effects of a 400 volt pressure to earth.

When superintending recently some measurements on the insulation resistance of an electric installation, the electric current for which was supplied by a London company, we found that the pressure between one of the company's mains and earth was + 192 volts, and between the other and the earth + 88 volts. Of course, this may have been due to abnormally good insulation of the positive outside main and the middle one, but whether the company are to blame or not, it was evident that one house main had to withstand a pressure to earth of 192 volts. Having found out by the method given in this article which of the mains had the best insulation resistance, all lamps being in their sockets, and all the switches turned off, we naturally connected this main to the high pressure supply main. As the company always put their meter on the high-pressure house main, it is obvious that any accidental leakage from the other house main to earth must be a dead loss to the company, besides being a source of danger

to the consumer. Leakage currents are nearly always microscopic, and have no effect on the meter, except in special cases where the wiring has been damaged through gross carelessness or tampered with by mischievous clerks. Although the insulation resistance of any particular building supplied by the company may be, comparatively speaking, high, yet the insulation resistance of the whole network of wires joined to the station is often painfully low. Leakage current is not only an expensive item in the working, but as it varies from day to day, it makes accidental leaks, provided they are not dead short circuits, hard to locate, and a serious leak may go on for days without being discovered.

When the tests show that the insulation resistance of a building is unsatisfactory, expert advice is usually necessary to find out where the fault is. We have found switches with an insulation resistance of less than 10,000 ohms each offered for sale. It would not need many of these switches in an installation to produce perpetual motion in the meter. It is a very false economy to use inferior material for large installations. That dishonest workmen aided and abetted by eager consumers, manage to cheat the company's inspector by disconnecting the faulty floor whilst the tests are being made, shows how exceedingly careless some people are of their own interests. It is customary for contractors to run down insulation tests, and to point out that they are no guarantee for certain dangerous defects in the wiring. Good work and good material is held up as the best guarantee of everything being all right. It is no doubt a good guarantee, but no electrician would like to switch on current to an installation without having first tested the insulation resistance of the good work and the good material. We came across electricians a few years ago who relied on fuses saving the building if there was a fault anywhere, but this class of persons got one or two nasty frights on 200-volt installations, and they are now convinced of the importance of insulation tests.

In conclusion, we would point out that to test the insulation resistance of the wiring in a building can easily be done and requires no special knowledge. In making the tests it is most important that all the lamps should be in their sockets and all the switches turned off, and, of course, the house mains disconnected from the supply mains. A testing set can be hired from several testing institutions in London for a few shillings, and with the help of the foreman wireman three readings can easily be taken with it by the architect or the consumer in the

way we have described, and a very fair idea can be obtained of the electrical quality of the contractor's work. It has to be remembered that the insulation resistance is a variable quantity, and often improves greatly when the building gets drier, so no great importance is to be attached to the absolute value of X, Y, and Z, so long as they are sufficiently high to prevent the total leakage current being greater than the hundred thousandth part of the total working current.

For alternating current supply the insulation resistance has to be tested in a somewhat similar way, care being taken to disconnect the wiring from the secondary terminals of the transformer, and good insulation from earth is just as important as with direct currents.

MORTAR FROM PETERBOROUGH CATHEDRAL.

WITH a view of extending his researches into the composition of the mortar used in the construction of our old castles and abbeys also with a view of obtaining reliable information upon a subject having an important bearing upon the proposed restoration of a building which has lately attracted much public interest, the writer was desirous of obtaining specimens of mortar from the west front of Peterborough Cathedral.

By the courtesy and with the assistance of the contractor, Mr. John Thompson, two samples were obtained.

The first, marked A, was taken out from the bed of the ashlar of the gable now being taken down; it was very soft, easily broken, and evidently of poor quality.

The second, marked B, was taken out from the rubble walling about seven to nine inches from the face of the spandrel, and apparently consisted of loose concrete of inferior make.

Average samples of each were prepared for analysis and the results were as follows:

	A	B
Water (lost at 212 deg. Fah.)	1'56	'64
Loss on ignition	3'33	2'20
Oxide of iron	8'34	11'54
Alumina	1'21	1'01
Lime	28'25	25'14
Magnesia	'32	'23
Potash	'23	'08
Soda	'23	'29
Sulphuric acid	'20	'10
Carbonic acid and loss	20'88	19'57
Silica soluble in alkali	3'55	3'45
Insoluble silicates	31'90	35'75
	100'00	100'00

On comparing the above results with those in previous articles, published respectively in the *Builder*, June 18, 1892, and February 11, 1893, it will be noticed how very inferior the general character of the mortar must be.

The actual percentage of lime is certainly very high, but this is largely due to the calcareous nature of the small stones and gravel, consisting largely of cretaceous chalk, associated with the original mortar.

This is essentially an instance in which the high proportion of lime is no indication of the quality of the mortar, and, as such, is an interesting and useful illustration.

The next important feature to notice is the unusually large amount of oxide of iron, indicative of the soft and ferruginous nature of the sand and gravel.

But perhaps the most important point to

observe is the deficiency of soluble silica, or silica in the form of silicate soluble in a 10 per cent. solution of caustic soda.

It is silica in this condition that forms the important element in cement, and according to the writer's investigations, it is the respective richness in such soluble silica that constitutes the chief difference in the quality of certain kinds of lime for building purposes.

Thus chalk lime contains only 1 or 2 per cent. of soluble silica, greystone 9 to 10, Abertaw 15, while the best Portland cement contains as much as 20 to 22 per cent.

On applying this test to the mortar found in certain old castles and abbeys, already reported in the *Builder*, the following results were obtained:—

Caerphilly Castle	contained 9.85 per cent.
Corfe Castle	" 7.50 "
Whitby Abbey	" 8.20 "
Tintern Abbey	" 6.20 "
Glastonbury Abbey	" 6.10 "
Fountains Abbey	" 5.75 "
Bolton Abbey	" 5.65 "
Crowland Abbey	" 5.01 "
Carisbrooke Castle	" 4.35 "
Raglan Castle	" 4.10 "
Tattershall Castle	" 3.95 "
Rochester Castle	" 1.60 "

The mortar from the west front of Peterborough Cathedral, therefore, according to chemical analysis, although rich in lime, is essentially of inferior quality, and being very brittle would not be capable of standing much lateral pressure.

In many respects it closely resembles the quality of Gundulf's mortar in Rochester Castle, which, though containing 28.67 per cent. of lime, is admittedly of very inferior quality.

JOHN HUGHES, F.I.C.

NOTES.

We have given so much information and illustration on different occasions in regard to the new nave of St. Saviour's, Southwark, that it is hardly necessary here to do more than refer to the fact of its formal opening on Tuesday last by a special short service, and to congratulate Sir A. Blomfield on the successful completion of one of the most important pieces of modern church building. Now that the whole length of the church can be seen the interior has an exceedingly fine effect, and the new work in the nave combines well with the noble architecture of the choir; as well, at all events, as modern work can be expected to combine with old. Although we are not much in favour of reproductions of Gothic, this seems to be one of the cases in which *design* has to be considered; for it seems certain that only a continuation of the building in the same style of architecture could have succeeded in making it as much a harmonious whole as it now is. We confess however that, in spite of what may be said in favour of the continuous vista, we should have preferred, both for architectural and musical reasons, to have seen (and heard) the organ in the old cathedral position under the tower arch; no position has ever been so good for architectural and musical effect combined. The organ, a very good one (by Mr. Lewis) as far as it goes, would then perhaps have sounded sufficient for the building; as placed, it is lamentably insufficient for a great nave service. The church was crowded to excess, it is to be feared not merely for either religious or

architectural interest, but because it was announced that Royalty would take part in the service. That the Prince of Wales should attend a formal service to open what is practically a new Metropolitan cathedral was fitting enough; but that a number of the congregation should stand on the seats during the singing of the grand final hymn, "Now thank we all our God," to look at the Royal procession passing down the nave, was a proceeding which struck us as unseemly and disgraceful in the highest degree, the more so as those who acted in this way were persons admitted by privileged tickets, and therefore presumably belonging to a class who might have been expected to have more sense of reverence and propriety of demeanour at what was professedly at least a religious service.

ATTENTION was properly called last week in the House of Commons to the City of London Sewers Bill, which was read a second time, and by which it is proposed to transfer to the Corporation of the City of London certain powers now vested in the Commissioners of Sewers, such as those under the Local Loans Act and the Valuation of the Metropolis Act, 1869. We think that those members who urged that this matter should be dealt with by a public, and not by a private, Bill were right. It is essentially a public matter, and, further, it is most inconvenient that legislation of this kind should be contained in private Acts of Parliament. That it is desirable to concentrate the authority over the area of the City in one body we can hardly doubt, and, therefore, there can be no objection to the details of the Bill. But some definite Parliamentary rule should be laid down, and adhered to, in regard to the inclusion of such legislation as this in private Bills.

M. DUTERT's new building for the "Museum d'histoire naturelle" in the Rue Buffon, Paris, is now complete in portions, and some part of the palaeontological collection has already been installed in it. The entire block, when complete, will be 92 metres long and 27 metres wide. Externally the appearance of the new buildings is simple but dignified. A few pieces of sculpture decoration relieve it here and there. Above the entrance door of the principal pavillion M. Gardet has carved, on the keystone, an eagle with outspread wings. M. Allar has executed some sculpture in the pediment, symbolising the three kingdoms of Nature. At the first floor level are a series of bas-reliefs in marble and bronze. Those in marble are the work of M. Tony-Noël, M. Lanson, and MM. Maniglier, Fagel, Lemaire, Carlier, Gauquié, and Bayard de la Vingtrie. Those in bronze are by MM. Barrias, Frémiet, Marqueste, and Couton. Among the latter, the "Horse Tamed by Man," by M. Marqueste, and the "Nubian Killing a Crocodile," by M. Barrias, are particularly successful. On the consoles dividing the bays are sculptured figures of animals and busts of celebrated naturalists, arranged so as to produce a kind of decorative grouping.

Excavations at the Acropolis, Athens, on the north-west slope of the Acropolis, inscrip-

tions have come to light which prove that the cave usually pointed out as the Grotto of Pan was in reality sacred to Apollo Hypakraios; so that, in fact, both the apertures, long visible from below, belong to Apollo's sanctuary. In front of one of them—the most easterly—has been found a quadrangular space, hollowed in the rock, and this, probably, once held the altar of which Euripides speaks in the "Ion." In the larger of the two caves are traces of niches where votive offerings were placed. The excavations of the Archaeological Society have brought to light two other larger and deeper caves close at hand, and these it is supposed are the real Grotto of Pan. Euripides speaks of the sanctuary in the plural, the "Seats of Pan," "The Shepherd Caves," and these caves were "neighbour" to the Hollow Rocks, where Apollo dwelt. In fact, the case seems to stand thus: The whole region of the Makrai (Long Rocks) was from early days the primitive seat of Apollo Pythios. It was from this sanctuary, not from the Pythian near the Iliissus, that—as Dr. Dörpfeld long ago pointed out—the Pythiastai took their observation of the lightning from Harma. Then when, on the introduction or revival of the worship of Pan after the battle of Marathon, a sanctuary was needed for the shepherd god, a part of the precinct of Apollo was made over to him. To the north-east of Pan's real cave a portion of a flight of steps has been dug out. It continues the staircase made out by M. Kabbadias in 1886. The next discovery we may look for is of the Anakeion, the precinct of Castor and Pollux, which must be close by.

LAST Monday, at the second general meeting of the Hellenic Society, Professor Percy Gardner read two short papers, one of which, on "A Stone Tripod at Oxford" was of some architectural interest. The tripod was a gift to All Souls by Mr. Lefroy, and, though it had been noted and described by Professor Michaelis in his "Ancient Marbles of Great Britain," it had not received the attention it deserved. The design consisted of a pedestal with three women figures of archaic type, each standing on a lion, the tail of which each woman held in her hand. The monument belonged to a class, of which other specimens are now known, e.g., one at Olympia, others at Delphi and in the Central Museum at Athens. Professor Gardner suggested that the idea of a tripod support may have led to the triform figures of divinities, e.g., of Hecate. He further stated his belief that the type of woman standing on a lion had become purely arohitectonic, and cited the analogy of the lion-supported column. In his second paper Professor Gardner discussed the now famous sculptured basis of Mantinea, the design of which is attributed to Praxiteles. He controverted Dr. Waldstein's theory that a slab had been lost and that there were nine figures of Muses. Dr. Waldstein, in the discussion that followed, maintained his original view. Both these interesting papers will shortly appear in the journal of the Society.

On Wednesday evening Mr. W. H. St. John Hope gave an exceptionally excellent and interesting lecture to the St. Paul's Ecclesiological Society on "The Plan and Arrangement of a Cistercian Abbey." The lecture was illustrated by a large plan

Plan of the Cistercian Abbey.

of Fountains Abbey, and smaller ones of Kirkstall and Brildwas. Basing his remarks on documentary evidence, Mr. Hope traced the uses and purposes of the various portions of a Cistercian plan from the east end of the church, following the series of buildings round to the west end. Among special points elucidated were the use of the recess in the east wall of the cloister near the church (often broken through at a later date) as a book store for books of recreation or "edification," a use not unnaturally connected with the use of the adjoining north walk of the cloister as a day-room; the calefactory or "warming-room" (sometimes mistaken for the kitchen); the use of the *misericorde* as in fact a room for indulgence in better fare than the strict rule allowed in the refectory proper; the probable position of the infirmary for the *conversi*; the gradual (and unlawful) extension of the abbot's residence into a luxurious house; the extra-mural chapel for women to hear mass, &c. No positive opinion, however, was offered as to the vexed question of the special use of the usual long room south of the chapter house (parallel with the east cloister walk), but it was suggested that it was appropriated to novices; a suggestion, however, which seemed to be based only on the fact that no other place could be found for them. Mr. Hope lectured for nearly an hour and a half without any one finding it a minute too long—a rare thing to say of a lecture.

WE read that the Marquis of Arlington-street, Granby has lately purchased Piccadilly. the house, No. 16, which Lord North acquired upon the death of his father, the late Colonel John Sidney North, who lived there during many years. The house, on the street's west side, was formerly Lord Gage's, and then the Duke of Rutland's, being that wherein the Duke of York died on January 5, 1827; it was afterwards occupied by Lord Dudley. In the Park—then known as Upper St. James's Park—behind the house was fought the duel between Mr. Pulteney, since Earl of Bath, and John, Lord Hervey, son of the Earl of Bristol, at an early hour in the morning of January 25, 1731, as is recounted by Thomas Pelham in a letter to Lord Waldegrave. Some say that the encounter (with swords) took place in the garden of the house we mention.

THE report of the Borough Electricity Supply at Brighton. Electrical Engineer to the Brighton Corporation, which has just been adopted, is a very satisfactory one. The "electric lighting business," as Mr. Wright calls it, is in a very flourishing condition, and justifies his policy of giving to those consumers who produce the profits rebates proportional to them. The success of the electricity supply also benefits the general body of the ratepayers, since they get the electricity consumed by the street lamps at a much cheaper rate. For the coming year the Brighton Corporation are going to charge 7d. per unit for the first hour, and 13d. per unit for all electricity consumed afterwards. At this rate it will pay any manufactory in Brighton which generates its own motive power, whether by gas or steam engines, to get its supply from the Corporation. Mr. Wright also anticipates a profitable demand for charging motor-car batteries and for electric traction in connexion with the sea-shore tramways. It is true there is a little

grumbling by those thrifty consumers who yet like a little mild ostentation occasionally, and so have many lamps connected. They must suffer considerably when such an accident as turning on all the dining-room lamps before the drawing-room ones have been turned off happens, since their quarter's bill is charged on the maximum demand basis. Still, from the point of view of the general prosperity, they are hardly worth considering. If the electric-lighting supply at Brighton was in the hands of a private company, its shares would be at a considerable premium. The ratepayers are to be congratulated on having a man of the scientific eminence and business capacity of Mr. Wright as their electrical engineer.

Tramway Traction.

THE lengthy report of a committee of the Sheffield Corporation on tramway traction which has just been issued, is very similar to the reports recently made by other municipal committees. They sum up strongly in favour of electric traction on the overhead system, and they see great advantages in having span wires suspended from house to house across the streets to support the trolley wire. Fire-escapes, they say, can be made to run horizontally, and the firemen, as at Hamburg, can be provided with india-rubber gloves and shears to handle and cut the trolley wire if necessary. The loud-sounding bells and brilliant head-lights of the cars impressed the deputation, and on some of the suburban routes they travelled at a speed of twenty-five miles an hour; a rather dangerous speed, which is said to have caused some accidents. We are informed that the surface contact system in Paris is in quite an experimental stage, but that it is being considered by the Birmingham Corporation. This was the only surface contact system which the deputation saw; a visit to America doubtless, as with the Glasgow Committee, will be necessary before they can give a final opinion. They were told in Brussels that great improvements were being made in the manufacture of motors, that by the substitution of a new kind of armature, the efficiency of a 15-horse-power motor is increased to 25 horse-power, leaving it to be inferred that still greater horse-power would be obtained in the early future. What nonsense this is will be seen by remembering that a good traction motor converts 85 per cent. of the electric energy it receives into mechanical energy.

Dudley Gallery Art Society.

THE exhibition of water colours by the members of the Dudley Gallery Art Society, at the Egyptian Hall, contains a rather considerable proportion of architectural subjects, of very unequal merit. St. Paul's, against which artists seem to have a kind of spite, is illustrated in two drawings, by Mr. Burgess (13) and Miss Nesbitt (278), in both of which the dome, and in the latter of which the western towers, are very badly drawn and misrepresented in effect. Mr. Medlycott's "Santa Maria della Salute" (49) is also very bad in drawing and perspective; domical architecture being a constant source of failure with painters. The latter artist succeeds better with Gothic work, as is apparent in his "Rouen" (85) and the sketch of "Cologne" (145). Miss Margaret Bernard exhibits a broad freely executed view of "St.-Pol-de-Léon, Brittany" (132) and the "Market-

place, St. Lo" (121), the latter a little too obviously under the inspiration of Mr. R. W. Allan. Mr. Finn's "Christ Church Gateway, Canterbury" (6), though rather woolly in texture, is good in drawing and original in colour, and Mr. Newton Bennet's "Crown Inn, Dorchester" (3) is in every way admirable. Among landscapes may be noticed Mr. David Green's "Breakers" (53), a fine broadly executed study of sea, and his "Cloud land" (74); Miss Rose Douglas's "The Ferry, Walberswick" (79), a beautiful work; Mr. George Marks's small and delicate works, especially "A Berkshire Village Street" (266); Mr. Sidney Evans's "Bolton Abbey" (253), effective in an old-fashioned style; and Mr. Claud Haye's "Road to Portsmouth" (225), a fine study of moorland and sky. There is rather a preponderance of works, including some of the larger and what are meant as the more important ones, which are sensational and violent in effect rather than truly artistic.

Minor Exhibitions.

MR. AUMONIER seems to have been induced to get up a collection of no less than fifty-eight sketches of the old Chain Pier, Brighton, which certainly did not merit so much illustration, but which we presume are expected to have a market value since the demolition of the pier. They are exhibited at Messrs. Dowdeswell's. The best (as might not unnaturally be expected) are those general views in which the element of landscape effect comes in, such as Nos. 29, 34, 35, and 38. "The Last of the Old Pier" (36), showing the last portion of the staging and beams left standing in the sea, is effective, and the artist has also found some picturesque effects in the view of the structure from below (25 and 44), but on the whole more attention has been given to the pier than it was at all worth, except, as observed, from a commercial point of view. Mr. Wallace Rimmington's collection entitled "Wanderings in Italy" (Fine Art Society's Gallery) deals a good deal with architectural subjects which however, though well drawn, are rather weakly treated for the most part; but the landscape subjects exhibit a good deal of originality in style and colour, as for instance "Torcello" (2), "A Town of the Lagoons" (111), "Orvietto" (132), and "Siena" (6). Mr. C. E. Holloway's collection of water-colours (chiefly at the Goupil Gallery) are the work of an artist of some originality and power in broad rough sketches, with an almost scandalous contempt for detail; "Waterloo Bridge" (5) is admirable in general effect, but does not gain from the slovenly way in which the architecture of the bridge is indicated; "Clacton Sands" (20) and one or two others are happy effects of light and colour; but in many of the supposed sea sketches the sea is more like mud than water, and "The Lido" (6) and "Chioggia" (9), with the bits of white building dotted on in body-colour, are rapid tricks of effect rather than genuine sketching. The collection as a whole impresses one as of a pretentious and superficial cleverness.

The Sisley Exhibition, Paris.

M. ALFRED SISLEY is exhibiting at the Georges Petit Gallery 150 pastels and paintings which form a very good summary of his work, and which have excited great enthusiasm in the art world of Paris.

M. Sisley's effects of colour are startling at times, but he has an exceptional power in giving the effect of bright sunlight in scenes of full summer, especially in his later works; his earlier productions, before 1876, are in a more subdued style, and belong rather to the school of Corot. These earlier works are however really the finest, though not the most astonishing; there is a truth of atmospheric effect and colour in them which we hardly find in the artist's later works.

ARCHITECTS should pay their tribute of respect over the grave of G. P. Boyce, one of the most beautiful and accomplished of water-colour artists in dealing with subjects in which old buildings form an important element. Unlike some other recently deceased members of the "Society of Painters in Water Colours," Boyce had not been able to keep up painting almost to the time of his decease; failing health had incapacitated him from exhibiting for some years past, and his work had perhaps dropped out of the memory of the younger generation. But those who can recall a long series of exhibitions in the Water-colour Society's rooms will retain a vivid recollection of Boyce's beautiful and perfect little drawings of quiet English landscape in combination with building, in which such an object as an old barn, or even an old wall, was painted in such a way as to make one love it, and certainly as if the artist loved it. In treating such subjects he showed the highest finish, the most perfect verisimilitude, the most delicate perception of local colour, without ever becoming hard or mannered. His forte was buildings, but his foregrounds and skies were also well worth study, and he succeeded in preserving aerial effect along with the most painstaking minuteness of detail. He was an artist of exceptional style and talents, and no one can be said to have exactly filled his place.

THE ADVANCEMENT OF ARCHITECTURE *

WITH SOME REMARKS ON THE STUDY OF GOTHIC.

THE west fronts of the Gothic cathedrals are the best instances to be found of the Gothic architects' skill in composition, for they presented the largest surface to be dealt with unhampered by the necessity of resisting the thrust of the internal vaulting, the west towers acting as huge buttresses; and even when there are no walls of the towers inside but only piers, as in Notre Dame at Paris, the weight of the towers stiffened the piers that bore the thrust of the nave arches, and the vaults of the nave, aisles, and triforium. The position, too, of the west fronts from there being a large open space in front of them, encouraged the architects to concentrate on them their greatest efforts and to display the greatest richness; and as they contained the principal entrances, in which grand processions entered or from which they emerged on solemn or festive days, they may be looked upon as combining all the reasons for care and for display.

I begin with the three cathedrals of the Isle of France, of Picardy and of Champagne, Notre Dame of Paris, Notre Dame of Amiens, and the Cathedral of Reims, because the main motive of each is an arcade of kings, and, in my opinion, that of Paris very far exceeds the others in perfection of design. It is plainer, simpler, and more vigorous than the other two. The two others have more the air of beautiful women decked for a ball, while that of Paris looks like a warrior caparisoned for war.

In most cathedrals there is the Gothic device of horizontal connexion, by running up a door head or a canopy into the next story, as Wren got his horizontal tie to the bell towers of St. Paul's by running his lower portico into them; but the genius of the architect of Notre Dame made him keep his three stories separate. If you will take the trouble of laying a piece of paper above the balustrade of the ground story, you will find it makes in itself a most admirable design, not for a cathedral, but for some vast hall. Push the paper up to the top of string of the first floor, you have still a tolerable composition; push it up again to the balustrade of the second floor and you have a better design. Remove the paper and the cathedral is complete; the huge doublet windows of the towers seem to bring the whole into scale, and you have no doubt as to the destination of the building.

The architect knew the value of plainness to set off decoration and repetition. The flat splay of the doorways with their seven lines of ornament to each, would have hardly borne the carving of the tympanums, lintels, and central supports, had it not been for the mass of plain stonework in the buttresses and spandrels; by the canopied niches in each buttress he introduced an ornamental note, to prevent the ground story being divided into three separate slices; in the same way, in the gallery of kings, he brings forward each niche on the buttress, and these, too, look a trifle wider than the others, thus preventing the repetition from being monotonous; and by the flat arches of the lower trefoiled arcade he keeps a pretty equal amount of shade round each figure, while the smooth perpendicular shafts contrast well with the arms and sceptres of the kings and the pleats of their drapery; and this arcade makes a noble crown to the story, being about a quarter of the space below it, and binds the whole front together, above the solid part, in a way that is not only unique, but a master stroke.

The whole front, as you see, is divided into three unequal bays by buttresses, and what we may call the first floor has each of its three spaces nearly square. A very plain rose window beneath a circular arch fills the centre compartment and two blank trefoils adorn the spandrels above the semicircular arch; a pointed arch spans the two side spaces, each filled below with doublet windows with a blank rose in the solid head above them, and in the middle of each spandrel above the arches are blank trefoils; this story is rather heavy, and contrasts well with the light balustrade and the gallery of kings below and with the open arcade above, which again ties the whole front together at the springing of the towers. Above rise the towers with their grand doublet windows with deeply-splayed jambs, while floral cornices crown the towers and have slight pierced parapets above them. At the outer corner of the hack of each tower the roofs of the circular staircases just peep over the balustrade, and between the two towers the top of the thin central spire looks like a standard from which the banner has been torn. The whole front to the springing of the towers is but a trifle higher than its width. You may remark that the height of each main arch of the top arcade is about twice the height of that of the arcade of kings, which is also about a quarter of the height of the windows of the tower. These towers are 204 ft. high, 2 ft. higher than the Monument of London. The composition of this west front of Notre Dame is, in my opinion, the masterpiece of the west fronts of French cathedrals.

"Simple, erect, severe, austere, sublime."

Amiens is also divided vertically into three divisions, only the centre space is much larger than the side ones; measured by the statues in the gallery of kings, there are eight in the middle bay and five in each of the sides.

The bottom stage of each buttress that goes up to form the side of the towers projects so as to form deep porches, and the buttresses widen out so much in the lower story that the whole of the archivolts of the porches are on them, and the tops are turreted, and have spires, the finials of which run up into the gallery of kings. There are gables over the pointed arches of the porches, while behind the gables of the side porches are windows that light the aisles. The ground story is much higher in proportion than that of Notre Dame, and instead of the great rose-window filling in the first floor, it is above the second floor, and I must remark that the top of the gallery of kings, most unfortunately, cuts off the bottom of the rose, even when you stand with your back at the extremity of the Parvis. The first floor consists of an arcade of four arches over the middle doorway, and

of two under each tower; and each arch is subdivided by a shaft in the middle with trefoiled arches, and in each head there is a circle with a quatrefoil in it; above this is the gallery of kings. Standing between the shafts, which support high trefoiled arches, are the kings—eight in the middle bay and five in the side bays, as well as one in a niche on the face of each buttress. These niches are canopied, the canopies running up on the buttresses of the towers to just above the middle of the lower windows. In the centre bay of the third story is the rose-window filled with late tracery of kaleidoscope pattern, and on either side there are stepped doublet windows in the bottom of the tower; the opening of each window is about four times its width. Above is another story of tower with doublet windows, but of different dates, with the north tower higher than the other; and between the towers, and running up to about half the height of the north tower, is an open arcade. The north-west tower is 223 ft. high.

When the whole of these porches are in shade, they form, as at Soissons, the great and striking feature of the west front, although marred at Amiens by the stone fringe round the arches. The masons deserve as much praise for doing them so nicely, as the architect deserves blame for spoiling, by this trivial device, what would otherwise have been an impressive and dignified effect. All the architectural features up to the springing of the towers are harked by being overlaid with floral ornament, which, like that inside, errs on the side of over luxuriance; while the gallery of kings is spoiled as a feature, by the architect not keeping enough shade round the figures, and by the head of the arcade having too much luxuriant foliage: to put sculpture higher than need be is a colossal blunder. The two adjacent stories, viz., the arcade and the gallery of kings, are too nearly equal in height to look well, while the two stories of windows in the towers, of almost the same height, diminish their effect and the junction of the rose window, and the open gallery above it with the towers, almost destroys the idea of their being towers, for there is no striking contrast between the horizontal lines of the front and the vertical lines of the towers. The photograph, unfortunately, does not show the masses of shadow in the porches which produce the best effect.

The vigour of Notre Dame contrasts favourably with the fronts of Amiens and Reims, in both of which the gallery of kings makes no striking feature, and at Reims the canopied tops of the king's gallery is even more vague than a Saracen parapet. The facade lacks the strong horizontal lines of the cornice which make the composition of Notre Dame so vigorous.

Reims is generally held to be the finest of all the French cathedrals, and its west front is one of the richest, without having altogether lost all its vigour. For, with the exception of the vague line at its top, the strongly marked side windows of the first floor, and the long slits in the towers, form a useful corrective to its over softness, but the vigorous note of the first floor is echoed in the towers. Like Notre Dame and Amiens, it is divided by buttresses into three compartments that run up to the base of the towers, and the relative space between these may be measured by the gallery of the Kings, the centre division containing seven arches and the sides four each, exclusive of the statues on the buttresses. The front is divided into three stories in height, from the ground to the springing of the towers. On the ground are three deeply recessed portals with tall gables; the two end buttresses beyond have arches on their face, with gables over, making the tops of them simulate doorways; the gable of the middle portal runs up to the centre of the rose window; the gables of the two side ones just run into the windows above, and the last gables end at the string of the ground story. On the first floor the buttresses have little columned adiculae, with statues in them surmounted with spires, whose finials run up to the feet of the Kings in the gallery above. In the middle space is a pointed arch, with a rose window beneath it, some 41 ft. in diameter, looking like a huge plate in a tray of the *vasica piscis* form; under the towers on the same story are two gabled windows on each side, each window having a centre mullion and a traceried head; this story is crowned by a well marked string, carrying an open balustrade in the centre part. The story above is the gallery of Kings. This consists of an arcade, in each arch of which there is a statue. There are four side arches and seven in the middle. As these arches have traceried heads, the upper part looks, at a distance, like machicolations, for, as at Amiens, there is not enough shadow round the figures to detach them properly, and

* Being the third Royal Academy Lecture on Architecture this session. Delivered on the 1st inst. by Professor Aitchison, A.R.A.

the Kings and columns make a wide blurred band; the buttresses in this gallery have similar arcades on the face and sides of the buttresses, and the whole arcade is canopied, and over the three centre ones there is a sharp gable, but the tops of the canopies make a bazy line instead of a firm one. Each face of the tower consists of a long window with a centre mullion and a traceried bead, and there are projecting polygonal turrets at the angles pierced with long narrow windows on each face, and the spires and pinnacles have perished. It is a pity that Mr. Gossec has not given in his monograph the original spires, of which I am told a drawing remains.

I must revert to a few of the peculiarities that mark the porches. The gables are very steep so that between the apex of the archivolt and the raising cornice of the gables there is room for sculpture; the north pediment has the Crucifixion, the south the Last Judgment, and the middle one has the Coronation of the Virgin. On the cornices of the central gable canopies run up in steps to the top, looking like the stalactite work of the Saracens, or at a distance like a flock of doves that have settled there.

The portals are so high that windows are inserted above the lintels of the doorways, the window in the centre is a rose. Inside towards sunset the effulgence of the stained glass in this rose window is very striking. I may mention that the clear opening of the central portal is 52 ft. high and 20 ft. wide, divided by a central pier on which is a Virgin and child, and the doorways themselves are 20 ft. high. At the level of the door-heads there is a continuous string of canopies that runs right across all the buttresses, which is reasonable enough in two of them as they have figures beneath, but on the two end buttresses that have no statues beneath them, though there the canopies are of slight projection.

As a monument of bathetic grandeur it surpasses everything I have seen in Europe, for I have never been in India, but as a purely architectural composition it falls far short of Notre Dame. In the case of each of these three cathedrals I have merely given you my own impression on the merits of the composition, but in the actual edifice we are as much affected by the size as by other qualities. As architects we are still more affected by them as wondrous masterpieces of construction, and that, too, effected by architects straitened for means and surrounded by every difficulty.

It may be as well to speak of some of the late Gothic work before I leave France; and, as I have told you on former occasions, in criticising buildings I always endeavour to speak only of what I have seen—second-hand admiration or blame is, I think, of very little use. You can, as the astronomers say, allow for the personal equation of the observer; but you cannot do this if you do not know who the critic is.

The Church of St. Wulfran, at Abbeville, is said to be due to Cardinal Amboise, by whom it was founded, and it is said to have been begun in 1488, but not carried up far till early in 1500. It consists of two stories, with twin towers above the second story. The ground story consists of three portals, only divided from one another by canopied buttresses. The portals are not very deeply recessed, but of the utmost elaboration; and the central portal is so lofty that it has a rose window over the lintel. The tracery of this rose is, however, ugly. From the archivolts of the portals spring gables full of tracery, the two side ones stopping at the string, and the middle one running up to more than half the height of the window above, the whole of the space between the buttresses and the gables being arcaded so as to form minute panels in two stages.

Above the ground-floor string is a pierced parapet to protect those in the wide gallery above, so that the buttresses at the end of the towers are of great projection. In the middle compartment of the first floor is a large pointed west window nearly filling the whole space between the buttress, and with the top of the window treated as a rose; and the label above the archivolt is carried up and finishes against a single pinnacle above the parapet attached to the gable behind. The front consists of a canopied niche containing the Virgin and Child. All the space between the first-floor window-head and the string is arcaded in narrow panels. Under the towers are twin doublet windows filled with louvres. Above the windows the ground is panelled, but the plain masonry is left below the sills, with a little window below the sill, and a doorway below in the north one. These doublet tower windows have no architectural relation in height with the centre window. Above the string is a pierced parapet to a narrow gallery. Above the parapet are

two towers, having twin doublet windows filled with louvres. These windows are rather taller than the lower ones, with canopies and paneling between the heads and the cornice. Each tower has a floral cornice, which is capped with a pierced parapet with standards at the angles and in the middle. Both towers have octagonal outside staircases, whose tops are steeply roofed, and form twin angles to the towers.

It is a striking monument of exceeding richness and elaboration, and if it were not for the curious position of the lower tower windows it would be an effective composition.

The centre portal of the west front of Rouen Cathedral and the part above, as well as the upper part over the side portals, is said to have been built in the days of Cardinal Amboise, between 1509 and 1530, the side doorways being of the latter part of the twelfth century; and I may say, by the way, that the north doorway is, perhaps, with the exception of the south porch of Chartres, which also shows Romanesque influence, one of the finest pieces of Gothic composition in France.

The whole of this facade is flanked by two towers, the north one called the Tower of St. Romain, of the thirteenth century, and the south one the "Butter Tower," of the fifteenth and sixteenth centuries. Just short of these two towers the composition of the centre is flanked by two small square towers crowned with spires. The centre part between them is also flanked by two small, square towers, which probably had spires whose cornices range with those of the former towers. It is not easy to give a clear verbal description of the design, but, after hearing it, the lantern will show its appearance. Beginning at the ground, projecting buttresses flank the doorways. These buttresses are elaborately enriched with canopied niches and run up to the level of the centre of the rose window: between the buttresses of the centre bay springs the stepped arch of the central portal surmounted by an open gable. The cornices of the gable run up the rose window. Just over the point of the outer archivolt of the door is a string with an open balustrade above it, and at the back of this is an openwork arcade, the arches of which form an A, probably for Amboise. At the back are the deep jambs and arch of the central window, beneath the latter is the central rose window filled with thin and elaborate tracery. From the top of the archivolt of the great window run up ten small buttress-headed mullions cut off by a string level with the top of the arch through which they run, forming a pierced and canopied parapet with an arcade over it, each arch of which is alternately canopied and gabled, and at the back is an arcaded parapet. From the tops of the three centre ones runs a sharp curved gable with a finial behind it, flanked by two pinnacles with open flying buttresses. The spaces to the north and south of the great window are formed into an arcade of three arches on each side mullioned with two mullions and divided into three heights with two heights of main arch filled with tracery; and with the head of each tower are blank and the one between has its traceried head open to the sky; standing on the canopied transoms are three rows of statues, one between each pair of mullions. A great part of this tabernacle work had perished, but was being restored some ten or a dozen years ago when I was last there. Between the last small northern tower of the front another arch wanting going right up to the tower of St. Romain.

Rouen Cathedral cannot be said to be existing in effect, the grand recessed central portal gives a sufficiently deep shadow—as does the deeply-recessed rose window with the harbed point in deep shadow above it, which almost looks as if the lofty gable of the door were its handle. Above, the open gallery has little more than a quarter of its length in light against the deep shade behind; the whole gallery holding the two narrow towers together. Attention is arrested by the slight cornice of the open gable to the central portal, which stand out light against the great dusky west window, which it cuts in two. Still, with all this, and with all the wonder experienced by the mysterious shapes and by the knowledge shown and the skill exhibited, it cannot be considered a satisfactory composition, nor in the true sense an architectural one. The central feature—that is, the middle portal—with its buttresses, is not ill proportioned, but the flank windows in the towers give a look of weakness to them, and an amateur could scarcely admire the proportions of the whole front between the tower of St. Romain and the Butter Tower, while to the architect it neither suggests permanence nor durability, but an ivory casket to be put under a

glass case; nor do the arcades suggest any comprehensible interior. The traceried heads of the second arcades, through which the sky is seen suggest folly, as the blind arches against the towers suggest weakness, while the open gable over the central portal suggest two scaffolds or the gigantic wooden compasses seen in the monuments to Gothic architects. With all its elaboration, originality of design, and superhuman skill in workmanship, it is much less satisfactory than the front of Soissons; which is plain, simple, effective, and eminently suggests permanence and durability: as well as that masterstroke of the architect, the production of the proper effect with the slightest amount of work. The cathedral up to the first floor consists, exclusively of the buttresses, of plain flat masonry with three deeply-recessed portals, there is a narrow recessed archivolt to each of the portals corbelled over, the edge of which is ornamented with string beads at considerable distances apart, a small cornice or string ornamented with leaves and a pierced parapet above, finishing this projecting story; the design of which is almost perfect, the sizes of the openings being of most exquisite proportions, and the ratio of shade to light is equally agreeable. Above this the front is divided into three portions by projecting buttresses, whose three upper sets are nearly equal, and this is capped by a cornice with some effective ornament on it and a deep splay at the top. Two deeply-recessed windows, now blank, fill up the outer divisions, and in the middle space there is a fringed pointed arch, beneath which is a circular rose window. This feature is not to my taste. This story is capped with an open arcade binding the whole front together. When I was there one tower alone remained and two bays of the arcade. The one tower that still remained had a buttress on each angle with pinnacled tops, the finial of each just peeping over the cornice. The whole space between the buttresses is filled with two long windows, which are louvred. The tower is capped with a strong cornice, and with an open halustrade above it.

I must just say a word or two about our own cathedrals, though I doubt if any one can in all respects hold it own against the great cathedrals of France, still I think that the west front of York is a vigorous composition and the treatment of the west front of Peterborough is unique, called by Ferguson, if I recollect rightly, the only instance of a Christian portico. Though barbarous enough, it would be striking if it were not for that ugly little abortion, the library, stuck in the centre arch. One can hardly believe it was put there of malice prepense; I have always supposed that the piers there showed signs of bulging before the library was built. Durham owes much of its fame to its situation, and from the river banks the Galilee perched on the crags is one of the most picturesque things I have ever seen, though it is externally without any merit.

As far as composition on a grand scale is concerned, at least as far as I have seen, Lincoln surpasses everything.

In the Parthenon we admire the exquisite contrast of line; the tapering columns springing from a flight of steps with architrave frieze and cornices repeating the horizontal motive of the steps; but at Lincoln, in the view I give, there is a horizontal line of 160 ft. to set off the vertical masses of towers more than 30 ft. square and 100 ft. high, while the centre lantern tower is more than 50 ft. square and nearly 120 ft. above the ridge, with windows in it more than 40 ft. high. When you get composition on this scale you cease to care about detail.

I just give you a view of Milan Cathedral and the west front of Siena Cathedral, not to leave out Italy.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

THE GARDEN IN RELATION TO THE HOUSE.

A MEETING of this Institute was held on Monday, at No. 9, Conduit-street, Regent-street, Professor Aitchison, A.R.A., President, in the chair.

The minutes of the last meeting having been taken as read, Mr. W. Emerson, Hon. Secretary, announced the death of Mr. W. Tipping, Hon. Associate. Mr. H. E. Milner, Hon. Associate, then read a paper entitled "The Garden in Relation to the House," the following being an abstract of the paper.

Mr. Milner said that he proposed to speak of the treatment to be adopted in laying out grounds, particularly in their more immediate relation to the house, and to indicate generally a practical

application of the theories advanced. The formal treatment of gardens reached a high state of perfection under Elizabeth, when the architect who designed the house also laid out the garden with its forecourt and broad terrace, its straight walks leading from it encompassing the flowerbeds, and all harmonising with the building. Little thought, however, was devoted to the treatment of the country outside beyond the planting of avenues. Towards the end of the eighteenth century fashion ruled the destruction of most of the old formal gardens, to be replaced in very many instances by a less artificial and formal imitation of nature. The designers were not content with amalgamating with whatever was good of the old work a natural treatment of the outlying ground, or of giving greater breadth to the existing formal work, but swept away all this and replaced it by meaningless walks, by clumps of trees and shrubs dotted irregularly on the lawn and park, by a hounded planting, by imitation of bits of natural scenery, by the introduction of artificial ruins and such-like objects, with the desire of making a picturesque landscape. The author then went on to speak of the happy-mean between the formal and the picturesque treatment. He differentiated greatly between the treatment of terraces, walls, steps, balustrades, &c., in stone and verdure. Architects should extend their work in the garden in connexion with the building; but this work should go hand-in-hand with the composition of the greater picture, which the art of landscape-gardening should produce. The increased resources of modern horticulture should be taken into account: not merely the eye but the mind should be appealed to by the beauty of composition of line, colour, perspective, and grandeur; a liberal art should not degenerate into a mechanical one. Places differed in the conformation of the ground, in climate, in soil, in the requirements of the owner, in the amount to be expended, and in the possibility of an extension beyond the immediate precincts. It was, therefore, futile to lay down any hard-and-fast rules for design. The author then proceeded to treat in detail of the site, the approach, the terrace, and the garden formation and planting. The approach to a house should always appear to be direct, and any deviation from such directness should not only arise from, but should also be made to arise from, some decided obstacle. By direct was not meant straight. A straight approach required careful treatment. It was artificial in character, it could appropriately be used when an imposing or somewhat pretentious building was at the end of it, or when the distance was short, and when the country was flat. In sloping ground it should, if possible, be made against the slope of a hill. The gradient should be even and flat, or very slightly and continuously curved, otherwise it would appear not straight. If the ground be very undulating, a straight road is out of character with its surroundings. A curved line of road was generally to be preferred, as being more easy of construction, more varied views could be obtained, its gradient could be varied, following within limitations the natural undulation of the ground, and the side slopes could be more easily and freely dealt with than the sides of a straight drive. Gradients, width of walks and drives, entrances, were here discussed in considerable detail by the author. The lodge and entrance gates belong to the drive, and should be parallel with, and at right angles to it, as distinguished from the highway. The face line of lodge should be at least 10 ft. from the edge of the drive, and its windows should be able to command the entrance and a certain length of drive. On entering by the drive it was advisable to create a good impression, and, therefore, to mark distinctly the difference between the dusty highway and the shaded, well-trimmed drive within the gates. Planting might be introduced on either side of the entrance, but once well inside a view should be given of the outlying grounds, or stretch of park, or distant wood. A curved drive should not be planted continuously, but broad masses of planting introduced, at first to shut off the highway, at turns in the drive, and on the top or slopes of knolls round which the drive may wind. The direction and level of the approach, and the character of the architectural features, ruled greatly the plan to be adopted for the treatment next the house. The treatment of the terrace also depended very much on the architectural character of the building. By "terrace" was meant not only the narrow strip of level ground placed parallel with the house, or the more stately portion—often with architectural ornaments—laid out along the face of the structure, but the whole of the ground that formed the base or setting of the building.

Having next discussed the various forms of terraces, the author passed on to the treatment of the garden proper, quoting partly from his book on the subject, which defined the system he advocated. So many considerations press in to vary design in the general plan of a garden, that arbitrary dealing by imposition of what may be termed paper designs, however ingenious, was ill advised. The detailed plan should spring from the site as an adaptation of its natural, or created natural, features, and should not be forced upon the position, crushing it to an artificial scheme. To copy simply the design of another place is inadmissible. Considerations that rule in this connexion were almost infinite—extent, geological formation, soil, existing natural formation or features, climate and aspect, the display of distant beauty, conformity to outside influences, particularly to the requirements of the possessor and the expenditure of money that may be made. There were points of similitude between the painter's art and landscape-gardening; but the landscape-gardener must consider that his colours change and grow; he must realise as he creates his picture that in a few years what now seems like a light green stroke of pigment to the painter may have become a tall tree, beautiful in itself, but of altered beauty, either helping or marring the landscape. He must follow nature by adapting or garnering her beauties, and tutoring her, so to speak, to a display of them. But by following nature was not meant a slavish imitation or reproduction of any of her particular scenes. Some were unattractive, some very inappropriate—all were subject to dissimilar conditions, and imitation in nature as well as in art produced pettiness. But the spirit of the beauty of nature embodied as it were in those of her works or features that express her majesty, simplicity, peacefulness, sweetness, repose, refinement, strength, and variety in form, colour, abundance, or any of her modifications as parts of loveliness, should be included and brought into juxtaposition in an ideal scene so far as it was possible to promote its natural development. The terrace, the region immediately next the house, and the general arrangement of the walks and gardens, having been discussed, the author next dealt with the most suitable positions for planting trees and shrubs, principles of grouping, the effect of colour on distance, character of foliage, &c. He maintained that they should carry out in the parts surrounding the house the architectural feeling of the design in terraces, walls, steps, basins, beds, and so form a base; that they could still have the dignified and quiet delight of formal work—not a narrow curtailment of the whole design. But there was in addition a broader treatment beyond—a work difficult to proportion in relation to foreground, to broad lawn-spaces, to grouping, and choosing trees and shrubs for effect in size and colour, to directing the eye to desired points, to taking advantage of climate and character of the place either natural or acquired, to provision of light and shade in the undulation of the ground, and to a knowledge of horticulture. This art-gardening was far beyond the limitations of formal work only, for it could apply the balance and proportion of the latter, and, in addition, present a noble conception of art-work, in its execution of outline, surface-formation, and grouping, and draw into the picture the greater, broader, varied landscape.

The Hon. Alicia Amherst said that she certainly thought that the garden should be laid out as much as possible to coincide with the architecture of the house, and that that was being more seen to every day by the designer. She was glad to hear the allusion to Parkinson and his old-fashioned flowers; certainly there never was a time when there were so many old-fashioned flowers as there were to-day, and they ought to be taken very much into consideration when designs for new gardens were being made, just as in designing an old Elizabethan house we had to adapt it to modern requirements. And the kind of plants should be thought of. In some parts of England, a sheltered garden, or a garden with sheltering trees, would grow anything; and in the southern or western parts of England, many trees which were sub-tropical in appearance could be easily naturalised; and it would not be at all in the interest of horticulture to contract or limit the design.

Mr. Aston Webb, in proposing a vote of thanks to Mr. Milner for his paper, said that the architect and the landscape gardener were most closely and properly associated. The nearest approach to a paradise was a beautiful garden on a beautiful summer's day, and anything that would help us to realise that paradise was very

much to our advantage; but the most beautiful garden was incomplete without a house, just as the most beautiful house was incomplete without a garden surrounding it, and it was essential that the two producers of the house and the garden should work hand in hand from the very commencement. When we were building a house we should call in the landscape gardener as our friend and discuss with him the way in which we proposed to enter the house and lay out the general building before we laid a stick or even drew a line on paper. The question whether the garden should be formal or otherwise had interested architects not only, as some people seemed to think, now, but from the time of Elizabeth. The term "formal garden" was rather overdone, and often very much misunderstood, not so much by architects, but amongst their clients and the public generally. The formal garden that we were striving for was not the formal garden of Holland or of Italy, but the formal garden of England, such as that at Hampton Court or as left at Hatfield and in hundreds of thousands of our old English homes, with high hedges and long walls, with wide sloping lawns to look at and to walk on. How far the garden should be cut off from the general grounds must naturally have affected all that we did. Mr. Sedding thought gardening disappeared when the ha-ha fence was discovered. That was true, and one could recognise the disastrous effect that it had had upon our gardens; but, on the other hand, Mr. Austin, the poet laureate, who had written so delightfully on gardens, quoted from a book lately published, in which it was advocated that there must be a boundary line between the garden and the house, for choice a good high wall, and said that this was an idea that could only have emanated from an architect who naturally went for bricks and mortar. He had not been able to discover that passage. He had also seen a notice in *The Garden* that an architect's idea of a garden was a small square plot of land surrounded by a high brick wall. There must have been some mistake there. Architects did not wish to surround the house with a brick wall and put a garden in the middle of it, but they certainly were not afraid of hedges or walls. Mr. Milner spoke of the courtyard of houses having a wall 3 ft. high. He was sure he must have meant 9 ft. or 10 ft.; a courtyard with walls 3 ft. high would not have been a courtyard at all to his thinking. Mr. Austin, in "The Garden that I Love," had exactly described the ideal sort of garden, and in a little poem called "Had I a Garden" he described his ideal garden as not a strictly formal one, but a combination. It should "lie in the sun;" it should have "Alleys green that lead where none should trace;" it should have a certain mystery about it; it should provide "shelter for feeble feet" under its tall trees and in shady walks, and it should have "design." In a garden which was man's work man's hand should be visible—not too apparent, but showing some object in view.

Mr. Statham seconded the vote of thanks to Mr. Milner, although he could not say that he altogether agreed with him. We were in a sort of reaction in regard to the question of the formal and informal garden. For a long time the formal garden was discarded as an old-fashioned thing in favour of the natural garden; now there was a movement in favour of it by some clever enthusiasts who were disposed to go to the other extreme. Like Mr. Milner, he had no sympathy for that movement. He did not think that hedges and trees clipped into artificial shapes necessarily belonged to the formal garden. Hampton Court as it now stood was almost an ideal formal garden in connexion with a house, but the old engravings of Hampton Court, as originally laid out, showed a totally different thing—a formal garden of little box hedges laid out in intricate and elaborate patterns. That had all been done away with, and to the great improvement of the garden. He agreed with Mr. Milner in advocating the formal treatment of the garden in immediate connexion with the house. Till recent years that was not realised, but now both the formal and informal people were inclined to it; but he disagreed with Mr. Milner where his walks began to wriggle. The walks and clumps of bushes in one of the plans reminded him of the great problem in creation—which came first, the bird or the egg; were the walks curved in order to get round the bushes, or were the bushes planted for the walks to curve round? His opinion was that the whole process of what was called landscape gardening—the carving out of a sort of picturesqueness out of the ground, and planting trees to make what might be called an artificial accident—was all a delusion, and did not give pleasure, because it was always

found that it was a contrived thing. Turn again to Hampton Court; nothing could be better; the garden formal in detail; the park, beyond the garden fence, not formal in detail, but formal in its general lines, keeping up the appearance of design over the whole ground. As to light and dark coloured trees being used to give the effect of nearness or distance, he did not quarrel with Mr. Milner on that point, but it reminded him of the case of the poet Shenstone, who had a fancy for artificial effect, and in a small garden arranged an avenue with converging sides to make an artificial perspective; he made bays in it half-way down, ending with large dark trees on the nearer side and beginning with small light tinted trees on the further side, to give a false extent to the opening, and the vista ended with a miniature summer-house too small for any one to get inside, and painted in delicate tones to give the effect of distance. The Nemesis that overtook Shenstone was that his neighbours the Lytteltons, on the next estate, used to bring their friends to the boundary to look at Shenstone's perspective from the wrong end.

Colonel Prendergast said he thought that Mr. Milner's paper would be found to contain a great deal of most valuable information on a subject that touched the Institute more nearly than people were inclined to believe, for each generation had to deal with the difficult task of making our English homes more charming than they were before. Fifty years ago the great houses of England were laid out so as to have a great field right up to them. At that time the Duchess of Sutherland, who had been brought up at Castle Howard, which was Italian in all its surroundings, set to work at Trentham to create an Italian garden, but splendid as it had been and was, one knew that the bedding out business was now utterly worn out and done for. In England in all matters we were divided into two parties, and in the matter of gardening we had the formalist and those who went in for a free hand. He agreed with Mr. Milner that the garden could only be treated properly in these days by a combination of the two methods. The Institute was chiefly concerned, no doubt, with new buildings. Unlike the buildings of a former day, which were always built in hollows or on the flat, the houses were now almost always placed on high ground, which at once altered the whole method of treating the grounds round them; it was therefore the more essential that the architect and landscape-gardener should be in consultation, and in complete accord from the very commencement, and that no cut-and-dried plan should be laid out for the grounds until you knew how the house was going to look, and how the superfluous material was going to be disposed of.

The President, in putting the vote of thanks to Mr. Milner, remarked that every one who was born in England was sure to have more or less of a taste for a garden, whether it was a formal one or a natural one. He admired Mr. Milner for his modesty, for he had always understood that the landscape-gardener looked upon himself as entirely master of the situation; that the only important thing was to lay out the grounds, and having done that, he could always recommend an architect to build the house to accord with them. There was a certain charm about what it was the fashion to call the formal garden, with its cut yews and cypresses, especially in a cottage garden in wildish places in the country, where they formed such a contrast to the natural wildness and introduced a touch of humanity into nature. This trimmed garden was derived, like most things in our civilisation, from the Romans, by whom it was carried, perhaps, to an excessive degree when the trees were cut into the shape of animals. Martial told us of a little boy who put his hand into a bear's mouth cut in the foliage of a tree, but a serpent had got in there and bit him, so the bear was the end of the boy. The best thanks of the Institute were due to Mr. Milner, for there was hardly one present who had not had a house or even a cottage to build inhabited by people who had not always been accustomed to cottages where a garden formed its principal delight.

The vote of thanks was then put, and carried unanimously.

Mr. Milner, in reply, said: It was difficult to say where in the discussion lay the happy mean, when on the one hand one of the greatest authorities on art (the President) stated that it was pleasant and delightful to see a cut bird next a little cottage, and another gentleman (Mr. Statham), who certainly had studied gardening, insisted that the formality should extend not only close to the house, but should form the whole of the garden. Then, again, Mr. Aston Webb, whom he had always considered most moderate, advocated the extension of the formal garden in a



GATES. ITALIAN. 17th CENTURY

Fig. 1.

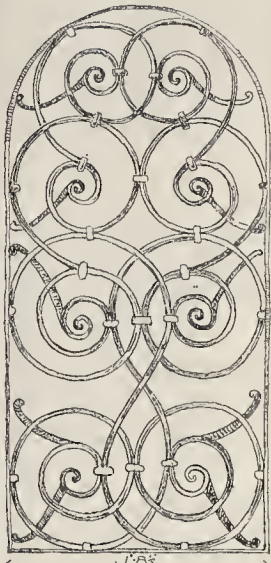
greater direction than he should do. He had tried to explain that the formal garden (which he agreed was a misnomer) should extend to and form the platform of the house, but that once passed you must at some time get into the natural treatment of the ground. He thought Colonel Prendergast had made a most important point which he admitted in his paper that houses were now placed on the hills or hill-sides, whereas formerly they were on the flat ground. The only rational way of treating the ground was to adapt your plan to the natural site. It was unwise, if not impossible, in an undulating district or on the hill-side or at the top of a hill to form a regular formal garden, such as Hampton Court. He agreed with Mr. Statham as to the alterations and improvements at Hampton Court, but at the time when the avenues there were laid out there was not that fringe of houses that there was now, and many of the avenues led from nowhere to nowhere, and if that Hampton Court plan had been made on the hill-side, he thought the result would have been ridiculous. You must adapt yourself to the place in all your work. He felt with Mr. Aston Webb that the architect and the landscape-gardener should work hand in hand. The work of the landscape-gardener he took to be to form in his mind a picture of how the ground would look when he and the architect had finished with it; and so they ought to work in harmony. He always in his own practice tried to induce the architect to carry out into the gardens more of his architectural work, and he felt strongly that this

subject had been very much neglected. It was all very well to talk of the formal garden, but the hedges would grow and shut off views. There was no formal garden over eighty years old that retained anything of its former and ideal character. The really old gardens had a picturesque quality in the growth of the trees themselves, but that was not owing to their design; it was owing to the beauty of the trees themselves. Mr. Aston Webb spoke of the courtyard. He should be very sorry to see a courtyard with walls nine or ten feet high all round the north side of the house. The walls must necessarily be high if they were to enclose the offices, &c., or to provide shelter, but surely one would like to have a peep into the park on the north and north-west sides through the courtyard.

The Chairman announced that a Special General meeting would be held on the 1st prox. to elect the Royal Gold Medallist for the current year.

The meeting then terminated.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—We are informed that the partnership which has for many years existed between Mrs. Mary Woodward and Mr. Samuel Hunt Rowley, who traded as James Woodward & Rowley, sanitary earthenware manufacturers, at Swadlowcote, Burton-on-Trent, has been dissolved by mutual consent. Mrs. Mary Woodward will henceforth carry on the business of James Woodward on her own account at the works and premises where the partnership business has been carried on.



TWO WINDOW GRATES FROM—

Fig. 2.



ALIX-LE-CAPELLE. GERMANIA. 17 1/2 CENT.

Fig. 3.

ARCHITECTURAL SOCIETIES.

ARCHITECTURAL ASSOCIATION: DISCUSSION SECTION.—The seventh meeting of the Discussion Section of the Architectural Association for this session was held, on the 27th inst., at 56, Great Marlborough-street, Mr. W. Pywell in the chair. Mr. F. C. Eden read a paper on "Mystery as an Architectural Quality." Mystery, the author said, was that which is obscure until explained. It might be either absolute or relative to man's knowledge at the time at which it was expressed. Its value in the arts was its truth to Nature, and its function its power to rouse the interest of the spectator. Mystery had a well-recognised place in poetry and the drama, and it was especially appropriate in music and architecture, and, though it was perhaps not essential to beauty, yet in the greatest works it was ever present. In architecture its sources were found in various qualities, such as reserve in the mind of the designer, which became suggestion in that of the beholder. Such reserve was seen in complication and inexplicability of parts, as in Gothic tabernacle work, interpenetration of mouldings, and intricate vaulting; in subdivision of plan, as where the altar screens at Winchester, thwarting the view, suggested further glories beyond; in incompleteness or unsymmetry, as in the differing twin towers of many foreign churches. Other sources of mystery were found in surprise; in gloom, which, however, was only telling when relative to surrounding brilliance either in other parts of the same building or in the open air, as in sunny lands; in inspiration of design, occasionally so marked as to be mysterious; in size; in sumptuousness; in situation and environment; and in remote age, which was always mysterious, and which gave to buildings, though they might have been commonplace to contemporary men, a mysterious interest to succeeding generations.—In the discussion which followed, it was brought out that mystery as seen in architecture was probably more a result of fortuitous circumstances than a quality deliberately sought for by the designers of buildings; and that a quality in the mind of the beholder was perhaps as essential to its existence equally with the qualities in the object beheld. The next meeting will be held on the 24th inst., at 7 p.m., when Mr. Henry Rose will read a paper on "Dodges."

EDINBURGH ARCHITECTURAL ASSOCIATION.—This Association, by permission of the Edinburgh School Board, visited on Saturday last the new school at Broughton, under the leadership of Mr. Robert Wilson, architect. The school is built upon the site of Blackfield House, and

consists of a central block with a wing at each side. The central block contains the principal class-rooms, entering from a combined boys' and girls' staircase, and in the wings are the teachers' private rooms and coveys and laundry class-rooms. There is a total accommodation for 1,358 children, provided at a cost of about 24,000*l.*, exclusive of the site. In the basement are situated the gymnasium, swimming bath, boiler house, and engine room. The visit was brought to a close by a vote of thanks to Mr. Wilson for his explanation.

DUNDEE INSTITUTE OF ARCHITECTURE, SCIENCE, AND ART.—A meeting of this body was held in the Victoria Art Galleries, Dundee, on the 10th inst., Mr. Leslie Ower presiding. Mr. J. J. Henderson, the Secretary, read the announcement of awards in connexion with the local competitions of the Institute. The referees in connexion with the competition were Messrs. T. S. Robertson, James Langlands, J. G. H. Spindler, Robert Hunter, and John MacLachlan. There were eight competitors for the first competition (sketch-book), and the awards were as follows:—1, Miss Ada Hill Walker, St. Andrews; 2, Robert Annal, Dundee, and A. G. R. Mackenzie, Aberdeen, equal; 4, Thomas Ross, Dundee. The other competitions resulted as follows:—Measured Drawing—1, Andrew Haxton, St. Andrews; 2, R. D. Baillie, Cupar Fife. Design for Pediment—A. Hilton. Outline Drawing from Museum Cast—1, Miss Catherine Fidler, Dundee; 2, W. H. Grant, Dundee. Interior Glass Door—J. Wyse, Maryfield. Mr. Walter McGregor, Superintendent of the Public Baths, Dundee, then gave an address on "Water Heating by Steam." He explained the working of the various kinds of apparatus in use in the Dundee and Lochee Baths.

CARLISLE ARCHITECTURAL, ENGINEERING, AND SURVEYING SOCIETY.—A meeting of this Society was held in the Town Hall on the 9th inst., Mr. C. Lonsdale occupying the chair. A paper was read by Mr. J. Slack on "The Warming of Buildings." The lecturer described the methods of warming buildings by means of one-pipe apparatus, and described their advantage over the old two-pipe system. The lecture was illustrated by diagrams and photographs of the most improved fire-grates now in use. A vote of thanks to Mr. Slack for his paper terminated the proceedings.

THE ARCHITECTURAL ASSOCIATION OF IRELAND.—The first of a series of visits to buildings was held on Saturday last, when, by the kind permission of the architects (Sir T. N. Deane & Son), the party were conducted over the

new lecture theatre of the Royal Dublin Society by Sir T. N. Deane. On Monday evening at the Advanced Class of Design Mr. J. J. O'Callaghan criticised the designs submitted for "A Village Public-house." The next subject to be criticised, by Mr. T. Drew, is "A Small Country Church." On Tuesday evening the ordinary meeting was held at the Grosvenor Hotel, Mr. R. Caulfield Orpen in the chair, and among the visitors were a number of the medical profession, who took part in the discussion, the subject of the lecture being "Hospitals and Hospital Construction," by Mr. F. Batchelor. The lecturer drew attention to the fact that Dublin stands second in the United Kingdom in the proportion of hospital beds to the population. London stands first, and Edinburgh third. Of the Continental cities Rome occupies the first place, with about three times the number in proportion to the population that Dublin provides. The lecturer then described the various types of hospitals in the United Kingdom and the Continent, and, after describing them, he went fully into the construction, accommodation, arrangements, methods of heating and ventilation, and various other points of interests. A discussion ensued, in which Mr. Jameson Johnston (City of Dublin Hospital), Mr. Rawson Carroll, and Mr. F. Hicks, took part. The Chairman having announced the next subject for the Advanced Class of Design, "A Cottage Hospital," to be criticised by Mr. Batchelor, the meeting terminated.

COMPETITIONS.

POSTER FOR THE BUILDING TRADES' EXHIBITION.—The premium of 10*l.*, offered for the best design for a poster to advertise the Building Trades' Exhibition in March next, brought forth some thirty competitors, the winner being Mr. J. Houry, 9, Athelney-road, Bristol. The following competitors were highly commended:—"The Master Builder" (Muirhead Bone, Glasgow); "Sphinx" (Alfred Morgan, London); "Bis" (Robert F. Sherar, Edinburgh); "L'Elephant Blanc" (David Pearce, Glasgow).

SKETCHES OF WROUGHT IRON-WORK: SOUTH KENSINGTON MUSEUM.

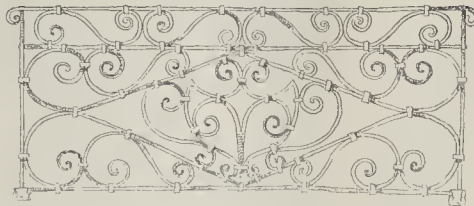
THESE examples, mostly of the seventeenth century, serve to illustrate some of the decorative effect which may be obtained from the simple treatment of wrought iron in lines which express more or less the ductility of the material, without any of the more elaborate effects of smith's work in conventional foliage and other such details.

Of the Italian examples, the gates shown in fig. 1 present an admirable example of the form of ornamental design in perfectly symmetrical panels which is characteristic of the taste of the Italian Renaissance, reminding us of the effect often found in carved pilaster panels, but treated in a manner entirely suited to the material. The whole design is formed by the twisting of the bars and the manner of putting them together; and though the whole is completely symmetrical whether we regard it as divided vertically or horizontally, yet there is complete freedom and play of line in the detail, which is bent and played with in its various curves in a very expressive manner. If we compare this with the two German designs shown in figs. 2 and 3, of about the same period, we may recognise that neither of these makes so characteristic a use of the ductility of the material. Fig. 2 is designed in curves, but in a more rigid and less playful manner. In fig. 3 there is more freedom in the treatment round the edges of the panel, but the central portion shows a stiff cross-barred pattern which is quite out of keeping with the character of wrought iron, and, as far as decorative purpose is concerned, is both commonplace in effect, and a throwing away of the real capabilities of the material.

Fig. 4 (p. 170) is elegant in design, but derives a little stiffness of effect from the straight lines running through it, which makes it inferior in point of style to fig. 1. The grille shown in fig. 5 is a good example of Italian taste in the production of a geometrical diaper pattern in a thoroughly wrought iron manner, and in this respect may be instructively compared with the hard mechanical effect of the centre portion of fig. 3.

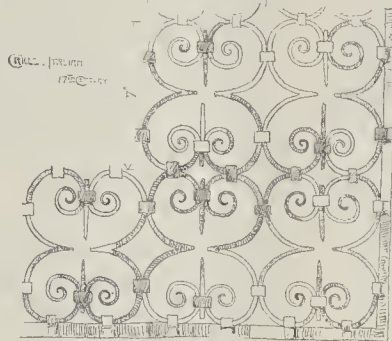
Fig. 6 is an example of German freakishness in the design of the vane, which is rather original, and the decoration at the top and bottom is in harmony with the material. Figs. 7 and 8 are fair examples of bracket designs, a little wanting in decision of form.

Fig. 9 is exceedingly English in character, one of those examples of the way in which English smiths would ornament an instrument for



SCREEN. ITALIAN. 17th CENTURY

Fig. 4.



SCREEN. ITALIAN. 17th CENTURY

Fig. 5.



Fig. 6.

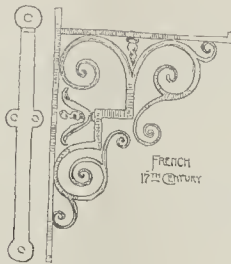


Fig. 7.



Fig. 8.



Fig. 9.

practical use in a manner which rather interferes with its appearance of efficiency for its purpose, and perhaps with its actual efficiency, but nevertheless converts it into an object of artistic interest, though in a rather eccentric and semi-grotesque manner, as is often the case with English work of this class, where we are struck not so much by any beauty of line in the implement as by the curiously pertinacious endeavour of the workman to twist his work into shapes which were intended to conceal its merely practical character. This class of English work is not of the finest type in an artistic sense, but it is interesting from a certain original humour which seems to pervade it.

THE SANITARY INSTITUTE.—The council have accepted an invitation from the City Council of Leeds to hold a Sanitary Congress and Health Exhibition in that city in the month of September next.

THE LONDON COUNTY COUNCIL.

The usual weekly meeting of the London County Council was held on Tuesday at the County Hall, Spring-gardens, Sir Arthur Arnold, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee it was agreed to lend the St. Marylebone Baths Commissioners 10,500*l.* for rebuilding the public baths, and the School Board for London 150,000*l.* for school buildings and other purposes.

Proposed Incorporation of Westminster.—A long debate took place on the following recommendation of the Local Government and Taxation Committee:—

“(a) That while the Council does not object a charter being granted for the incorporation of any suitable area in London, for the purposes merely of the change of the corporate name and the substitu-

tion of the name of mayor and council for the existing name of a vestry or district board, provided that this can legally be done in the manner proposed, the Council will strenuously oppose any transfer of powers by any such machinery, or any such transfer by any other machinery to a particular area, without the simultaneous consideration of the whole subject of powers and areas in London.

(h) That a communication in accordance with the above resolution be sent to the Privy Council.”

After two amendments had been defeated the recommendations were agreed to, the phrase, “the Council will strenuously oppose any transfer of powers,” being altered to read, “the Council will oppose any transfer of central powers.”

New Theatre, Norris-street, Haymarket.—The Theatres and Music Halls Committee brought up the following report:—

“The Council, on June 30, 1896, approved of two drawings, submitted on behalf of Mr. Henry Dana, showing a site for a proposed theatre situated at the junction of Norris-street and St. Alban's-place, Haymarket. Norris-street, it was pointed out, is only 28 ft. 6 in. in width at one end, but is shown on the drawings to be increased in width to 30 ft. in front of the theatre. St. Alban's-place is at present 41 ft. 2 in. in width in front of the proposed building. On November 24, 1896, we reported to the Council that we had received seven drawings, dated November 10, 1896, submitted on behalf of Sir Henry Brownrigg, for the erection of a theatre upon this site, that seating accommodation would be provided for 800 people, and that all the regulations of the Council would be complied with. These drawings we asked the Council to approve upon the usual conditions, but the matter was withdrawn when our report was laid before the Council in order that we might further consider the question of the site of the proposed premises. We therefore gave the whole question further consideration, with the result that our previous report was again submitted to the Council on December 15 last, and again withdrawn. We have to report that we have again carefully gone into the whole matter, and having regard to all the circumstances of the site, we recommend—That the seven drawings, dated November 10, 1896, be approved, on condition that the works be commenced within six months, and be carried out in all respects in accordance with the Council's regulations and the provisions of the London Building Act, 1894, and that upon our reporting the completion of the building in accordance with the approved drawings and the above conditions, a certificate under the Metropolitan Management and Building Acts Amendment Act, 1878, be sealed and issued to the owner of the premises.”

Mr. Roberts moved as an amendment “That the recommendation be referred back to the Committee with an instruction to consult the solicitor as to the legal position of the Council in the matter, and to report to the Council thereon.”

He especially called attention to the narrowness of the thoroughfares leading to the site.

Mr. John Balfans, M.P., strongly supported the amendment, contending that the site was altogether unsuitable, and that the approaches were of less width than the regulations required.

Lord Monkswell said whether the plans complied with the regulations or not did not much matter, because it must be apparent to any one who had seen the locality that a theatre on this site would be nothing more nor less than a death trap. Therefore they ought not to hesitate in rejecting the application.

The amendment was carried by a large majority.

Drainage of Clerkenwell Detached: Construction of a Sewer.—On the recommendation of the Main Drainage Committee it was agreed that the tender of Mr. John Jackson, as amended, and amounting to 1,075*l.* 14*s.* 6*d.*, for the construction of a sewer and other incidental works for the drainage of Clerkenwell detached, be accepted; and that the Solicitor be instructed to prepare the contract.

City of London (Sewers) Bill.—The report of the Parliamentary Committee contained the following paragraph, the recommendation being agreed to, 54 voting for and 51 against:—

"The object of this Bill is to dissolve the Commissioners of Sewers of the City of London, and to provide for the vesting of the property of the commissioners in the mayor and commonalty and citizens of the City of London, and for the execution of the powers and duties of the commissioners through the Common Council of the City. We need not remind the Council that the City of London stands in an exceptional position, never having been subjected to the legislation under which the other municipal corporations of the country have been reformed. The general powers of local government which have been granted to the reformed municipal corporations have not been granted to the Corporation of the City of London, which at the same time is not placed under the same financial restrictions as those corporations. The City Corporation possesses uncontrolled powers of borrowing and of alienating its property, and is not under the usual obligations as to the redemption of its debts; it does not submit its accounts to independent audit, or publish an account of the value of its corporate property. All the general powers as to management, sewerage, street lighting, watching, and rating within the City have been placed under the Commissioners of Sewers. Under the present scheme of metropolitan management, therefore, the area of the City under the Commissioners of Sewers stands on much the same footing as the areas of the other parishes and districts under the local government of vestries and district boards. The effect of the present proposal is to invest the City Corporation with all the general powers of local government, including new powers of rating, without at the same time subjecting it to the general law applicable to municipal corporations, and the bill, if passed into an Act, would certainly place a considerable impediment in the way of future reform of local government upon all the principles which have been hitherto suggested. We recommend:—That a petition be sent and presented against the City of London Sewers Bill."

The Council adjourned after having transacted other business.

THE LONDON COUNTY COUNCIL INQUIRY.

The special inquiry into the organisation of the Works Department of the London County Council was resumed on the 3rd inst., when the examination of Mr. Edward White was concluded.

In reply to Mr. Dickinson, the witness said that, in putting the loss on the Colney Hatch works at from 5,000*l.* to 6,000*l.*, he had purposely understated the amount. He now showed that 7,000*l.* would more nearly represent the total loss. The real cost was found by adding the 3,253*l.*, which the Comptroller estimated as the amount of the transfers when adjusted, to Mr. Dyson's figures, 20,229*l.*, making the real total 23,482*l.*, and not 22,891*l.*, as had been stated. The sum of 2,900*l.* was still in dispute, that amount being claimed by the Works Committee for extra work done. The Engineer was of opinion that only 300*l.* should be allowed. This dispute would have to be settled by arbitration. In the case of Banstead Asylum, a precisely similar work, but done by a contractor, the claim for extras was only 230*l.*, which, as afterwards explained by Mr. White, was reduced by the Engineer to 70*l.* The witness denied that the work at Banstead was inferior; it was, on the contrary, very good, while worse work than some of that at Colney Hatch, especially the

matchboarding, he had never seen. The wood was full of knots, was sappy, and very badly prepared. He had never seen such stuff used for varnished work. Work had been passed there, because it had been done by the Works Committee, which never would have been passed if done by an outside contractor. In the case of both Colney Hatch and Banstead the buildings were of a temporary character, and of such a special nature that they should never have been undertaken by the Committee. The witness invited the Inquiry Committee to go down to Colney Hatch and see the work for themselves. In the case of the Bexley Asylum foundations, where the prices obtained by the manager were good, there should have been a large profit, instead of which, when the establishment charges of 6 per cent. were added, there would be a loss of 7,700*l.*, instead of a profit of about that amount. The brickwork in the foundation requiring no scaffolding was charged at 15*s.* a yard, and 20,000 yards of sand at 1*s.* a yard. On both these items there should have been a very good profit. Then, during the construction, the Committee were fortunate in having four or five months of extremely fine weather, and the manager naturally thought that this would be a good job. The loss was simply due to mismanagement and to the waste of labour. The works executed by the Committee at the Asylum were only the foundations and not the superstructure, the whole cost of which the Committee knew would be 350,000*l.* In answer to further questions, the witness said the real amount of the contract for these foundations was 105,000*l.*, but it had been stated by Mr. Ward at 34,000*l.*, and nothing had ever been said to the Moderate members on the Committee about this higher sum. He did not know who had prepared the estimates, but he had been told that they were made up by Mr. Burns. It was true that out of a selected list of twenty-two builders only eight had sent in tenders, but several others had written to say that they would have been glad to tender but for the onerous conditions imposed. Seven out of eight of the jobs let to contractors were being carried out by country firms because the London builder would not compete so long as such conditions existed. They were thus driving the work into the country, and the London ratemayers were the sufferers. Not only was the contractor required to show his books, but he had to make a statutory declaration that the books were kept correctly, and this condition was regarded as an insult. The only alternative was to obtain tenders from a selected list of contractors.

Mr. Dickinson: Mr. Alderman Taylor has told us that the Government have given up the system of selected tenders.—The School Board do it, and their jobs are much more comparable to ours than Government jobs. The examination was continued at great length by Mr. Dickinson upon the witness's previous statement that the knowledge of the regulation for the production of periodical returns had been withheld from the Committee, which Mr. Dickinson regarded as a very serious charge. Mr. Dickinson endeavoured to make the witness admit that these periodical returns were only ordered for the information of the Comptroller, but the witness stated that the rule in question (Rule 62) had been passed in November, 1894, three months before he, as a member of the new Council, was elected, and when the complexion of the Committee was of a less party character. Mr. White adhered to his opinion that the first return should have been presented in November, and not left until March 25. A return brought down to the beginning of March should undoubtedly have been produced at the first meeting of the new Council. Instead of that it was withheld, and the witness did not think it was withheld accidentally.

In reply to Mr. Gruning, the architectural assessor, Mr. White made a further statement with regard to the losses on Vauxhall Temporary Bridge, Shelton-street, Bexley, and other jobs. He had estimated the loss on Vauxhall Bridge at 2,000*l.*, but when the establishment charges were added he believed it would amount to more than 3,000*l.* On November 20 last 11,484*l.* had been expended on the work, which was 44*l.* over the original estimate, but according to the new manager there was still, at that time, three months' work to be done, and that, by adverse conditions of weather and tide, might be further extended. When the losses on the other works mentioned were added the total loss would not be less than 29,750*l.*, and he still thought that this estimate was very much under the mark. There were some other large jobs which were not yet sufficiently advanced for a similar estimate

to be formed. With regard to the question of friction between the Works Committee and the Architect's and Engineer's Departments, Mr. White expressed the opinion that the friction must continue so long as those officers did their duty, unless the Committee could show a profit on their jobs, and then, of course, there could be no dispute.

Mr. Gruning: What is the cause of the excessive cost?—It may be attributed chiefly to two causes—the cost of management and supervision, and the cost of labour. The supervision should be strengthened, and the tendency of the men not to do the same amount of work for the Council as for a contractor should be overcome if possible. No contractor would think of investing 125,000*l.* in a business of the extent of that of the Department, and of this sum he would never lay out 75,000*l.* for stores. The contractor's chief source of expense would be the wages, which he would have to provide for two months, at from 3,000*l.* to 4,000*l.* a week, amounting to about 25,000*l.*

Mr. Gruning: Would the builder turn over his money more often?—A builder would not require more than 50,000*l.* for a turnover of 250,000*l.* The witness expressed an opinion that the more work was undertaken by the Department the more money would be lost. The tendency in the Department was to take on too much work. They had fifty jobs running at one time, and as many as 4,000 jobbing works, which would, in the ordinary way of business, be distributed amongst thirty or forty jobbing builders. He found it difficult to say whether the Committee would be better employed in doing large works than in jobbing works because all their jobs showed a loss. He did not know of any Corporation which took on so many jobbing works as they did.

In reply to Mr. Waterhouse the witness reiterated his opinion that the Architect's estimates would have to be increased if these excessive costs were to continue. This agreed with the statement in evidence of Mr. Blashill himself, and also that of the Engineer, Mr. Binnie.

The next witness examined, Mr. Alderman Taylor, a member of the Works Committee, said in reply to questions from the Chairman, that before becoming a member of the County Council he was secretary of the Bricklayers' Union, and he was still the bricklayers' representative on the Arbitration and Conciliation Board of the London Chamber of Commerce.

His visits to the Central Works as well as to the other jobs had been very frequent, but they were merely to see how the works were progressing, and he had never spoken to a single individual upon any of the jobs except the manager or clerks of works. He did not know whether less work was done by the men in the earlier jobs, but at present they did a very fair day's work. After further questions with regard to the employment, as a bricklayer, of one of the witness's brothers the examination was adjourned.

The examination of Mr. Taylor was resumed on Friday, the 5th inst., by the assessors, Mr. Waterhouse and Mr. Gruning. In the witness's opinion, though less work was done by workmen under the Council, it was of a better quality than they would do for contractors, and he considered that good results had followed the institution of the Department. As instances of good work, he gave the jobs at the New Cross Fire Station, Claybury farm buildings, and one or two others. The whole finish in these jobs was of a superior character, and more especially the brick and stone work. He would object to the removal of the wages clauses, because that would enable contractors to employ inferior labour at inferior prices. There was now no need for strikes or disputes with regard to wages.

Mr. Gruning: They can afford to wait until a dispute is settled. But does not this facilitate strikes of contractors' men by reducing the number of idle men to be sustained?—That is so, from one point of view. The witness agreed that unless something very unusual occurred on a job, the actual conduct of the work should be left to the foremen, without interference.

In reply to Mr. Dickinson, the witness explained the loss on the foundations of the Bexley Asylum by the low prices of some portions of the work. There was a bad price for digging and also for grubbing.

In reply to Mr. Fletcher, who desired to know whether the system of the School Board, in employing local labour, was not more economical, more popular, and more fair to the 118,000 builders' workmen not in the Council's employ than the centralisation policy of the Council, Mr. Taylor said he had doubts as to economy,

if they were to be guided by the experience of the London School Board. The cost of its repairs, which in 1892 was £59,000, was £94,000 last year.

In reply to Mr. Beachcroft, the witness said he was still a member of the Union but not an official.

Mr. Beachcroft: Do you draw a salary?—I do.

The witness was now closely pressed to say what he knew of the working of the ticket system by certain officials of the Union called ticket stewards. The custom, he said, had formerly been to appoint somebody to collect tickets, but no examination of tickets now took place on the works.

Mr. Beachcroft: Is there anybody at the gate to do it?—Yes, occasionally.

Does a man stand at the gate?—Sometimes.

Mr. Henry Holloway, President of the Master Builders' Association, was now called. In reply to Sir Arthur Arnold, he disputed the allegation which had been made by Mr. Ward as to the existence of a ring amongst builders against the wages clauses in the Council's contracts. There was not, and never had been any such ring. The objections of builders were not to the Council's wages list, but emphatically against the last few obtained in the form of contract, "in practice obtained in the London district."

Sir Arthur Arnold: Would that prevent you from tendering?—Yes. That in connexion with other things. Builders did not object to their wages books and time sheets being open to the Council's officers, but an inspection of a builder's private books they felt to be both unnecessary and offensive. Another clause to which the strongest objection was felt was that which required a statutory declaration to be made that the books were correctly kept. This was not merely an absurdity but an insult. They had an objection to furnish to the Council their priced bills of quantities, because these documents, which were the builder's trade secrets were never returned to them whether their tenders were accepted or not. That gave the Committee an undue advantage in tendering, and the witness endorsed Mr. Blashill's opinion that it must stop tendering. The Architect's invitation to tender, when there was a selected list, was regarded as a mark of confidence, but the better contractors would not be likely to respond to the invitation under present conditions. One of the main objections was the arbitration clause. In the case of dispute the Architect gave his award in the first instance, but the builder who did not accept it must go on with the job and await the final settlement before his side of the dispute could be listened to. A builder should have the power to appeal at once to arbitration. Then, power was given to the Council to determine a contract if it became known that the contractor had sublet any portion of the work. This was a dangerous condition. If the Council had a desire to get tenders from responsible firms it should adopt the contract clause agreed upon between the Institute of British Architects and the Institute of Builders. Builders had no objection to pay a properly-recognised rate of wages, but certain exceptions should be made in favour of old or infirm employes whom a contractor might wish to continue in his employment. Most contractors had also improvers, to whom, of course, they did not pay the full rate of wages.

Mr. Holloway, in response to an invitation, gave valuable advice upon various points of a builder's practice, adding that he should like to say that he could see no advantage whatever obtained by the Department which could not be obtained from a contractor. In reply to Dr. Longstaff, the witness said it was always to the builder's interest to get his work rapidly done, that the conditions of contracting seemed to have been deliberately drawn up to prevent builders from tendering, and that trade union rules were often oppressive to workmen, and to old men positively cruel.

On the resumption of the inquiry on the 10th inst., Mr. Mowlem Burt was the first witness examined. Sir Arthur Arnold put a number of questions as to the objections entertained by builders to tender under the Council's form of contract. The witness said contractors made no objection to the wages schedule of the London County Council, but they strongly objected to the wages clause in the form of contract, because it recognised trades-unions only, and the masters thought they were worthy of being recognised as well as the men. The masters had met the men and agreed with them as to the rates of pay, and that agreement was as worthy of being mentioned as the trades-union agreement. They did not want to alter the general rate of wages, but they thought it a very

hard thing, as the result of the trades-union clause, that thousands of workmen were prevented from getting employment. The witness further objected to the form of contract on the same grounds previously urged by Mr. Holloway. The examination of a contractor's private books and the arbitration clause were two points most strongly objected to. These conditions were altogether arbitrary. Contractors would far rather be in the hands of a professional arbitrator, the Engineer, or Architect, than in the hands of the Council. His firm had no complaint against the Council, but they had never made a tender since the new rules came into operation. He should not object to enter into competition with the Works Department at first, and his firm would be willing to tender against them so long as they found themselves fairly treated.

In reply to Mr. Waterhouse, one of the assessors, the witness said the books of his firm had not been examined, and he could not, of his own knowledge, say whether the private books of other firms had been examined or not.

In reply to Mr. Gruning, the architectural assessor, Mr. Burt said he preferred the form of contract agreed upon between the Institute of British Architects and the Master Builders' Association, and he accepted the alteration suggested by the Institute.

In reply to Mr. Dickinson, the witness said they were willing to tender for the Holloway storm sewer with altered conditions, but without such alteration they would not have tendered at all. It was true that their tender was considerably higher than the stated actual cost when done by the Department, but he had heard, and had good reason to believe that materials had been used, he alluded particularly to bricks, such as they (the contractors) would never have been allowed to use. In the cases in which they had undertaken work they had struck out certain paragraphs to which they took exception, and had suggested alterations in others. The penalty clauses they had struck out altogether. He would prefer the terms of the old form of contract, which made the termination of the contract the penalty for infractions, rather than he exposed to vexatious and arbitrary fines for infractions which were usually of an insignificant nature and often accidental. The Council would never dream of terminating a contract because a man had been paid 3d. or 1d. less per hour. Most firms had men working for them who might no longer be worth the full rate of 6d. an hour, but were very well worth 12. a week. They had also young men, just out of their apprenticeship, to whom they could not entrust the finer work, and to whom they could not, of course, pay the full rate of wages. The tendency of trades-unions was to limit the number of young men—improvers—and also the number of apprentices, which was bad for all concerned.

In reply to Dr. Collins, Mr. Burt admitted that the arbitration clause was not so objectionable in the case of his own firm as to builders because they had not so many different items in their contracts out of which disputes might arise. The opportunities of dispute were so numerous in architectural contracts that an architect might render a good job a bad one. An architect had to look at so many little matters that he was apt, perhaps, to become a little captious. In his opinion, engineers who dealt with much larger items were generally larger minded men. His firm had never had any reason to object to an engineer's decision, but if he had made unreasonable demands they would have objected. There should be provision for an outside arbitration. It was very hard on a builder who believed he was entitled to draw perhaps 5,000l. to be told by the architect, "No, I shan't give it to you until the job is measured up."

In reply to Mr. Fletcher, the witness thought the conditions exacted by the Council seemed intended to discourage contractors, as if it wished to stop contracting altogether. It would be a very difficult thing for the Department to find a manager equally well versed in all departments of the building trade, but the contractor had able foremen on his different jobs, some being best at one thing, some at another.

In reply to the invitation to suggest improvements in the Department, Mr. Burt said he feared he had not sufficient confidence that any suggestions he might make would be properly carried out by the Department as at present constituted. He thought it was a very costly way of doing jobbing work to send men to all the various districts from the central works at Belvedere-road. He believed the system adopted by the School Board was preferable.

In reply to questions from Messrs. Torrance, Davies, and Beachcroft, the witness gave par-

ticulars as to the terms of apprenticeship, the diminishing number of apprentices, the necessity of a contractor frequently visiting his works, contractors' methods of purchasing materials, and the execution of works by direct employment by corporate bodies. Contractors, in his opinion, could do engineering work at least as cheaply and as well as any corporate body provided they were treated in the same way, but, as in the case of their York-road sewer, such bodies could do work more cheaply at lower cost by making for themselves favourable conditions. His firm in tendering had to provide for the cost of keeping the traffic open, which would entail considerable expense, but the Council, having undertaken to do the work, closed the road and so saved that expense; then they found gravel where his firm had been led to expect running sand. The Council would probably find out what that meant in the Fulham sewer. Questioned as to the existence of a strike against the Council among contractors, the witness most emphatically denied the charge; so far as his firm was concerned there was not the slightest reason for it, and he believed that there was not the slightest reason for the allegation against any other firm.

Mr. Beachcroft: Your interpretation was that it was rather in the nature of a lock-out, the Council saying in effect you shall do no work for us unless on these terms.—Yes, and they still keep us out.

In reply to questions from Sir Godfrey Lushington bearing upon the favouritism practically shown to trades-unions by the policy of the Council, the witness admitted that the extension of the radius covered by the Department to twenty miles from Charing-cross and the agreement to pay any new rate of wages that might be established by a strike might work that way, but whether it was intended to do so was another matter. With regard to periodical returns of prime cost, Mr. Burt said the practice of his firm was to insist upon such returns every month wherever a job cost over 1,000l.

Mr. Kowland B. Plunbe, architect, the next witness, in reply to Sir Arthur Arnold, explained in detail the causes of the loss of 2,600l. (or 3,600l. as estimated by Dr. Longstaff and other members of the Committee) on the Shelton-street job, and the loss which a previous witness had alleged would be incurred on the Boundary-street job. Speaking generally, he said the work done by the Department was as good as that done by the ordinary contractor. He was unable to see any difference, and he had taken care to compare. The supervision was as strict as in the case of contract work so far as he could judge.

In reply to Mr. Fletcher the witness said he thought, on the whole, that it was undesirable for any such body as the Council to do the whole of its work itself. It was desirable to employ outside contractors for work it could not do so well as they. There were certain works the Council might do with advantage to the public and in a fair way, if not in a better manner, than the contractors. In the case of the Blackwall Tunnel there was special risk, and it would have been better not to undertake it.

In reply to Mr. Alderman Beachcroft, Mr. Plunbe said that, since May, 1894, he had been in the employ of the Department and had had no special difficulty to contend with. He denied that, when completed, there was bound to be a loss at Boundary-street. A return made a few days ago showed that when all charges were included, with a charge for extra work of 1,070l. which would about balance that for deductions, there would be a balance of about 600l. to complete the job, and he was under the impression that there would be no loss. The Shelton-street job was one of the most unfortunate that a builder could possibly have undertaken. They had hardly started when the new act came into force and many alterations were made in accordance with its provisions, which need not necessarily have been made. There was delay from the ruinous condition of the neighbouring properties, which had to be shored up, and from strikes among the builders, carpenters, and plasterers, but he confessed he was somewhat surprised at the amount of the loss, and he thought more inquiry was required, and he had asked for it because he did not think so much could have been lost.

In reply to Dr. Collins, the witness explained what he meant by "loss," and "estimate of the Works Department." It did not necessarily follow that where a loss was shown, the Council had not received good value for money. As far as he had observed the quality of timber used was equal to that used by contractors, though from one job at Clapham a small lot had been sent away. He had found no fault with the ironwork

except on account of delay, the mortar was very good, and he had good foremen, especially at Boundary-street (Mr. Jacobs). Mr. Plumble would strongly advise the Council not to give work out to open competition. They should invite only men they knew to be capable of doing the work properly.

In reply to Mr. Gruning, the witness said he was aware of the new contract between the Institute of British Architects and the Builders' Association. He had used it ever since it came out, and had had no difficulty.

Mr. Gruning: Have you had more or less difficulty with the Department than with contractors in settling accounts.—I have had no trouble with the Department. Where you have had to condemn materials does the loss fall upon the public?—Yes; on the Department. Mr. Gruning: But in the case of a contractor it would fall on the contractor personally?—It would.

If contingencies occurred in a job undertaken by the Works Committee, there might be a loss to the Department?—That is so. A contract might be done cheaper by a contractor.

The inquiry was adjourned, after one or two further questions from Mr. Waterhouse and Dr. Longstaff.

The examination of one of the Labour representatives on the Council, Mr. Alderman Taylor, interrupted to admit the evidence of Mr. Holloway and Mr. Burt, was resumed on the 12th inst., by Dr. Longstaff, whose questions with regard to "the man at the gate" (the ticket steward) and the method adopted when men became members of the union, only elicited the reply, "I would rather not answer."

The witness was invited to make any further statement he wished, when he adduced a number of statistics with a view of showing that in a large number of cases the amounts of contractors' tenders, which commenced by being below the Architect's tenders, had jumped up in the course of a few months to 8, 12½, 15½, and even as much as 18 per cent. above his estimates. These figures showed, the witness contended, that either the Architect's estimates were being cut down, or that builders were increasing their tenders.

Asked by Sir Godfrey Lushington with regard to the made claim that men worked better for the Department than for a contractor, the witness admitted that the better the quality of work, the longer the time occupied was, and that the true explanation might be that the workman in spending an inordinate time over it merely desired to make more work for himself.

Sir Godfrey Lushington: Would it not be your duty, as a salaried officer of the union, to see that the practices of the trade unions were observed?—Yes; to advance its interests.

Then you serve two masters?—I don't think I do.

Are the trades unions your masters?—I am not bound to them body and soul.

After your visits to works did you report to your union?—Yes; frequently.

Finally the witness was asked, Do you think it right for the London County Council to engage in work at a loss in order to help workmen?—I have not considered the question.

Mr. John Burns, M.P., was then called and examined by Sir A. Arnold as to the visits of Labour members of the Works Committee, as to the advantage to workmen of having a scheduled list of wages, what security the labourer would lose by the abolition of the wages clause, and as to the quality of the work done by workmen in the employ of the Department. To all these questions Mr. Burns gave answers in harmony with those of the previous witnesses with whom he works. He could see no reason why the Works Committee should be reduced below twelve members, and adhered to his opinion that that number was necessary.

In reply to Alderman Beachcroft, the witness still maintained that the withdrawal of tenders justified him in making the statement that the contractors had formed a ring against the Council. The witness gave a number of reasons why he was pledged to the principle of the direct employment of labour.

Mr. Beachcroft: You have omitted one object—to obtain control of the labour market. Oh! I don't claim that. In reply to Mr. Gruning, the witness said he believed, in case of a general strike, the men in the employ of the Department would do precisely as they would if working for contractors, and in the case of a lock-out in the building trade he did not see why the County Council should sympathise with the builders, or close their works. Some builders did not sympathise in lock-outs.

Mr. Gruning: Had there been any difficulty in obtaining tenders before 1892?—I would not like to answer that question off-hand.

In reply to other questions, Mr. Burns said he believed public bodies ought to do engineering work successfully, and he did not see why they should not build a town hall. It was only the "cussedness" of partisanship in the Council that prevented them from doing all work cheaper and better than contractors. The inquiry was further adjourned to Wednesday, the 17th inst.

ARCHÆOLOGICAL SOCIETIES.

LONDON AND MIDDLESEX ARCHÆOLOGICAL SOCIETY.—An afternoon meeting of the members of this Society was held on the 8th inst., at St. Michael's Church, Wood-street, Cheap-side, preparatory to its demolition. Mr. Philip Norman, F.S.A., met the visitors and described the church. It was destroyed in the Great Fire of 1666, and afterwards rebuilt by Sir Christopher Wren. An evening meeting of this Society was also held the next day, at the London Institution, Finsbury-circus, when Canon Benham presided. Mr. Charles Welch, F.S.A., pointed out and described some Roman pottery, &c., which had been recently discovered in the heart of the City during the excavations of the new London Central (Electric) Railway in Threadneedle-street. There were some large fragments of a broken amphora, with some vessels that had been found inside, and which were exhibited to the members. There was also a cinerary urn, which was found a few feet east of Princes-street. The Rev. James Christie next read a paper on "The Parishes of St. Michael, Wood-street, and St. John Zachary, and their Records." He exhibited several ancient minute books, and described the various changes through which these churches had passed from 1625 and onwards. Stow, the historian, asserted that there was interred in the Church of St. Michael the head of King James IV. of Scotland, but without any outward monument. Mr. Welch also produced and described a manuscript book containing a plan of the churchyard of St. Mary Abchurch, with particulars of burials prepared by order of the churchwardens in 1732. In the cases of some of the coffins only six inches of earth sufficed to cover them, and several of the graves contained three or four bodies.

SOCIETY OF ANTIQUARIES.—February 11. The Right Rev. the Bishop of Stepney, Vice-President, in the chair.—The following resolution was proposed by the Rev. G. W. Minns, seconded by Sir Samuel Montagu, Bart., M.P., and carried unanimously:—

"The Society of Antiquaries of London having heard that the sanitary welfare of the Borough of Southampton demands the removal of some ancient and dilapidated dwellings, respectfully urges upon the Mayor and Corporation the importance of preserving ancient landmarks of historic interest. It hopes that an ancient vault of the fourteenth century in Simons-street may be carefully preserved, connected as it is with the commercial history of the town and the privileges it enjoyed in olden time."

Mr. A. Wyon exhibited and presented casts of a fifth great Seal of Charles II., and impressions and casts of some modern episcopal seals. Sir J. C. Robinson exhibited a double mazer, mounted in silver-gilt, probably German work of the end of the fifteenth century. Chancellor Ferguson, as Local Secretary for Cumberland, reported the discovery, (1) at Gosford, of a coped tombstone of the "hog-back" type, decorated on one side with knot-work and interlacing ornament, on the other with two groups of warriors; (2) of a cinerary urn at Carlisle; and (3) a mutilated and defaced Roman altar at Baldwinholme, near Carlisle. The Chancellor further reported briefly on the excavations made on the line of the Roman Wall during the past summer. Professor John Ferguson read the first section of a paper on "The Secrets of Alexis," a sixteenth century collection of medical and technical receipts.

ENGINEERING SOCIETIES.

THE INSTITUTION OF JUNIOR ENGINEERS.—At the meeting of this Institution, held at the Westminster Palace Hotel on the 12th inst., the Chairman, Mr. H. Bloomfield Vorley, presiding, a paper on the "Manufacture of High-class Bridge Work" was read by Mr. J. A. Macpherson, of London. He said there were two systems of setting-out practised at the present time:—(1) by wood template; (2) by using the actual plates

and bars as templates from which to mark every corresponding piece. The author showed how the employment of the wood template method might be accepted as producing the best results. The direct system, however, being more expeditious (if the material were to hand) was very beneficial applied in ironwork for the building trades where high finish was not required. Great responsibility rested upon the leading template maker. It was necessary that he should cultivate a system by which hitches might be most effectually avoided during the progress of the work. Fixed trammel gauges were far superior to the common rules for measuring corresponding parts, absolute exactness being highly essential for all intermediate portions. Owing to the variable nature of the metal due to change of temperature, reliable check was required to be taken of all the important measurements by noting the temperature at the time of measuring. I was shown how the necessary camber in a bridge complicated the process of manufacture, and an example was given of a convenient and economical method of producing the correct camber in a web girder. In considering the question of the bearing surfaces the unsatisfactory hearing due to the deflection was partially remedied (apart from introducing expensive knuckle bearers) by making the plane of the bearing surface a mean between the horizontal and the continuation of the camber line. In illustration of the methods of setting out the rivet holes, &c., a 50-ft. single web girder was taken, and all the operations described. The desirability of no two holes coming opposite in small angles, so as not to weaken the section and avoid difficulty of riveting, was pointed out. In referring to lattice constructions, the author showed that theoretically a lattice girder formed a segment of a very large circle, and the true lengths of every member could be readily obtained by mathematical calculation. This method gave far more satisfactory results than the old-fashioned rule of thumb and laborious process of drawing down the girder full size on a floor, and fitting the templates to the lines. Difference of opinion existed as regards the size of rivets and rivet holes, some preferring the rivet to be the size figured on the drawing, and the holes $\frac{1}{8}$ in. larger; others that the holes should be the size figured, and the rivets $\frac{1}{8}$ in. smaller. In the designing of iron and steel work the ultimate erection of the structure should always be borne in mind, the parts being made as far as possible universal and interchangeable to facilitate putting together. Individual knowledge and skill were more essential in the economical production of first-class work than extensive and elaborate plant.

THE PAVIORS' COMPANY.

AT the invitation of the Master, Wardens, and Court of Assistants of the Worshipful Company of Pavors, a large company assembled at the Carpenters' Hall on Tuesday to meet the Lord Mayor and Sheriffs at dinner. Mr. F. Bennett, the Master of the Company, presided, and there were also present the Bishop of Stepney, Lord Rodney, Sir F. Dixon-Hartland, Mr. A. Cock, Q.C., the Dean of St. Paul's, Sir Hugh Owen, Professor Aitchison, A.R.A., Mr. Alexander Graham, F.S.A., Professor Banister Fletcher, and others.

The loyal and patriotic toasts having been honoured,

Sir Hugh Owen proposed, and Mr. Cock, Q.C., responded, to the toast of "Bench and Bar."

The Chairman then proposed "The Lord Mayor and Corporation," the Lord Mayor responding.

The toast of "The Carpenters' Company" was given by Major L. H. Isaacs, who referred to the excellent work which the Company is carrying on in its technical education classes and instruction, and the good uses to which they put their fine hall.

The Master of the Carpenters' Company briefly replied, remarking that the Company spent nearly 5,000*l.* a year in educational work alone.

Mr. D. Burnett, the chief Commoner, proposed the "Paviors' Company," and the Master, in reply, said that the Company was one of considerable antiquity, and according to Stow it dated back to the fifteenth century. After a period of extinction, the Company was resuscitated fifteen or twenty years ago. They were doing all they could to justify their existence, and they had offered prizes recently, and had received some very good essays which had been put to practical results.

Other toasts followed.

Illustrations.

MONUMENT, BRADING CHURCH.

THE Alton tomb lately erected in the Oglander Chapel of Brading Church to the memory of Sir Henry and Lady Oglander was designed by Mr. James C. Powell of the Whitefriars Glass Works, and carried out under his supervision. The tomb is of white alabaster, the slab and base being of slightly coloured alabaster, and stands on a step of black marble. The panels are of Rosso-antico with gilt lettering, and a slab of the same material has been inserted as a background to the mantling of the central panel. The border round the tomb is composed of glass enamel work in blue and gold. The top slab is incised with inscription and arabesque, and inlaid with small pieces of blue and red glass enamel.

The two figures at either end were modelled and carved by Mr. H. A. Pegram; the remainder of the carved work was carried out by Messrs. Earp & Hobbs.

The heraldry and ornament is further enriched by painting and gilding.

There are in the same chapel four old altar tombs to ancestors of the same family.

COMPETITION DESIGN FOR LIVERPOOL MUSEUM EXTENSION.

THIS design, submitted in the recent competition, was understood to have been disqualified on account of overstepping the limits of the site on the Byrom-street frontage. The instructions stated that competitors were at liberty to exercise their discretion as to the building-line towards this and the back street, and this was interpreted in a literal sense, and a "give and take" line adopted; which was, however, still well within the general line of the street. Considerable advantage was thus gained both in internal accommodation and in external treatment, and it is difficult to see what objection can be urged against it.

The existing museum building, being a complete composition, it was felt that the correct treatment was to design a building which should harmonise and group with it, rather than extend it.

The accommodation generally was slightly in excess of the requirements, and every room and corridor was well and efficiently lighted and ventilated. The lecture-hall was so arranged as to be used either independently or in conjunction with the technical school. H. T. H.

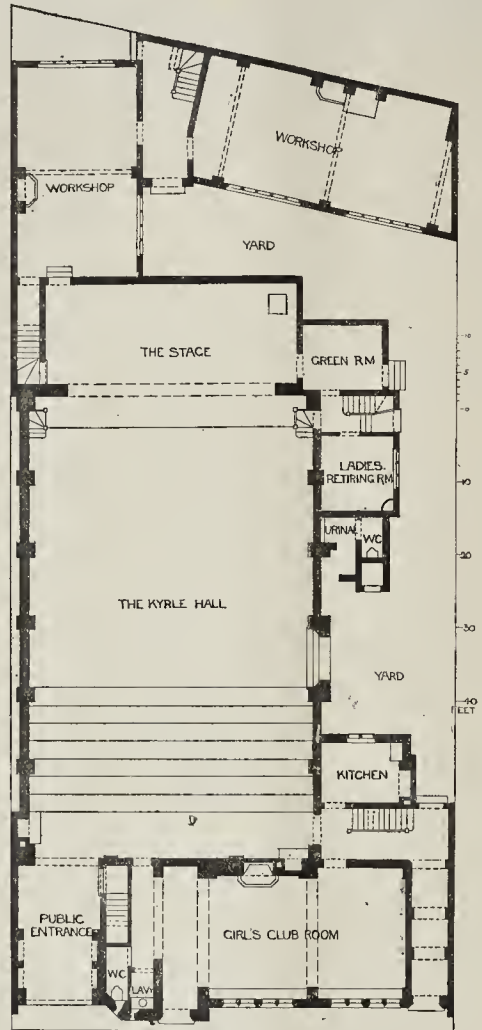
HOUSE, SUNDRIDGE PARK, KENT.

THE site of this house is an old orchard, now converted into a picturesque garden, which lies on the outskirts of Bromley, in a position commanding extensive views over wooded country. The materials employed for the exterior are red bricks, with tile-hanging and stone dressings. The roofs are covered with Reading tiles. In addition to the accommodation shown there are six bedrooms, dressing-room, hatroom, &c., on the upper floors, with cellarerage in the basement. The builder was Mr. R. S. Robertson, of Edgware-road, N.W., and the architects Messrs. Gibson & Russell.

THE KYRLE HALL, BIRMINGHAM.

THE Kyrle Hall, in Sheep-street, Birmingham, is the centre of the local Kyrle Society's work. Here, facing the street, are club-rooms for girls, men, and boys, together with committee room, library, and caretaker's dwelling. The centre of the site is occupied by a large hall, capable of seating 600. It has a stage, with adjoining dressing rooms for the free dramatic performances given on Saturday evenings throughout the winter months. In the rear are the workshops of the Birmingham Guild of Handicraft, where printing, bookbinding, and metal work are carried on, specimens of which were to be found in the last Arts and Crafts Exhibition. The buildings were erected in 1893 from the designs of Mr. W. H. Bidlake, at the cost of about 4,000*l.* The builder was Mr. John Bowen.

MASONIC TEMPLE, GREENOCK.—The foundation-stone of the new Masonic Temple at Greenock was laid recently. The building is being erected at the corner of Argyle and West Stewart streets, and it is estimated, will cost 4,000*l.* Messrs. Boston Menzies & Morton are the architects, and Mr. William Steel is the builder.



SHEEP STREET

The Kyrle Hall, Birmingham. Plan.

LONDON AND PROVINCIAL BUILDERS' FOREMEN'S ASSOCIATION:

ANNUAL DINNER.

THE Annual Dinner of this Association was held on Saturday last at the Holborn Restaurant, Mr. E. G. Thompson occupying the chair.

The toast of "The Queen and Royal Family" having been honoured,

The Chairman briefly proposed the toast of the evening, "Success to the London and Provincial Builders' Foremen's Association." He had, he said, carefully studied all the rules and objects of the Association, and he considered that they were worthy of encouragement and support, both from builders' foremen and master builders. A builders' foreman's duties were of an arduous and responsible character, and he had many different interests to consider, and much tact and management were necessary in carrying out his duties.

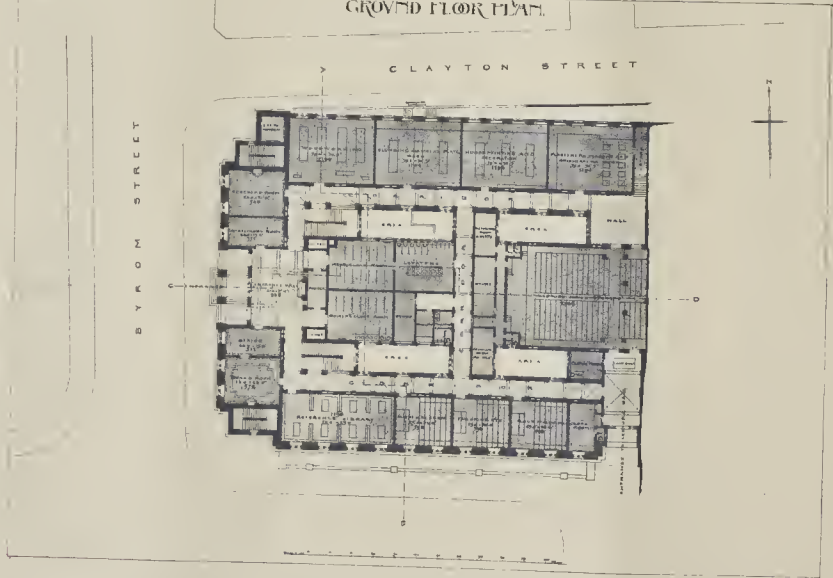
Mr. G. Barclay, the President of the Association, in reply, said that the success of that gathering augured well for the future. The Association was founded in 1894, when the London County Council took the important step of inaugurating its Works Department. It was thought that foremen ought to have a society, especially of a social character, and as soon as the Association was founded, thirty-three foremen joined, while now their

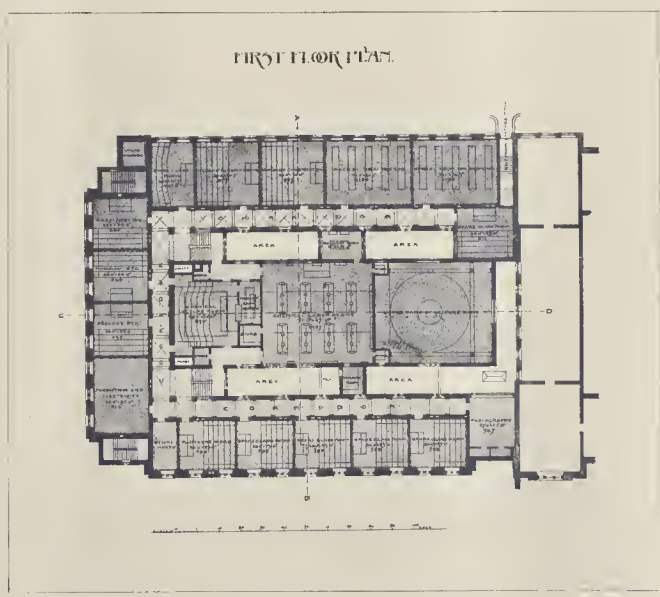
membership was about seventy. Of the thirty-three original members, the names of thirty were still on the books. He had been asked why the Association was started, seeing that another similar society was in existence. It was out of antagonism to that society—and he might add that some of its members belonged to their Association—but was the result of a desire partly to admit to membership foremen who were beyond forty years of age. There were many capable foremen beyond the age limit set by the Builders' Foremen and Clerks of Works Institution and the Association had decided to considerably extend that age limitation. Another reason for establishing the Association was that since many of their members already belonged to some provident society, and it would tax them too severely to ask them to belong to another, it was thought better to encourage foremen to join an association in which the work of a provident society was not attempted. In his opinion there was scope for both associations. His Association made a special appeal to master builders to make use of their employment bureau, and to write to their secretary if in need of a competent foreman. The membership subscription was 1*l.* per annum, and out of that they gave 2*l.* out-of-work foreman 10*s.* for the purpose of advertising for a situation. They had monthly meetings, at which papers were read and discussed





GROUNDFLOOR PLAN.

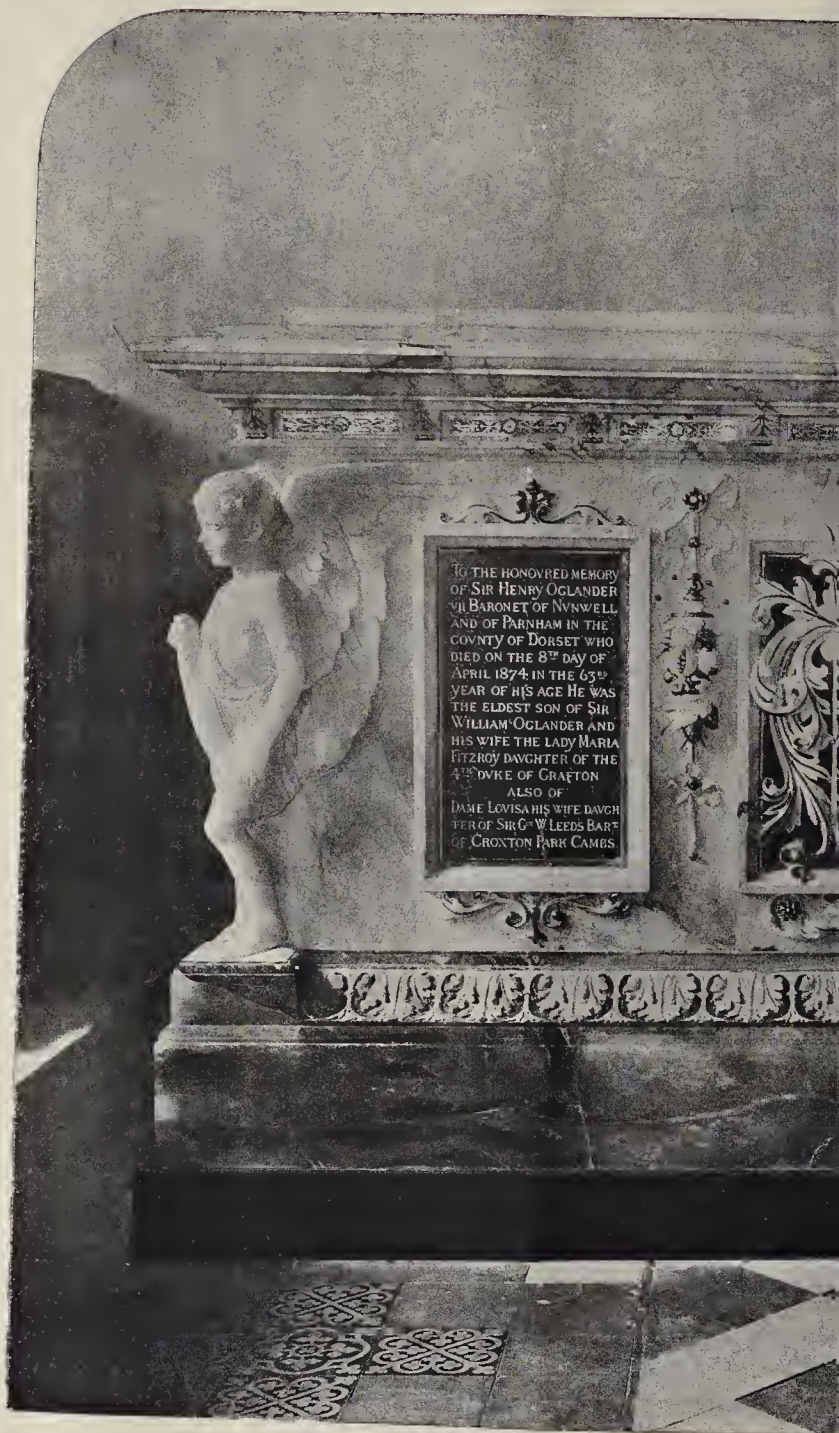




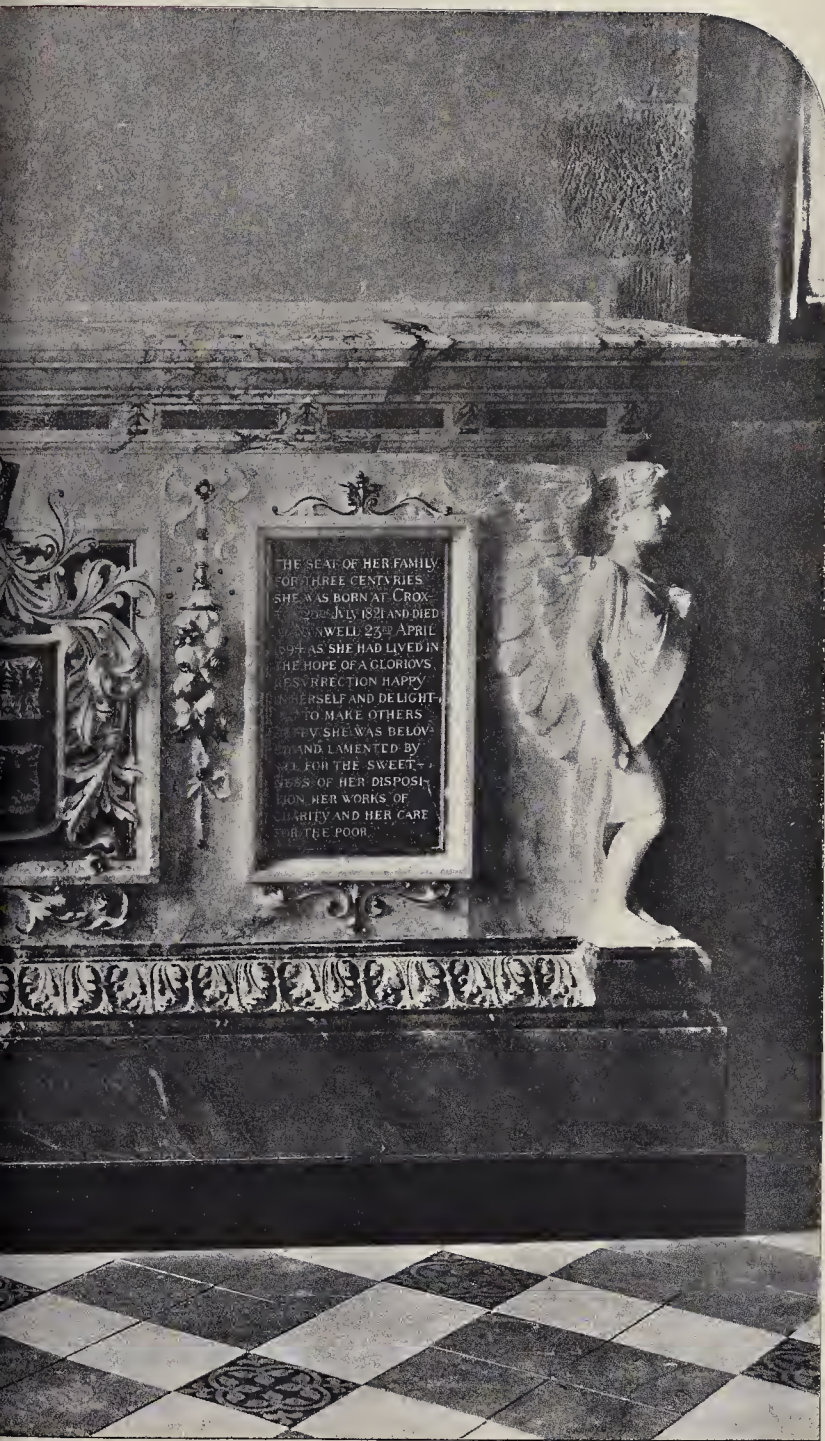
THE PHOTO SPRAGUE & CO. 145 EAST HARDING STREET FLETTER LANE F.C.







MEMORIAL TOMB TO SIR HENRY OGLANDER, BRAD-
DESIGNED BY MR. JAS. C. POWELL

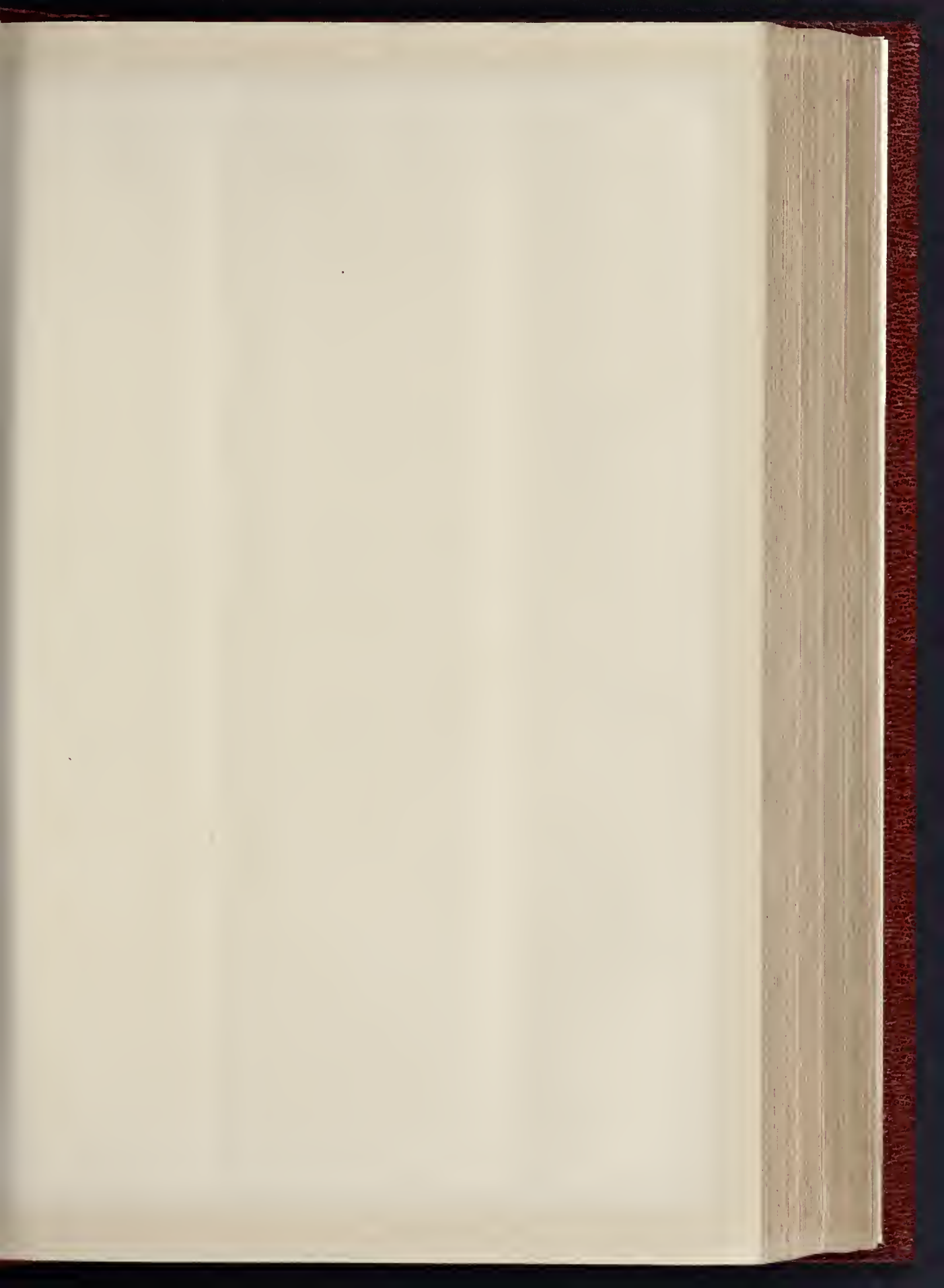


THE SEAT OF HER FAMILY
FOR THREE CENTURIES
SHE WAS BORN AT CROX-
WELL 23RD JULY 1821 AND DIED
23RD APRIL 1897 AS SHE HAD LIVED IN
THE HOPE OF A GLORIOUS
RESURRECTION HAPPY
IN HERSELF AND DELIGHT-
ING TO MAKE OTHERS
HAPPY SHE WAS BELOVED
AND LAMENTED BY
ALL FOR THE SWEET-
NESS OF HER DISPOSI-
TION HER WORKS OF
CHARITY AND HER CARE
FOR THE POOR.

INK PHOTO SPRAGUE & CO. 4 & 5, EAST HARDING STREET FETTER LANE, E.C.

CH, ISLE OF WIGHT.—MESSRS. JAMES POWELL & SONS.
TURE BY MR. H. A. PEGRAM.

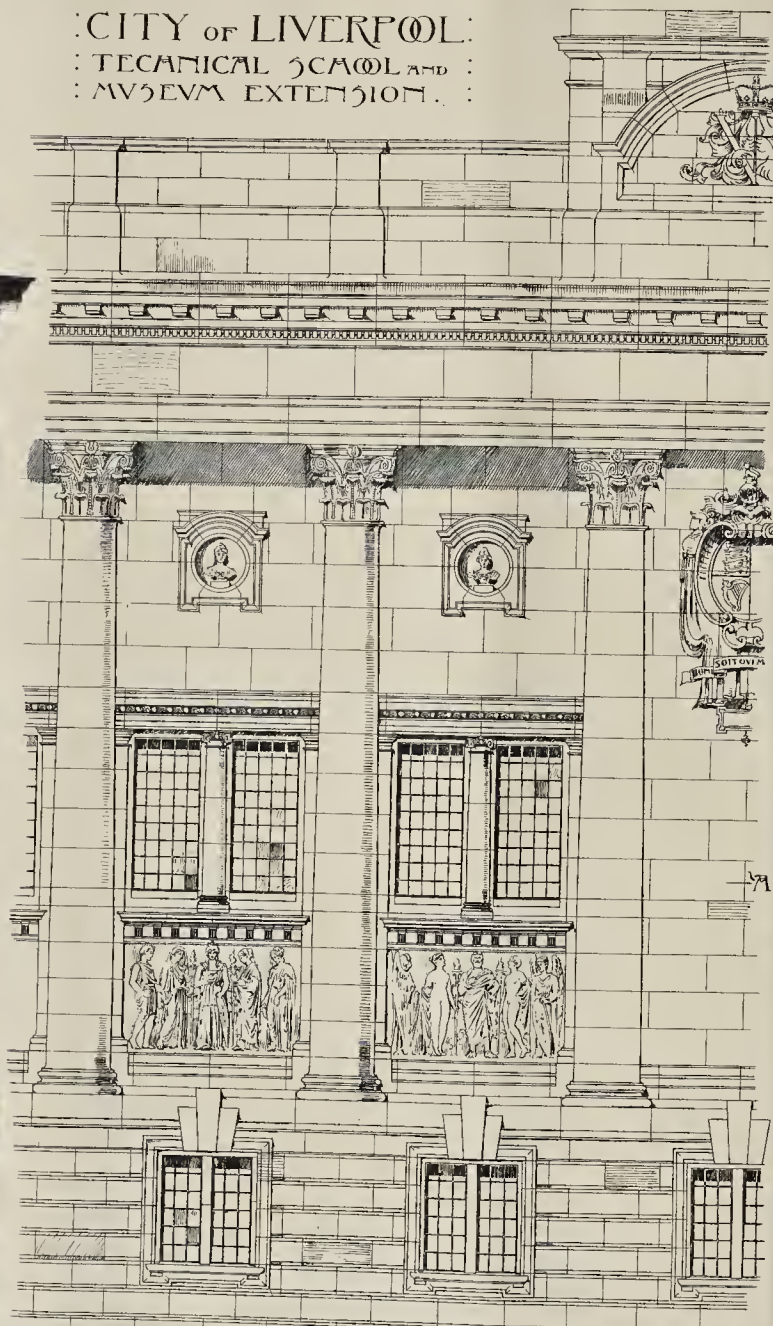
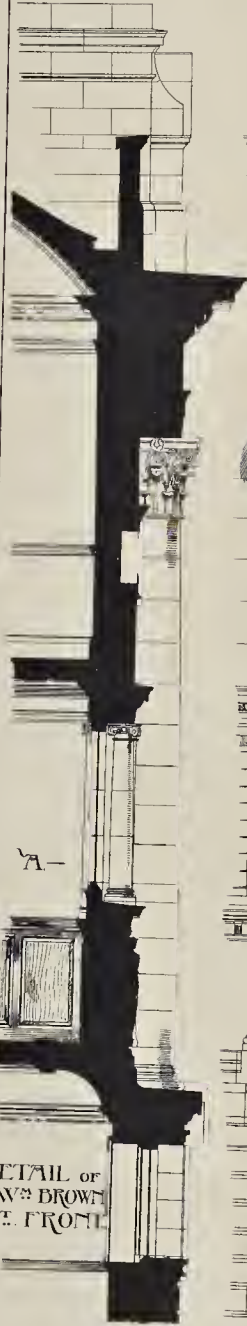




PLAN OF
LINE AA.



: CITY OF LIVERPOOL :
: TECHNICAL SCHOOL AND :
: MUSEUM EXTENSION. :



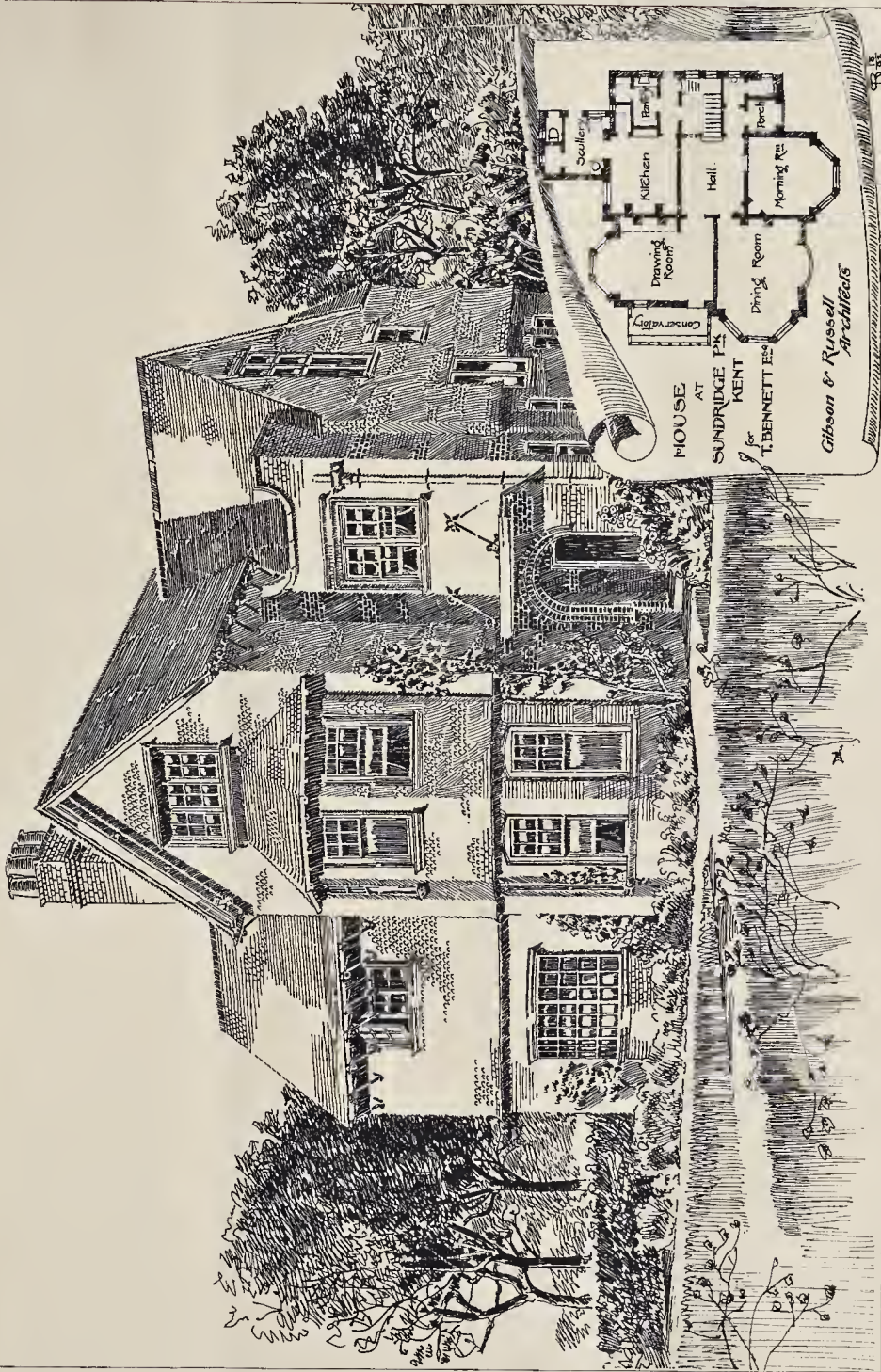
DETAIL OF
W. BROWN
SE. FRONT.

Scale 1 inch
to 2 feet

PHOTO-LITHO. SPRAGUE & CO. 495, EAST HARDING STREET, FETTER LANE, E.C.

COMPETITION DESIGN FOR LIVERPOOL TECHNICAL SCHOOL AND MUSEUM EXTENSION.
DETAIL ELEVATION.

By MR. H. T. HARE, A.R.I.B.A., AND MR. THOMAS DAVISON, A.R.I.B.A.





THE BUILDER FEBRUARY 20 1897

GRANDFATHER
BIRMINGHAM
CONSTRUCTION 1893
THE BIRMINGHAM ARE





THE PHOTOGRAPHIC ARTIST. 14, EAST LONDON. STREET PETER LANE, E.C.

and the Association was, in short, an excellent means of intercourse between foremen. In conclusion, he said he hoped that they would receive support from master builders who could help them by becoming honorary members.

The Chairman then proposed "The Building and Kindred Trades." The building trade, he said, and no doubt the kindred trades, had for some years past suffered from a time of depression, but there were signs of improvement everywhere, and he was glad to say.

Mr. J. M. Wales, Clerk of Works to the London School Board, in reply, referred to the great indebtedness of builders to foremen. Both should work together, he said, for the good of each other. He quite agreed that it was absurd to limit to forty years the age of a candidate for admission to an association like theirs.

Other toasts were "The Chairman," proposed by Mr. Chinery, Vice-President; "The Visitors," proposed by Mr. A. Warren, Secretary, and responded to by Mr. Pultman, of the firm of Messrs. Hobbs, Hart, & Co., and "The Press," proposed by Mr. Young.

CENTRAL ASSOCIATION OF MASTER BUILDERS OF LONDON.

THE twenty-fifth annual general meeting of this Association was held at the offices, 31 and 32, Bedford-street, Strand, London, W.C., on Wednesday, the 10th inst., the President, Mr. Henry Holloway, being in the chair.

The notices concerning the meeting and the following annual report were taken as read, the report being unanimously received and adopted:—

"1. In presenting the twenty-fifth annual report the Council are pleased to be able to state that trade continues to be in a satisfactory condition, and, but for the increasing friction with the workmen, there is every indication of a period of prosperity.

2. The past year has been a time of exceptional disturbance with the workmen. Early in the year notices were received from the various trades demanding an increase in the rates of wages and a code of working rules. A special meeting of the members of the Association, together with other builders, was called to consider these demands, and it was agreed to concede the advance in wages to the principal trades, provided they assented to a satisfactory code of rules. In pursuance of this decision, arrangements were made for meeting each trade separately in conference. The main variations to the 1892 rules insisted upon by the Council were the following:—

(a) The working hours in winter to be altered—the breakfast time being abolished, the hour for commencing work being 8 a.m.;

(b) A rule to put an end to the practice of the trade unions striking against non-union workmen;

(c) The omission of the date (May 1) for the termination of rules.

3. All the trades have practically accepted the foregoing. In dealing with the second item, the Council were successful in establishing the principle of a Conciliation Board, consisting of an equal number of employers and workmen, with power to call in an umpire, for settling disputes arising out of the rules. All the trades have agreed to this with the exception of the Painters' and Labourers'. The Plasterers' Association, after being on strike for over two months, agreed to a modified form of the rule, which, however, has proved to be unsatisfactory.

4. The dispute with the bricklayers on Messrs. J. Mowlem & Co.'s works, at the beginning of last year, terminated at the end of February. The offer of arbitration made by the Council was declined by the Operative Bricklayers' Society, but the strike was afterwards formally withdrawn.

The scarcity of skilled workmen throughout the country is a serious difficulty, and largely accounts for the independent and aggressive attitude of the trade unions towards employers. The Council strongly urge special attention to this matter, and hope that every employer will take immediate action to deal with the difficulty by increasing the number of apprentices and improving in all trades, but especially those of plasterers and bricklayers.

6. The case of Trollope & Co. The London Building Trades' Federation has, the Council are pleased to record, been carried to a successful issue, the plaintiffs succeeding in getting the injunction obtained last year made perpetual.

The Council have under consideration a proposal for putting the Association in a more satisfactory position financially by creating a reserve or contingency fund. The numerous disputes and litigation with the trade unions have caused a considerable increase in the expenditure during the past year, which the Council hope will be readily met by the members of the Association, especially as the Council consider that the result of the proceedings in the case of Trollope's Black List, before

referred to, will be beneficial and of vast importance to the trade.

8. The Council take this opportunity of expressing their obligations to the members of the various committees.

9. The Council would again urge upon the members the importance of inducing those employers, who are not at present members, the desirability of joining this Association.

10. In accordance with the rules, the audited accounts will be presented to the meeting, and it will be necessary to elect two auditors and three members of the Council. The elected members of the Council who retire are Messrs. Joseph Hill, William F. King, and G. J. Lyall, all of whom are eligible for re-election."

The Secretary, Mr. R. S. Ienshaw, having read the accounts for the year 1896, they were adopted. Mr. Geo. Williams and Mr. Horace S. Foster were reappointed auditors, a cordial vote of thanks being accorded to them. Mr. Wm. F. King was re-elected and Mr. W. J. Adamson and Mr. Howell J. Williams were elected members of the Council.

A vote of thanks to the Chairman for presiding terminated the proceedings.

APPLICATIONS UNDER THE 1894 LONDON BUILDING ACT.

At the meeting of the London County Council on the 9th inst., the Building Act Committee reported that they had considered the under-mentioned applications under the London Building Act, 1894, and had arrived at the following decisions. Those applications which have been agreed to are granted on certain conditions:—

Lines of Frontages.

Islington, North.—That consent be given to the erection of the flank wall only of an addition to a house on the north side of Dresden-road, Hornsey-lane, to abut upon Ashmount-road, on the further application of Mr. W. E. Sanders, on behalf of Mr. J. Sanders.

Lewisham.—That consent be given to the erection of a house on the south side of Brookdale-road, Catford, to flank upon Schneckburgh-road, on the application of Mr. H. Hopton, on behalf of Mr. J. Laird.

Battersea.—That consent be given to the erection of bay windows to four blocks of residential flats on the south side of Prince of Wales-road, between Rosenau-crescent and Bridge-road, on the application of Mr. J. Halley, on behalf of Mr. J. R. Ward.

Hoddeston South.—That consent be given to the erection of a covered playshed at Millfield-road schools, Clapton, to abut upon Hilson-road, on the application of Mr. T. J. Bailey, on behalf of the School Board for London.

Hammersmith.—That the application of Messrs. Fuller & Co., for an extension of the period within which the rebuilding of the "Red Cow" public-house, No. 157, Hammersmith-road, at the corner of Colet-gardens, was required to be commenced, be granted.

Hampstead.—That consent be given to the erection of a porch in front of "Wychcombe," No. 99, Haverstock-hill, on the application of Mr. R. Groom on behalf of Mr. R. Bellamy.

Hampstead.—That consent be given to the erection of enclosures and an iron and glass addition to the porch in front of No. 11, Arkwright-road, on the further application of Messrs. F. W. Porter & Son on behalf of Mr. E. H. Manning.

Holborn.—That consent be given to the erection of a balcony at the first floor level, in front of the Royal Music Hall, Nos. 242 and 243, High Holborn, St. Giles-in-the-Fields, on the application of Mr. E. Kuntz on behalf of Mr. John Brill.

Kensington, South.—That consent be given to the erection of an oriel window in front of No. 61, Kensington-court, on the application of Mr. W. W. Gwyther, on behalf of Mr. J. Joshua.

St. George, Hannover-square.—That consent be given to the erection of an iron and glass hood in front of No. 179, New Bond-street, on the application of Mr. E. W. Wimperis, on behalf of Messrs. Lafayette.

St. George-in-the-East.—That consent be given to the erection of a wood and iron lookum in front of the Eagle Brewery, Wellclose-square, on the application of Messrs. A. Kinder & Son, on behalf of Messrs. H. Greenfield & Co.

Wandsworth.—That consent be given to the erection of an iron and glass covered way in front of Wandsworth Town Hall, High-street, on the further application of Mr. G. Patrick, on behalf of the Wandsworth Vestry.

Dulwich.—That consent he not given to the erection of three houses with one-story shops and an arched entrance, on the north side of Park-road between No. 77, and Gorleston Villas, on the application of Mr. J. Bartlett.

Dulwich.—That consent be not given to the erection of a building on the west side of Peckham Rye, on the north side of No. 138, at the corner of East Dulwich-road, and the erection of a house in that road adjacent to and eastward of No. 3, on the

application of Mr. A. Keen on behalf of Miss E. Chamberlin.

Hampstead.—That consent be not given to the erection of six one-story shops on the north-west side of Belsize-road, upon part of the grounds of Nos. 2 and 4, St. George's-road, on the application of Mr. J. Mackland on behalf of Captain Bagot, M.P.

Lewisham.—That consent be not given to the erection of a building with one-story shop next No. 504, Brockley-road, at the corner of Comerford-road, on the application of Mr. J. Weuster on behalf of Mr. J. Chappell.

Paddington, South.—That consent be not given to the erection of an iron and glass covered way in front of No. 1, Southwick-street, Hyde Park-square, on the application of Messrs. R. Hogg & Son.

Width of Way.

Hammersmith.—That consent be given to the erection of three houses with bay windows, on the west side of Ceylon-road, Blythe-road, with the forecourt boundary of such houses at less than the prescribed distance from the centre of the road, on the application of Mr. W. J. Burns.

Holborn.—That consent he not given to the construction and erection of a wood and iron room, for cleaning carpets, adjoining a warehouse on the west side of Newton-street, High Holborn, St. Giles-in-the-Fields, on the application of Messrs. Simmonds Bros., Limited.

Width of Way and Space at Rear.

Finsbury, Central.—That the Council, in the exercise of its powers under Sections 13 and 41 of the London Building Act, 1894, do not consent to nor permit the erection of four blocks of dwellings adapted to be inhabited by persons of the working class, with shops on the ground floor, on plots A, B, C, and D of the Council's land in Rosebery-avenue, Clerkenwell, with portions of the buildings at less than the prescribed distance from the centre of Jolley's-yard and Garnault-mews, and exceeding in height the width of those streets respectively, and also with irregular open spaces at the rear of the new buildings, on the application of Messrs. Goren & Tapp, on behalf of Mr. H. Rofey.

Open Space at Rear and Projections from Buildings.

Hampstead.—That the Council, in the exercise of its powers under Section 73 of the London Building Act, 1894, do not consent to the erection of a block of residential flats on the west side of Langland-gardens, at the corner of Finchley-road, with an enclosed porch, projecting balconies, turret and four-story bay windows; and that the Council, acting under Section 41 of the Act, do not allow a modification of the provisions of that section with regard to open spaces about buildings, so far as relates to the proposed erection of the said block of flats with an open space at the rear, on the application of Messrs. Boehmer & Gibbs on behalf of Mr. E. A. Cave.

Open Spaces about Buildings.

Norwood.—That the Council do, in the exercise of its powers under Section 41 (1) (b) of the London Building Act, 1894, allow a modification of the provisions of that section with regard to open spaces about buildings, so far as relates to the proposed erection of a dwelling house on the north side of Harpenden-street, Norwood-road, at the corner of a passage leading to a timber yard, with an irregular space at the rear of the new house, on the application of Mr. H. Bignold on behalf of Mr. T. Crabb.

Southwark, West.—That the Council do not permit the erection of a stable, with loft and two living rooms over, and of a harness room and one-story stable at the rear of Nos. 15, 17, and 19, Gray-street, Blackfriars, without an open space at the rear of each of the new buildings, on the application of Mr. H. Smith on behalf of Mr. C. King.

Line of Fronts and Width of Way.

Strand.—That consent be given to the erection of buildings on the site of Nos. 13, 14, and 15, Broad-court, and Nos. 19 and 20, Bow-street, St. Martin-in-the-Fields, on the application of Mr. R. S. Wornum, on behalf of the Duke of Bedford.

Strand.—That consent be given to the erection of an enclosed iron footbridge across Northumberland-street, Strand, to connect the Grand Hotel with No. 1, Northumberland-street, St. Martin-in-the-Fields, on the application of Mr. W. Woodward, on behalf of the Gordon Hotels, Limited.

Lewisham.—That consent be not given to the erection of one-story shops upon part of the forecourts of Nos. 29, 31, 33, 35, 37, and 39, Ladywell-road, on the application of Mr. G. Kimble, on behalf of Mrs. F. Kimble.

Peckham.—That consent be not given to the erection of nine houses with projecting bay windows on the west side of Lower-park-road, and also of eight houses with similar bays on the south side of Commercial-road, on the site Nos. 72, 74, 76, 78, 80, 82, 84, 86, 88, and 90, Lower-park-road, on the application of Messrs. Benison and Bargman, on behalf of Mr. Pennack.

Width of Way and Cubical Extent.

Marylebone, East.—That consent be not given to the erection of an iron and glass roof over a por-

tion of Duke's-mews, Lisson-grove, on the further application of Messrs. Wilson & Long on behalf of Messrs. Spencer, Turner, & Boldero.

Formation of Streets.

Lewisham.—That an order be sealed and issued to Mr. H. H. Fuller, sanctioning the formation or laying out for carriage traffic of a street, 30 ft. wide, to lead from Honor Oak-road to Devonshire-road on the Oakfield estate, Forest Hill, on his further application to the Council.

Strand.—That an order be sealed and issued to Mr. C. Stanley Peach, sanctioning the formation or laying-out of a passage-way 10 ft. wide, for foot traffic, to lead from Carnaby-street into Marlborough-row, St. James's, and the erection of an addition to the central electric lighting station on the north side of such passage-way, to abut also upon Carnaby-street and Marlborough-row, on his application to the Council on behalf of the St. James's and Pall-mall Electric Light Company, Limited.

Hampstead.—That an order be sealed and issued to Mr. W. E. Sanders, sanctioning the formation or laying out of a street, 42 ft. wide, for carriage traffic, to lead out of Haverstock-hill into Lawn-road, on his further application to the Council on behalf of Mr. J. Sanders. That the name Downside-crescent be approved for the new street.

Dulwich.—That an order be sealed and issued to Mr. W. Hancock, refusing to sanction the formation or laying out of a street, 40 ft. wide, for carriage traffic, to lead from the east side of Denmark-hill into Daneville-road, Camberwell, and also the formation or laying out of a spur street, 90 ft. long and 30 ft. wide, to lead out of such new street, on his application to the Council on behalf of the Oriental Palace of Varieties Company, Limited.

Height of Buildings.

City of London.—That consent be given to the erection of a building on the south side of Tallis-street, at the corner of Carmelite-street, to exceed in height the width of each of those streets, on the further application of Messrs. Robertson & Ellis, on behalf of Messrs. Harmsworth Brothers, Limited.

Cubical Extent.

Battersea.—That consent be not given to the erection at the London Road Car Company's premises, Wellington-street, to abut upon the river Thames, of a forage-preparing granary, with openings in the party walls to connect it with a bay store on the west side, and a covered yard on the east and south sides, communicating with other premises in the same occupation, together exceeding in extent 450,000 cubic feet, on the application of Mr. P. Dollar, on behalf of the said company.

Buildings for the Supply of Electricity.

Strand.—That the Council do approve of the plans, dated January 28, 1897, submitted with the application of Mr. C. Stanley Peach, on behalf of the St. James and Pall Mall Electric Light Company (Limited), for the construction of an addition on the south side of their central generating station and works in Carnaby-street, Regent-street, St. James's.

*Recommendations marked * are contrary to the views of the Local Authorities.*

Correspondence.

To the Editor of THE BUILDER.

LONDON WATER SUPPLY AND THE REMOVAL OF THREE-GALLON FLUSHING TANKS.

SIR,—I am in perfect sympathy with the efforts of your correspondents, Messrs. Carter, Tidman, Lawford, and Ilubert, whose letter upon this matter appears in your issue of last week. It would be had enough if the Companies were insisting that in future the maximum shall be a two-gallon flush, but to put persons to the expense and inconvenience of removing all three-gallon flushing cisterns is grotesquely ridiculous, to say nothing of the unfairness of the proceeding; and, as your correspondents point out, it is high time that this and other such arbitrary powers of the Water Companies should not be tolerated longer than is absolutely necessary.

This extraordinary arbitrariness on the part of the London Companies is certainly another nail in their coffin, and I trust it will awaken so much distrust in sanitarians as will lead to such discontent on the part of the general body of consumers as will bring about the change so much desired by all classes of people who have the health and welfare of the people at heart, viz., the placing of the water supply in the hands of the consumers themselves.

I believe there are very few persons who have experimented with the two-gallon flush under conditions as commonly existing—and which conditions it is often physically impossible to alter—who would say that a two-gallon flush is sufficient. I am aware that experiments have

been made, and I have heard them described, to prove that a two-gallon flush is sufficient; but these experiments have been, in fact, only theoretical in nature, and although they may be interesting, particularly to the experimenters, in practice they are valueless. What we have to contend with is a set of conditions as they exist in practice, and there are a number of observant men who are daily in contact with conditions as they are usually met with, and they are practically unanimous in advocating a three-gallon flush, and such testimony as theirs should be accepted as it is given, solely in the interest of the community at large, and without fee or award of any kind.

My own impression is that the companies will gain little, if anything, by their uncalled for action, as oftentimes the water closets will be flushed two or three times in order to effectually remove all the soil from the trap. The advice to all users of water closets until the companies give way should be "Flush before and after using," and these directions should be printed on a card and hung up in every water closet.

It is surely high time that the public, not only of the Metropolis, but of other towns and districts supplied by private companies, should arise to the necessity of getting the water works in their own hands, and thus prevent undue monopoly of nature's gift to man.

I have known water companies' inspectors carefully measure flushing tanks after they have been fixed, with standard measures, and condemn the tanks on account of their holding a little more than two gallons. Such behaviour as this is extraordinary, and I am sure it cannot be suffered much longer. I would suggest memorialising the Local Government Board, or even Parliament, upon this important matter, and I should be pleased to undertake to get the signatures of practical men in this district.

T. J. MOSS FLOWER,
Assoc. Mem. Inst. C. E.

Bristol, February 16.

THE A.A. "DISCOVERY" OF A THIRTEENTH CENTURY ARCHITECT.

SIR,—In your last issue you reproduced a thirteenth century drawing of King Oifa and his Architect, exhibited by Mr. A. S. Flower in reading his interesting paper at the A.A. on the 5th inst. According to your report of the discussion which followed, the President said, "The portrait of the medieval architect that he (Mr. Flower) had discovered . . . would no doubt mark that meeting as historic. They might think that he was unduly exaggerating the importance of this discovery, but he believed that the point would receive, through the publicity it would gain in the press, the attention it deserved." And Mr. W. H. Seth-Smith said, "The illustration . . . would mark an epoch in the information which they had on the subject."

But they had forgotten their Violet-le-Duc. The first volume of the *Dictionnaire*, published in 1858, contains (p. 115) a reproduction of the figures of King and Architect from the same drawing.

JOHN BILSON.

** Two other correspondents write that the illustration is given in Green's "History of the English People," and in Gardiner's "Students' History of England."—Ed.

PAVILION COMPETITION, WESTON-SUPER-MARE.

SIR,—Doubtless many of the competitors in the above competition—the drawings for which were sent in on December 21 of last year—were anxiously awaiting some information, and, although nothing has appeared in the professional papers, nor has any intimation been sent to any of the competitors, I am in a position to state what has transpired up to the present.

Under the terms of the competition, a professional assessor would be appointed to select three schemes to the authors of which would be awarded the respective premiums of 50*l.*, 20*l.*, and 10*l.*, and the Council "absolutely reserve to themselves (I am quoting from their advertisement) the right to carry out such one of the three premiated designs as they may consider best adapted to the requirements of the town, and the architect thereof will be appointed architect of the works if carried out at an inclusive remuneration of 5 per cent. to cover all charges and expenses."

Mr. Alexander Graham, of London, was appointed assessor, and he has placed the designs "Promenade," "Stability," and "Straight," and these designs are now being publicly exhibited in premises adjoining the market.

From the local press and other sources I gather that there is a strong feeling against carrying out any of the three premiated designs, and it is commonly reported that some of the rejected designs

find much favour with many members of the Council, one in particular. Will this be found to be by a local man?

This my plain unvarnished tale, which will doubtless serve to arouse to some course of action the authors of the three designs selected by Mr. Graham. Personally I am absolutely ignorant of the identity of any of these gentlemen, and only write in the interest of fair-play and justice. Unless this farce of competition is not to become more corrupt than it already is, something must be done. Who is to lead us? the profession certainly expects the Institute, which, whatever its faults, is the recognised mouthpiece of the majority of the profession.

"NON SIBI."

RISKS OF ADVERTISERS.

SIR,—In the *Builder* of January 9 appeared the following advertisement:—"Architect's junior assistant required in City office. Only those with some artistic taste need apply, stating terms and previous experience, to P. H., 26, Royal Exchange, E.C."

I applied by letter, also sending several drawings upon which I had expended much time. I asked for the return of the drawings, and enclosed stamps for the purpose. A month has now elapsed, and my drawings have not yet been returned, nor any reply received, although I have again written.

Inquiries have been made at the address given, which we found to be the City Advertising Company, and the clerk there said he did not know the address of the advertiser.

Although I fear my drawings are lost to me, still the warning may put other assistants on their guard, and induce them not to reply, or at least not to send drawings of any value, or stamps, to the unknown.

"SOLD."

BRISTOL ARCHITECTURE.

SIR,—I notice in your article on Bristol Architecture that the design of the Dock offices, Queen's square, is attributed to Mr. Drake. The building was designed by me.

Bristol, February 13.

** We much regret the mistake.—Ed.

The Student's Column.

SPECIFICATIONS.—VIII.] JOINER.

UN this case, as with the carpenter, the precise determination of the quality of wood required is the first consideration, and the student will, of course, bear in mind that it does not necessarily follow that the deals and fir timber from the same port are of equal quality or equally suitable for the different work of the carpenter and the joiner. Thus, whilst crown Memel may be taken as representing the highest quality of fir timber for carpentry work, Omega and Archangel deals are about the best suited for joinery.

Materials.—The deals to be of (approved) quality yellow or red deals, from (Russian) ports, but for panels only of internal doors and framing, American red or yellow pine of approved quality may be used. (This is, of course, a matter for the architect's discretion. If there is no objection to American wood, it should be thus stated in the specification.) All deal and pine to be perfectly sound and well seasoned, cut out perfectly free from sapwood, large, loose, or decayed knots and other defects.

The fir for casement and door frames and other joiner's work to be cut out of (approved) quality red or yellow fir of bright colour and straight grain, and free from knots.

(If the work is practically entirely in deal, the oak for sills and the small amount of other hard wood required, as mahogany for water-closet seats, can have their quality stipulated under this section, but if there is a considerable amount and it is as well to make a separate heading, and write the description of all work in that wood together.)

The oak for sills and thresholds to be sound, well grown, and properly seasoned oak of English growth.

Workmanship.—All joiners' work to be wrought and finished according to the detail drawings, with a clean, even, and smooth surface from the plane, and no sand paper to be used.

The dimensions and thicknesses of joiners' work, figured on the drawings or described in this specification, are the original ones out of which the joinery is prepared, and not the finished thicknesses after planing and cleaning down. (This being the usual practice of joiners, it is as well to adhere to it and save confusion. It is often specified that the sizes are to be finished sizes when fixed; but bearing in mind the way in which joinery is prepared, legitimately, from deals, it is really irrational to expect that finished

sizes shall be exact in inches. The finished thicknesses should be stated in sixteenths of an inch, as a "1 1/16 inch door," and so on.)

All glued joints to be feather-tongued, and the glue to be a mixture of equal parts Scotch and French glue, used fresh. External work to be put together in white lead.

The joiners' work is to be put together without wedging, and placed in a hot-stove room for at least one month before finishing, and any which may split, shrink, part in the joints, or show flaws or other defects, is to be removed and replaced with new material.

The floors, after being laid, are to be protected with a thick covering of dry sawdust until completion, and treads of stairs to be protected with rough cover boards.

Floors.—The floors of frame to be laid with 1 1/2 in. yellow deal flooring in half batten widths, grooved and tongued with rebated heading joints, and mitred borders to hearths. These floors to be secret nailed.

The floors of to be laid with inch yellow batten flooring, ploughed and tongued with hoop iron, with splayed heading joints, and mitred borders to slabs.

The floors of to be laid with inch yellow deal straight joint flooring, with splayed heading joints, and to be covered with inch parquet flooring, to be supplied and laid by Messrs. at p.c. price of per yard super (or quote the amount in lump sum) to be paid to Messrs. by the contractor within one month after presentation of the architect's certificate.

The floor of to be laid with mill-traversed yellow deal boarding, inch thick, laid straight joint, with butted heading joints.

Skirtings.—All skirtings to be tongued to floors, and to have tongued and mitred angles.

Put to 1 1/2 in. double faced and fully moulded skirtings, 15 in. high, on splayed grounds and backings.

The skirtings in to be 1 1/2 in. moulded skirting, 9 in. high.

The skirtings in to be 1 in. by 7 in. square skirting.

Put 2 in. by 2 in. rounded fillet as skirting to floor of kitchen.

Windows.—The windows numbered on plans to have deal cased frames, oak sunk, weathered, and cheek-throated sills, and 2 in. double hung ovolo moulded sashes with sash bars 1 1/2 in. wide. Deal cased frames to have 1 1/2 in. pulley stiles, and 1 in. inside and outside linings, and 3/4 in. back linings, all tongued together, and the parting beads tongued to frame. All oak sills to be grooved on underside, and to have 1 1/2 in. by 3/4 in. galvanised iron water bar bedded in whitelead, and let into groove in stone sill (or brick). Sashes to be double hung with brass lashed axle pulleys, braided cotton lines, and iron weights. All double hung sashes to have strong knife-proof brass sash-fasteners, each lower sash to have a pair of brass sash-lifts, p.c. each, and each upper sash to have a pair of brass sash-pulls, p.c. each. All double hung sashes to have moulded horns, and in place of usual bottom bead a beaded sill piece 4 1/2 in. by 1 in.

The windows numbered on plans to have double hung sashes as above described, but with 6 in. by 3 in. rebated, weathered, and throated transome, and 2 in. fanlight above same to match sashes in detail, and to be hung at bottom with a pair of 3 in. brass butts. These fanlights to be rebated on bottom rail, and to have externally a moulded and throated weather fillet out of 2 1/2 in. by 2 1/2 in. tongued on to rail. Fit the fanlights with wrought-iron quadrant stay-bar, with lines and pulleys to open and close fanlight from floor. (In every case the student may be advised to fix a p.c. price for each item of ironmongery, and to select his ironmongery at that price. But let it be quite clear, as enforced in an earlier chapter, what p.c. means, as ironmongery is pre-eminently a discount trade.)

The windows numbered on plans to have 4 1/2 in. by 4 in. rebated and twice moulded casement frames, with 6 in. by 3 1/2 in. oak, rebated, sunk weathered and throated sills, and to have 2 in. ovolo moulded sashes with sash-bars 1 1/2 in. wide. These casements to be hung with a pair of 4 in. brass butts to open outwards, and to have 12 in. brass casement stay-bars with stout plates and strong brass cockscrew fastening (p.c.).

The windows numbered on plans to have similar frames and casements, but these are to be fixed.

The windows numbered on plans to have 4 1/2 in. by 4 in. fir rebated, chamfered, and moulded frames, with 6 in. by 3 1/2 in. oak, rebated, sunk, weathered and throated sills, and to be fitted

with 2 in. ovolo moulded sashes, the lower part fixed and the upper hung on butts as fanlight, in a similar manner to those windows numbered

The bull's-eye windows numbered on plans to have 4 1/2 in. by 4 in. fir rebated, chamfered and moulded frame, put together in two thicknesses and keyed with oak hammer-headed keys, and to be hung with 2 in. ovolo moulded casements on brass sash centres and fitted with white cotton cords in one length and brass screw-eyes in sash to open and close same, and brass cleat to fix same (quote p.c.).

Linings to Windows.—All linings to be tongued to frames, and with tongued and mitred angles. The windows numbered on plans to have 1 1/2 in. frame, moulded, and panelled linings and soffits, on deal dovetailed backings. The architrave moulding around to be out of 4 1/2 in. by 1 1/2 in. wide. The window board to splayed grounds to be 1 1/2 in. rounded with moulding out of 3 1/2 in. by 1 1/2 in. below same. These windows to have 1 1/2 in. moulded, panelled window backs and elbows.

The windows numbered on plans to have 1 1/2 in. plain jamb linings and soffits, ovolo moulded on edge, 5 1/2 in. by 1 1/2 in. moulded architraves on 1 in. splayed grounds, and 1 1/2 in. rounded window boards. No window backs to these windows.

The windows numbered on plans to have no window linings or architraves, the plaster being continued over jambs, but they are to have 1 in. rounded windows with returned nosings.

(N.B.—If the linings correspond exactly with the classes of windows, it is well to let the description of linings follow immediately that of the windows to which they apply, but if as would usually happen where there is a considerable variety of windows as indicated in the descriptions given above, it would probably happen that one class of linings would apply to more than one kind of window. In this case it is better to specify all the window-linings together after the model given above.)

Doors.—All door frames on stone thresholds to be doweled with 1 in. wrought iron dowels, 3 in. long.

The doors numbered on plans to be 2 1/2 in. folding doors, each leaf four panelled, the top and bottom panels to have raised panels, and all to be moulded both sides. The frame to be 4 1/2 in. by 4 in., rebated, chamfered, and moulded, and the doors to be hung thereto with one and a half pairs of 9 in. wrought iron butts to each leaf. Put a pair of 9 in. wrought-iron barrel-bolts and street-door latch, p.c. 25s. to these doors, and a pair of bronzed iron door-knobs, p.c. 10s. each. These doors to have 6 in. by 2 1/2 in. architrave moulding, splayed at back for plaster. The pedimented over-door to be out of 2 in. stuff with moulded scrolls as shown on detailed drawing.

The doors numbered on plans to be similar, but the frame to have twice rebated and twice moulded transome 4 1/2 in. by 4 in. and 2 in. ovolo moulded fixed fanlight over. Put to these doors 8 in. rebated mortice-locks with brass furniture hot sides and two keys. These doors to have 4 1/2 in. by 2 in. splayed architrave moulding both sides.

The doors numbered on plans to be framed, ledged, and braced with 1 1/2 in. framing covered with 1 in. V-jointed boarding in half batten widths, and hung with a pair of 4 in. wrought-iron butts to 4 1/2 in. by 4 in. rebated and chamfered frames, and to be fitted with 7 in. rounded rim dead lock and a pair of 9 in. wrought-iron barrel bolts.

The doors numbered on plans to be 2 in. five-panel doors, moulded both sides, hung with a pair of 4 in. wrought iron butts to 1 1/2 in. rebated and beaded jamb linings with architrave mouldings out of 4 1/2 in. by 2 in. These doors to be fitted with 6 in. 2-bolt lever mortice locks, with brass furniture both sides.

GENERAL BUILDING NEWS.

SOUTH HACKNEY SYNAGOGUE AND CLASS-ROOMS.—The foundation stone of the South Hackney Synagogue and class-rooms was laid by the Hon. Walter Rothschild, Chairman of the Building Committee, on Sunday, the 14th inst. The new buildings will comprise a lower ground floor, containing nine class-rooms and an assembly hall, with lavatory and cloak-room accommodation for boys and girls. This floor will be fitted with sliding partitions, which, when put aside, will convert the entire floor into a great hall for prize distributions and overflow services. The upper ground floor will be the main floor of the Synagogue, and will contain accommodation for 340 men. The whole of the seats will be placed crossways, and

the ark, pulpit, and reading platform will be grouped together at the eastern end of the building. There will also be on this level lavatory accommodation for gentlemen and a robing-room for the ministers. Two self-enclosed staircases will lead direct from the street to the gallery, which will contain sittings for 210 women, and two sets of cloak-rooms. The total cost, including the freehold site, will be 7,350l. The contractors for the whole of the work are Messrs Brown, Son, & Blomfield, and the architect is Mr. Delissa Joseph.

NEW BUILDINGS IN BIRMINGHAM.—The following is the Building Surveyor's return of new buildings erected in Birmingham, for which plans were approved by the City Surveyor, during 1895:— Houses and shops, 1,852; business premises, 354; warehouses and shopping, 247; miscellaneous, 314; alterations and additions, 324; churches, 2; chapels, 2; schools, 2. The plans submitted for approval numbered 1,017, as compared with 797 in 1895, an increase of 220. The churches are both temporary iron structures, one being situated in City-road, and the other in Cherrywood-road. The chapels, two in number, are a Baptist chapel, in Crabtree-road, and a temporary chapel, in Elkington-street. The schools are St. Martin's (Church of England), Dean-street, and Wesleyan Schools, in Benacre-street. The principal items among the miscellaneous are the rebuilding of the Gaiety Palace, Coleshill-street; a new police station, at Harborne; branch district post office, Five Ways; extension of Central Fire Station, Upper Priory; water-gas works, at Salfley and Windsor-street; extension of the Deaf and Dumb Institute, Edgbaston; reconstruction of the old Inland Revenue Offices, Waterloo-street; mission-room and institute, Freetb-street; mission-room, Garrison-lane; mission-room and Sunday School, Belmont-row. The alterations and additions include:—Alteration and extension of Unitarian Chapel, Newhall-hill; extension of schools, All Saints' Church, Hoxley; enlargement of Free Library, Aston-road; additions to Board Schools in Highfield-road, Salfley, Hutot-street, Goodrick-street, and Icknield-street; also to St. Matthias's Church School, Wheeler street, and to schools in South-street, Harborne, and Tennant-street. Amongst the business premises are:—New premises for the National Telephone Company, Newhall-street and Edmund-street; Messrs. Newbury's, Old-square; A. R. Dean, Corporation-street; rebuilding "Hen and Chickens," New-street; residential premises, Cornwall-street and Newhall-street. During the year 773 notices have been served on property-owners and others as to dangerous buildings, projecting signs, &c. Six hundred and forty-nine square yards of land have been given up to the Corporation by owners of property setting back shop-fronts, hay windows, and other projections. Under the Factory and Workshops Acts 142 factories have been inspected, seventeen of which have been altered, and twenty-three others are now being altered in accordance with the requirements. The year generally has been a very busy one with the building and kindred trades in the city, and has been chiefly notable for the number of new warehouses and factories that have been erected, and for the many large alterations and extensions of existing factories that have been made. This has been especially marked in the cycle trades.

BOARD SCHOOLS, BILTON, HARROGATE.—These schools have been erected at New Park on a site containing 4,840 sq. yds., with a frontage to Skipton-road of 188 ft. The buildings give accommodation for 510 mixed children, and consist of central hall, with classrooms, infants' room, and cookery room grouped around; cloak rooms, teachers' rooms, heating apparatus chamber, and spare cellar in the basement. In the play-yards are play-sheds and the necessary latrines. The central hall will seat (after allowing space for platform, &c.) 300 adults on the occasion of a concert, public meeting, &c. The stone used in the buildings has been obtained from the local quarries. Welsh slates and Staffordshire ridge tiling is used on the roof. The floor of central hall is of pitch pine, laid solid on a concrete bed. An ornamental glazed brick dado surrounds the whole of the rooms on ground floor, with the exception of teachers' rooms. The contracts for the whole of the works (including master's house) amounted to about 6,000l., and have been carried out by the following contractors:—Mr. H. Abbott, mason, Harrogate; Mr. G. H. Carrick, carpenter and joiner, Harrogate; Mr. J. Shepherd, slater, Harrogate; Messrs. Laycock, Bros., plasterers, Harrogate; R. & C. Barran, plumbers, Leeds; Mr. S. M. Parlane, cementer, Leeds; and Messrs. Homan & Rodgers, concreters, Manchester; Mr. Hutton, painter, Shipley; Messrs. J. King, Ltd., heating engineers, Liverpool. Messrs. Illingworth, Ingham, & Co., of Leeds, have supplied the school furniture. Mr. George Fletcher is clerk of works; and Mr. George Bland of Harrogate, is the architect.

BOARD SCHOOL, LOW FELL, DURHAM.—A new school, erected by the Gateshead School Board, at Kell's-line, Low Fell, was opened on the 25th ult. The new school has been built from the designs of Messrs. Oliver & Leeson, of Newcastle, and provides accommodation for 380 children. It is designed on the class-room and central hall principle. Each of the two floors has six class-rooms, in addition to the usual teachers' rooms, cloakrooms, &c. The school is so planned that it may be worked either a

a separate boys' school and separate girls' school, or on the "mixed" principle. Each room is lighted from the two sides. Warmth is provided by means of hot-water pipes, and, in addition, there is a fireplace in each class-room. The school is built of Pelaw bricks, with stone dressings. The whole of the work has been carried out by Mr. Joseph Elliott, of North Shields. Mr. W. Edington having been the clerk of the works. The central hall of the school is 85 ft. by 30 ft. On the second floor are a gymnasium 86 ft. by 30 ft., a cookery class-room 38 ft. by 25 ft., a large scullery, pantry, and larder, and cloakroom. A room, 25 ft. 6 in. by 64 ft., is provided for the purpose of manual instruction, together with two store-rooms. Two fireproof staircases are carried up as ventilating towers with ventilating turrets over them, to which exhaust flues are led from the various rooms. There are covered playsheds for the children. The slating was done by Mr. Wylie, of South Shields. Messrs. Dinning & Cooke supplied the heating apparatus, and the lavatories and sanitary fittings generally were supplied by Messrs. Twyford & Co.

NEW BUILDINGS, QUEEN'S COLLEGE, BELFAST.—The Lord Lieutenant of Ireland, Lord Cadogan, has just opened the Students' Union and the Pathological and Physiological Laboratories at Queen's College, Belfast. The principal elevations of the Union Buildings face University-square. A broad flight of stone steps leads to the principal entrance on the ground floor. Advantage is taken of the sloping nature of the ground to obtain a basement floor, which contains apartments for caretaker, kitchen, offices, and heating chambers. These are separated from the students' quarters, which contain a two-table billiard-room, 40 ft. by 30 ft., with bay-window recesses and wall seats. Adjacent are the apartments containing the lavatories, baths, and students' lockers. These rooms are separated from the kitchen and offices by a vestibule or under hall, 40 ft. by 70 ft., which gives accommodation for the storage of bicycles. The principal apartment is called the "M'Mordie Hall," and will be used for public meetings for the various societies in connexion with the college. It will also be available as a reading-room. The hall measures 40 ft. by 30 ft., and contains accommodation for about 400 people on the floor and gallery. The gallery runs round three sides of the hall on the upper floor, and is reached by the grand staircase. The hall is lighted at each end by large five-light traceried windows, and at the side by the large recessed bay window. The grand staircase is approached by the porch and vestibule. It is of polished oak, on a foundation of granolithic concrete. The dining-room is 30 ft. by 24 ft., is reached from the hall, and is over the kitchen, from which it is served by lifts. There are pantries and stores adjoining this department, also served by lifts from below. The upper floor contains smoking-room, 30 ft. by 24 ft., approached from the grand staircase. A class-room leads off the vestibule of the grand stairs. The committee-room is approached from the grand stairs. The building is of brickwork, picked Annadale bricks being used for facing, and Giffnock sandstone for all quoins, window and door jambs, &c. The large windows of the M'Mordie Hall and the lower staircase are filled with ornamental quarry glazing in lead, of colours to harmonise with the internal decorations, and are hierarchically emblazoned, showing the arms of the college, of Belfast, of Ulster, of Ireland, and the United Kingdom. The contract for the Union Buildings was entrusted to Messrs. R. & J. Thompson, of Belfast. The architect is Mr. Robert Cochrane, of Dublin. The gas-fittings have been done by Messrs. Richard Patterson & Co., and the heating by Messrs. Boyd, Paisley. The pathological and physiological laboratories were also opened by the Lord-Lieutenant. The external brickwork of the building is the manufacture of the Annadale Brick and Tile Company, Belfast. The contractors for the buildings were Messrs. Fitzpatrick Brothers, Limited, of Belfast; and the heating was done by Messrs. Musgrave. The whole was designed and carried out under the supervision of the architect, Mr. Robert Cochrane, Dublin.

THEATRE, FEBRUARY, DURHAM.—The new theatre which has been erected by Messrs. John Rowell & Co. at Ribblesdale Quay was opened on the 1st inst. Mr. Simpson was the architect, and Mr. Pringle the contractor. The theatre seats about 1,500.

BUILDING ACTIVITY, SHEFFIELD.—The Sheffield City Surveyor, in a report on the work of the Building Department during 1896, makes the following statements:—This has been without exception the busiest year since the Building By-Laws were first adopted by the Corporation in 1864. The number of plans submitted has risen from 329 in 1888 to 1,230 during the past year, or almost four times as many as those submitted in the former year, and is also an increase of 238 upon the high figures of 1895. The number of houses certified during the year was 1,059, as compared with 523 in 1895. The number of houses erected, but not certified, on account of the absence of metal gullies, specified on the approved plan, is now reduced from 476 in 1895 to 124 in 1896; the total number of houses erected 1,183, being an increase of 184 on 1895, and the largest number of houses erected in any one year since 1880, and only exceeded on three

occasions since 1864, viz., 1—1866, when 1,187 houses were erected; 1876, 1,448; and 1880, 1,220. The numbers of other buildings of every description erected during the year is 305, as compared with 253 in 1895. These figures have only been exceeded once since 1888, viz., in 1892, when 340 buildings were erected. The number of houses completed, but not certified, has increased from 156 at the end of 1893, to 1,052, and these figures will be increased but slightly since the non-enforcement of cast-iron gullies. Since building by-laws were first adopted by the Corporation in 1864, there have been 27,230 houses certified as fit for human habitation, and, in addition, during the last four years, 1,052 houses have been erected and not certified, making a total of 28,332. Although, generally, the class of buildings has much improved during the past year, it has been found necessary in four cases to take proceedings, all of which were successful, the penalties imposed by the magistrates amounting to 207. 15s. 6d., and in addition costs in two of the cases.

PUBLIC CONVENIENCES, HYDE PARK CORNER.—These conveniences have been erected by the Vestry of the Parish of St. George, Hanover-square, in Hyde Park at Hyde Park Corner, opposite St. George's Hospital. Provision is made for separate conveniences for men and women. The men's department is underground, and is built of brick-work faced inside with white glazed bricks. It is surrounded above the ground level by a parapet wall faced with Bath stone in coursed ashlar, finished with a moulded cornice of brown Portland stone. It has two entrances, one from Knightsbridge and one from the park, each staircase is 5 ft. in width and provided with brass hand-rails, and fitted with Bostwick's patent collapsible iron trellis gates. The entrance from the park is lined with "ceratite" or glass-faced bricks. The following accommodation is provided, viz.:—Twelve water-closets, thirty-two urinals, one large lavatory with six wash-basins, and an attendant's room situated in the centre of the building. The water-closets are of the pedestal pattern, fitted with mahogany seats and three-gallon waste-preventing cisterns. The urinals are semi-circular fire-ally backs in enamel, with polished St. Anne's marble divisions. The lavatory is lined inside with "ceratite," and is provided with six tip-up basins and receivers. The women's department is built entirely above ground. It is a structure of Grecian design, and is built of brickwork, faced on the outside with Bath stone in coursed ashlar; the columns, pilasters, cornices, and other dressings being of brown Portland stone. The roof is covered with lead, and has a central copper-covered dome forming an octagonal lantern inside, having sashes, gables, and ornamental lead lights. The whole of the woodwork (with the exception of that in the entrance hall and waiting-room, which is polished American walnut) is selected pitch pine, stained and varnished. The building consists of a central hall, or waiting-room, with projecting wings, and contains the following accommodation, viz.:—twelve water-closets, a lavatory with four wash-basins, and an attendant's room; the fittings in this department are similar in all respects to those in the men's department. The water-closets and lavatory are arranged in corridors on the north, south, and east sides of the waiting-room from which each corridor has a separate entrance. The corridors are warmed by hot water radiators supplied from a boiler in the basement, which also supplies hot water to the lavatory basins. The entrance, which has a covered portico with fluted Grecian columns, is in the park, but has an approach from Knightsbridge. A private entrance and lobby is also provided in the park at the north-east angle of the building, to obviate the necessity of the officer entering the main building to collect the money. The floors in each department are laid with "terrazza," and with borders, &c. in Roman mosaic. Both departments are fitted throughout with the electric light. The doors of all the water-closets are fitted with Maskelyne's patent automatic "penny in the slot" locks. The sanitary work has been carried out by Messrs. Doulton & Co.; the electrical installation by Messrs. Ridout & Co.; the current being supplied by the Westminster Electric Supply Corporation. The whole of the works have been constructed by Messrs. Patman & Fotheringham, at a contract price of 6,473/1, from plans and specifications prepared by and under the supervision of Mr. George Livingstone, C.E., Surveyor to the Vestry, and his chief assistant, Mr. C. S. Milner.

HOSPITAL, MONKLANDS, GLASGOW.—On the 11th inst. the trustees of the late Provost Alexander, Coatbridge, applied at the Dean of Guild Court for lining for the erection of an hospital to be called the Alexander Hospital, in Blair-street, for which the deceased left 30,000. The plans, which were passed, have been prepared by Mr. A. McGregor Mitchell, architect and Bush Engineer, Coatbridge, and show a set of buildings in the Old Scotch Baronial style. The cost will be about 8,500, and there will be thirteen beds for patients meeting with accidents in the districts of Old and New Monkland and Shotts. The buildings will cover 13 acres of ground near Gartsherrie and Drumpeller Station, N.B.R., and will include nurses', doctor's, convalescent, &c. rooms.—*Glasgow Herald.*

RECREATION HALL, SCHOOL FOR THE BLIND, NEWCASTLE.—On the 12th inst. the new recreation hall was opened at the Royal Victoria School for the

Blind, Benwell Dene, Newcastle. The architect for the erection was Mr. W. L. Newcombe, and the contractor was Mr. Pringle, of Gateshead.

THE PALACE AT DARMSTADT.—The Grand Duke of Hesse has appointed Messrs. Bailie Scott & Stetson Morris, of London and Douglas (Isle of Man), as his architects for the decoration and general fitting of certain rooms in the Palace at Darmstadt.

ALTERATIONS, K.C., WESLEYAN CHURCH, SPRINGBOURNE, HANTS.—This church, which has been enlarged and renovated, was recently reopened. The alterations carried out comprise the erection of a porch and lobbies in the front of the building, the placing of a gallery to accommodate some eighty or ninety persons in the western end of the church, re-fitting the whole of the ground floor with pitch-pine seats, improving the choir accommodation, decorating the walls, rearranging the lighting, and other minor details. The contract was entrusted to Messrs. J. McWilliam & Son, of Bournemouth, and Mr. W. A. Hillier has been in charge of the work; the architect being Mr. G. J. Lawson, of the firm of Messrs. Lawson & Donkin.

SCHOOL, FIFE.—The new school erected by the Wemyss School Board at Coalton of Wemyss was opened on the 8th inst. The school is built to accommodate over 400 children. Mr. Alex. Todd is the architect, Mr. Thomas Brown builder, Mr. Robert Suttie joiner, Mr. D. Johnston slater and plasterer, Mr. William Nicol plumber, Mr. R. B. Forrester painter, Mr. McCulloch railings and other iron work, sanitary fittings, Messrs. Adams & Co., Glasgow.

REPAIR OF CHURCH SPIRE, SWAFFHAM.—The spire of this parish church was last year examined by Messrs. Milne & Hall, architects, London, and found by them to be unsafe. Plans for the repair of the spire have been prepared by the same architects and approved by the necessary parties, and the work has been entrusted to Mr. George Jeffries, builder, of Swaffham.

BUILDING TRADES, STAFFORDSHIRE.—The building trade for the season of the year is good. This is principally on account of the large number of artisans' houses which are being erected all over the district. Through the severe weather of the past week all outdoor operations have been stopped, consequently there have been large numbers of all classes of operatives temporarily thrown out of work, and now that the severe weather has gone there are less than 3 per cent. of bricklayers out of work, and joiners are practically all employed. The plumbers and painters are slack, and there are a large number of labourers unemployed.—*Staffordshire Sentinel.*

NEW UNION OFFICES, DARLINGTON.—The Darlington Guardians held their first Board meeting in their new quarters on the 1st inst. The building is situated in Mill-street, and measures about 83 ft. by 50 ft. north-east of the Edward Pease Public Library. The building was designed by Mr. G. G. Hoskins. The materials employed are grey bricks and buff terra-cotta. A feature in the design is a turret occupying the south-west angle, the lower portion of which forms a bay window in the Board room, while the upper part serves the special purpose of a ventilating chamber. The principal façade faces the south, and placed centrally here is the main entrance. On the west façade is the entrance for the relieving officers, while that for applicants for relief is from the back road on the north, and opens upon a waiting-room. From the main entrance the vestibule leads into the hall, both of which are floored with marble mosaic pavement. To the left is the Board-room, which, by means of a partition, can be converted into two committee rooms. To the rear of this is the waiting-room, and on the west of the latter are the separate offices of the two relieving officers. On the right of the entrance hall is the assistant's clerk's office, and adjoining this is the private office of the Clerk to the Guardians. North of these are a committee-room, strong-room, and lavatory accommodation. The several contractors for the various works have been:—For excavators, bricklayers, masons' terra-cotta, and plasterers' work, Messrs. Geo. Marshall & Son; carpenters' and joiners' work, Messrs. Thos. Stairmand & Son; slaters' work, Mr. J. Wandless; plumbers, glaziers, and gasfitters' work, Mr. E. Smith; painters' work, Messrs. W. H. & W. Hoskins; and heating arrangements, Mr. G. Denham, all of Darlington.

SAVINGS BANK, GATESHEAD.—The branch establishment which has been erected by the Committee of Management of the Newcastle Savings Bank, at Gateshead, was opened recently by the Mayor of Gateshead. The new premises are situated at the corner of West-street and Bensham-road. The style adopted is English Renaissance. The building has a massive Peterhead granite plinth and doorway. Above the plinth and up to the first floor level the facing is of Kenton stone, varied with red stone from Dumfries. Above the first floor level, the facing is of Normandy red, relieved with stone bands and dressings. The roof is covered with green slates, and the dome at the angle is of copper. The banking-room, lighted on three sides, measures 37 ft. 6 in. by 26 ft. 6 in., and is entered at the angle through an inner porch of oak, with lead glazing introduced. The walls and ceiling are finished in adamant, the ceiling being divided into panels with

moulded cornice. There is a panelled oak dado about 5 ft. high, and the flooring in front of the counter is of mosaic. The board-room is on the first floor, and above are rooms for the caretaker. There are cellars in the basement. The floors of the private entrance and lavatories are of coloured tiles, and the walls of the latter are lined with glazed brick. Messrs. Haswell & Waugh, of Gateshead, were the contractors, and Mr. G. B. Burnett has acted as clerk of works. The slating has been executed by Mr. J. Hewitson, Newcastle; the plumbing by Mr. Coking, Gateshead; the plastering by Mr. Rule, Gateshead; and the painting and glazing by Mr. Moreton, Gateshead. The granite, marble work, tiles, stoves, and gasfittings have been supplied by Messrs. Emley & Sons, the counter and other furnishings by Messrs. Sopwith & Co., and the leadglazing by the Gateshead Stained Glass Co. The contract for the whole of the work was 3 615s., and it has been carried out under the supervision of the architect, Mr. Stephen Piper, Newcastle.

TECHNICAL SCHOOLS, PAISLEY.—This school is expected to cost about 20,000*l.* The main fronts are to be built of stone from Cullallo Quarry, Fifeshire, and the corridors, cloak-rooms, lavatories, vestibules, &c., laid with terrazzo. The architect is Mr. T. Graham Abercrombie, Paisley; the measurer, Mr. James B. Lamb, Paisley; and the clerk of works, Mr. James Murray, Paisley. The following are the contractors:—Messrs. John Bryce & Co., Paisley, mason work; Messrs. I. & W. McInnes, Paisley, joiner work; Messrs. Hunter & Goudie, Paisley, plumber work; Messrs. Jas. Jeffrey & Co., Paisley, slater work; Mr. D. T. Hutchison, Paisley, plaster work; Messrs. Galbraith & Winton, Glasgow, tiler work; Messrs. P. & W. MacLellan, Limited, Glasgow, iron work; Mr. John McKenzie, Glasgow, cement paving work; Mr. Wm. Kay, Glasgow, heating and ventilating.

TOWN HALL, EAST COTES.—This building, which is situated in York-avenue, was opened as the Town Hall of East Cotes recently. The front of the building outside is 42ft., the length being 102 ft. 6 in., and it is constructed of white brick with cement facings and mouldings. The entrance is paved with mosaic work, and on each side of the vestibule are cloak-rooms. Above is a room intended for the use of the District Council adjoining being a smaller apartment for the accommodation of the Clerk. The hall itself contains a gallery over the entrance door, and at the opposite end a roomy stage, and the ceiling is panelled. With a length of 70 ft. and a breadth of 35 ft., there is room for an audience numbering about 500, exclusive of the platform. Behind the stage are dressing-rooms and a green-room, below being a kitchen. The hall was designed by Mr. James Newman, of Sandown, and the building work has been carried out by Messrs. W. H. Brading & Son, of East Cotes.

TECHNICAL SCHOOLS, SWINDON.—Lord Herschell recently opened the new technical schools at Swindon. The building, which is built of local bricks, is 174 ft. in length and three floors in height, and consists of a centre block, one room deep, with a wide corridor along the back leading to the projecting wings at each end. Accommodation has been provided for 1,000 students, and the structure is designed in such a way as to admit of enlargement by the extension of the two end wings; these can be carried back to form the two sides of a square with another connecting building at the back, the whole enclosing an inner quadrangle. The whole of the upper floor is devoted to art, and on the basement floor the various science rooms and laboratories are placed, while the women's department is located at the south end of the ground floor and the large lecture theatre at the north end. The building is heated throughout by hot-water pipes from a boiler in the sub-basement. Large extraction trunks are carried from each room to two large ventilating shafts, each 72 ft. in height, fixed one at the north end and one at the south end. Separate staircases are provided for the two sexes, with cloak-room accommodation on each floor. The whole of the work has been carried out by the contractors, Messrs. J. Long & Sons, of Bath, under the supervision of Mr. J. Eldsen as clerk of the works. The architect was Mr. Silcock.

PUBLIC HALL, NEWPORT, ISLE OF WIGHT.—The new public hall in the High-street, Newport, the Medina Hall, has just been opened. The facade of the building is executed throughout in red brick. The front entrance, which is paved with tiles, leads to the main hall, which has a floor space of 60 ft. by 30 ft., the height to the ceiling being 22 ft., and the floor being specially constructed for dancing. At the north end of the hall is a gallery, 30 ft. by 12 ft., this, as well as the staircase leading thereto, being of fireproof construction. At the south end is a raised sloping stage, 30 ft. by 20 ft. The hall will seat about 600 people, and it can be quickly cleared. At the back of the stage are ladies' and gentlemen's retiring rooms, with lavatory accommodation to each, and there is also a kitchen. The heating chamber is in the basement, together with a second kitchen. On either side of the main entrance is office and cloak-room accommodation. The building has been carried out by Messrs. Barton Bros., the heating arrangements by Messrs. Wood & Tame, whilst the ventilators were supplied by the Grahtrix Company.

The whole of the building was executed from the designs and under the supervision of Mr. E. A. Swane, C.E., of Messrs. Swane & Clark, architects.

WORKMEN'S DWELLINGS SCHEME, ABERDEEN.—The Aberdeen Town Council has resolved to purchase, at the price of 2,000*l.*, a triangular piece of ground of 2 1/2 acres in extent, with frontages to three streets, near the City Hospital, and to erect eight tenement houses fronting Urquhart-road, at a cost of 750*l.* each. Each tenement will be three floors in height, with accommodation for six tenants. The plans are by Mr. John Kust, junior, City Architect.

NEW OFFICES FOR PARISH COUNCIL, ABERDEEN.—The Aberdeen Parish Council has purchased a site in Union-terrace, and will erect thereon new offices according to plans by Messrs. Matthews & Mackenzie, architects, Aberdeen.

EMPIRE PALACE THEATRE, ABERDEEN.—To replace the "People's Palace," destroyed by fire, tenders, amounting in all to rather over 10,000*l.*, have been accepted. Mr. John Kust, junior, Aberdeen, is the architect.

A MODEL LODGING-HOUSE, MANCHESTER.—The Manchester City Surveyor (Mr. T. de Courcy Meade) has reported to the Sanitary Committee that in accordance with instructions he had prepared alternative sketch plans showing how the building sites now in the possession of the Committee can be used for tenement dwellings and for cottages for working people. The total number of persons to be housed is 2,584. With regard to the Oldham-road area, under the scheme recommended for adoption by the Committee, the buildings would be four stories in height and consist of fifteen shops and dwelling-houses. The first, second, and third stories would consist of five-roomed dwellings connected with the shops. The buildings on the remaining portion of the site would consist of two rows of two-story tenement buildings, fronting to a new twelve yards street, and one row of five-roomed cottage dwellings fronting to George Leigh-street, which is eighteen yards wide. The clear space between the buildings at the rear would vary from 38 ft. and 55 ft. in width. The four rows of dwellings would afford accommodation for 377 persons. The estimated cost of erecting the four rows of buildings is 17,501*l.*, equal to 36*l.* 15s. 3d. per person. The estimated cost of sewerage and paving the new streets, exclusive of the cost of widening the existing streets, is 900*l.*, to which must be added the estimated value of the site, 7,981*l.*, or a total of 26,772*l.* In Chester-street, Hulme, it is proposed to erect four blocks of buildings on the site, with frontages to Chester-street, Marsland-street, and Hulme-street. The buildings would be two stories high, and each dwelling consist of two two-roomed and two three-roomed tenements. They would accommodate 300 persons. The estimated cost of the buildings is 11,874*l.*, equal to 38*l.* 6s. per person, and the estimated cost of new streets, exclusive of street improvements, is 350*l.* The estimated value of the site, which has an area of 4,554 yards, is 2,277*l.*, or a total of 14,500*l.* It was proposed to erect on the Post-street area, Ancoats, two blocks of three-story tenements similar to those in Chester-street at a total estimated cost of 17,478*l.* Accommodation will be provided for 190 persons. The City Surveyor says that if Harrison-street, Oldham-street, site were utilised for a model lodging-house instead of for cottages and tenement dwellings, the site would accommodate 363 persons. The Committee recommend these schemes for adoption, and ask the Council to authorise them to carry out the plans, subject to the sanction of the Local Government Board. The number of persons to be accommodated is estimated as follows:—Oldham-road area, 377; Chester-street area, 305; Post-street area, 300; Harrison-street model lodging-house, 363; total, 1,345.

NEW PREMISES, WHITEFRIARS.—A large extension has just been made to the premises in Whitefriars, London, of the Argus Printing Company, from the drawings of Mr. Chas. Val. Hunter, C.C. The foundations were put in by Messrs. Greenwood, and the superstructure has been erected by Messrs. Estman & Fotheringham. The lower part of the building is in massive blocks of Portland stone, and the upper part in Raughon terra cotta. The floors are all fireproof on the Fawcett system.

CHURCH, HERNE BAY.—A new church, to accommodate 1,000 persons, is about to be built at Herne Bay. Mr. K. Philip Day, of London, is the architect.

SANITARY AND ENGINEERING NEWS.

PUBLIC WORKS, MANCHESTER.—In accordance with the standing orders of Parliament, Mr. George Hill, C.E., has deposited in the Private Bill Office an estimate of 40,000*l.* as the cost of the new water-works proposed to be authorised under the powers contained in the Manchester Corporation Bill of the present session. This estimate includes the purchase of necessary lands and provides for contingencies. The City Surveyor has also deposited an estimate of 950,000*l.* as the cost of constructing the effluent conduit and the street improvement as proposed by the same Bill. Of this sum 200,000*l.* will be expended upon the effluent conduit, and 350,000*l.* upon the proposed street improvement. *Manchester Guardian.*

LOCAL SEWERS IN LONDON.—The Main Drainage Committee of the London County Council have, subject to a condition recommended by the Engineer, sanctioned the construction of local sewers, as follows:—Lee: 950 ft. of 9-in. pipe and concrete sewer in Church-lane, Charlton, Shore-ditch; 220 ft. of 3-ft. 9-in. by 2-ft. 6-in. brick sewer in Clifton-street, 250 ft. of 12-in. pipe and concrete sewer in Dysart-street, and 920 ft. of 3-ft. 9-in. by 2-ft. 6-in. brick sewer in Curtain-road.

STAINED GLASS AND DECORATION.

WINDOW, HOLY TRINITY CHURCH, SYDENHAM.—The very large west window of Holy Trinity Church, Sydenham, has recently been filled with painted glass at a cost of nearly 1,000*l.* It commemorates a deceased parishioner. In the six long lights are two rows of pictures which illustrate, each in two panels in the upper tier, three incidents in the life of Job, and, in the lower tier, "Noah's Ark," "The Sacrifice of Isaac," and "Jacob's Dream." In the tracery openings, at the apex, is the Holy Lamb; in the other pieces figures of St. Michael and St. Gabriel, and of the other four Evangelists. The surroundings are of canopy work of the style which prevailed with fourteenth century Gothic architecture, in which style the church was built some years ago. The work is from the atelier of Messrs. Lavers & Westlake, of Endell-street, and was designed by Mr. N. H. J. Westlake.

PROPOSED MEMORIAL WINDOW, HAWARDEN PARISH CHURCH.—The members of the Gladstone family, as a thanksgiving for the extended years of life granted to their parents, intend, it is stated, erecting a memorial stained-glass window in Hawarden parish church. A design, by Sir E. Burne-Jones, representing "The Nativity," with "The Visit of the Shepherds," and "The Adoration of the Magi," has been accepted by Mr. Gladstone's sons and daughters.

THE RESTORATION OF ST. PETER'S CHURCH, THANET.—On the 7th inst. the chancel of this church was reopened, after the completion of the decoration and restoration that has been carried out in commemoration of the sixty years' reign of Queen Victoria. The coved ceiling of the chancel is divided into five main bays by ribs, which retain their original colouring of alternate gold and chocolate bandings, and white and black fillets; a similar rib at the ridge, with rich pendant bosses at the intersections; the cornices at the top of the walls are also ancient, and have furnished the key-note of the decoration. The ceiling between has been covered with pitch-pine boarding, which has been slightly darkened and allowed to form the ground-work for the painted figures and the other ornamentation. The three central bays have on each side a large figure of an angel, holding a shield bearing the monogram of our Lord or St. Peter. These angels are the work of Miss Maud Seddon (the daughter of the architect), and are surmounted by labels inscribed "Hosannah." The easternmost bay, that over the sacarium, has on each side three smaller angels with outstretched arms, with labels over, inscribed, "Hallelujah," and the westernmost bay, that next the nave, has on each side six half-length figures of the Apostles, seated on thrones, with gilded and diapered backgrounds. All these, together with the full-sized cartoons for the mosaic work, are the work of Mr. Henry G. Murray. The rest of the ornamentation consists of stencilled borders on either side of the vertical ribs, with a triangle of floriated panels on either side of the ridge rib, and on one side above the cornice, the work of Mr. C. Stollé. The eastern wall of the chancel has been covered with mosaic (Rusts' glass mosaic), and has a large figure of St. Peter on one side of the east window, and on the other of St. Andrew, both under canopies; angels bearing scrolls with inscriptions fill up the spandrels above the window, and there is a similar treatment in the same material of the east wall of the nave on either side of and above the chancel arch. The whole of the work is from the designs of Mr. John P. Seddon, and has been executed by Messrs. Belham & Co., with the assistance of the several artists above named.

FOREIGN.

FRANCE.—There is some talk of having a competition for a new *Salle des Stances* for the Chamber of Deputies in the *Cour d'honneur* of the Palais Bourbon. The expense is estimated at about four million francs. A limited competition between the following artists will shortly be opened by the Ville de Paris—M. Carrière, M. Laroche, M. Frouvé, M. Eliot, M. Raphael Collin, and M. Baschet—for the decoration of the ceiling of the library of the Municipal Council at the Hôtel de Ville. The Luxembourg Museum, which has been much enlarged and rearranged, has now been thrown open to the public. The two new halls on the terrace have been filled, one with the works of foreigners, and the other with the collection left by the late M. Gailletotte and a few other impressions of pictures. One of the halls at the end has been given up to engravings, and engravers are to be represented in succession, beginning by M. Braquemond, whose works are already there. The "Société des Artistes Graveurs au Burin" have just opened their

third annual exhibition in the rooms of the "Cercle de la Librairie," 177, Boulevard Saint-Germain. It will close on March 3.—The new silver coins designed by the engraver Roty, bear on the face the figure of a woman in profile, with a Phrygian cap on her head her right hand is scattering grain, which she takes from a bag held in her left. The reverse shows a lighted torch, round which is an olive branch, and at the most "Liberté, Egalité, Fraternité."—M. Alfred Boucher, the sculptor, has just finished the bust of the engineer, Flachbat, which is to be placed in the Boulevard Pereire, on a pedestal ornamented with industrial symbols from the designs of M. Gaston Trélat, architect.—M. Osiris has just founded a prize bearing his name, of the value of 200,000 fr., to be given to the person who makes the most remarkable work for the 1900 exhibition.—M. Jacques Lequeux, architect, is now superintending the building of a large hospital for old people, which the Conseil Général are erecting on the heights of Bry-sur-Marne, in a fine park that has been generously given to the Department of the Seine by a private individual.—Madame Elisa Bloch is making a bust of Daguerre, the inventor of the Daguerrotype, for the town of Bry-sur-Marne; it is to be paid for by subscription.—M. Rouyon, Director of Fine Arts, is at last roused by the destruction of the ramparts of Antibes, and he has convinced M. Revoil, the architect, the task of trying to save such portions of the debris as may contain anything of value, during the process of taking down.—M. I. Genay, architect, of Nancy, has been elected President of the "Société des Architectes de l'Est de la France."—There is talk of transforming completely the Babazon quarter at Algiers, which forms one of the most important suburbs of this town.—M. Haro *père*, the well-known art connoisseur, has just died. From a child he was familiar with the great painters of this century, particularly with Jacques and Eugène Delacroix. He had great experience in ancient and modern paintings, and his advice was always taken in the large artistic sales which have taken place in Paris during the last thirty-five years. He had made a fine collection of paintings, the sale of which, in 1892, was watched with intense interest amongst amateurs, and which realised the sum of upwards of 700,000 francs.—The death of M. Victor Guillemin, architect, of Paris, is also announced.

GERMANY.—It has long been intended to publish a monumental work on the new Houses of Parliament at Berlin; and we are now informed that the art publishers, "Cosmos," of Berlin, have taken the matter in hand. The monograph on this building is to be a large folio, profusely illustrated with photographs and etchings, and will appear in ten parts, at intervals during the course of the next three years. At the same time there will be a publication on craftsmen's work in the building. This publication will be in three parts, representing masonry, woodwork, and metal work.—The *Vossische Zeitung*, in its New Year's number, has a special supplement in connexion with a new building it has lately erected as a printing house and editorial offices. The publication contains a large number of interesting historical views of Berlin, and calls for some attention from those interested in the development of this city. It is only to be regretted that the illustrations, interesting in themselves, should not have been more carefully prepared, as far as the draughtsmanship is concerned. The post of City Engineer at Berlin has become vacant, and we understand that there are seventeen candidates for the new office, all of whom are from Berlin.—The popularity of the Royal Technical College at Munich seems to be on the increase, as no less than 1,750 students have availed themselves of the classes. A number of foreigners are also attending this college, but there are no Englishmen among them.—At Berlin the increase of the students at the Technical College promises to cause inconvenience, as the building is already over-filled, and there are now nearly 3,000 students attending the classes, as compared with about 2,000 five years back. In this case we find that there are three Englishmen on the lists. The largest number of foreigners is from Russia, which nationality sends 119 students.

AUSTRIA.—Professor A. Hausmann, of Buda Pesth, has been decorated with the order "Litteris et Artibus" in recognition of his services in the development of the architecture of Buda Pesth. It will be remembered that Professor Hausmann was entrusted with the extension of the Royal Castle of Ofen on the death of Von Yel.—According to the *Deutsche Bauzeitung*, there appears to be a rapid increase in the price of ground at Vienna, the data given by our contemporary being highly interesting.—A most influential committee of the members of the Municipality and some experts are considering extensive plans for the improvement of No. 1 District at Vienna, which is practically the principal business quarter inside the boulevards. Much of the central portion of the city requires rebuilding, and the opportunity will be taken of widening some of the leading thoroughfares.—The Municipality of Vienna has now finally decided to erect its own gasworks and lay down its own gas-mains throughout the city; and we understand that the present contractors, who hold the monopoly of supplying Vienna with gas, will have to retire in the course of a few years.

There has been an acrimonious discussion as to the renewal of the present contracts, which has resulted in these extreme measures. Practically, the whole of the Vienna roads will have to be opened up for the new mains, and a commencement has been made for the first, second, and third sections in the city. Incandescent gas-light will be introduced extensively for all the main thoroughfares.

SWITZERLAND.—In the preliminary competition for the proposed *Jungfrau Bahn* the first premium of 5,000 francs has been awarded to Mr. Strube, an engineer practising at Interlaken, whilst the second premium was also given to a Swiss engineer. Sixteen premiums were given in all, but, though the competition was an international one, only one award falls to England, *i.e.*, the fourteenth, to Mr. J. Bernays, of London. A number of German engineers participated in the competition and were successful in obtaining various premiums. Forty-eight designs in all were sent in, and besides those that received premiums the promoters also bought three of the designs, paying a nominal price of 100 francs for each.—An important competition for a church at Zurich is now being arranged. The cost of the church is not to exceed 350,000 francs; the premiums amount to a total of only 5,000 francs. There will be a national committee of assessors, among whom is Mr. Bluntschli.

SCANDINAVIA.—Rapid progress is being made on the Exhibition Buildings at Stockholm, which will be situated on a most picturesque site on the Oestermalmsviken and Djurgårdsbrunnsviken. The whole of the buildings are well designed, particularly the Industrial Hall, which is entirely of wood, and the large gallery for machinery. The particular feature of the exhibition will be the Fisheries Collection, and there will be the usual representation of the old town—this time, the "old Stockholm." The last exhibition at Stockholm, we believe, was held in 1866, the other more important exhibitions of the Northern Countries taking place at Copenhagen, in 1872 and 1888.

LAHORE CITY SANITATION.—The city of Lahore is as ancient as 300 years can make the more modern parts, while the "old" Lahore is supposed to have been situated somewhere in the times of the Vedas, by Lohr, one of the great ancient dignitaries of the Asoka family. Let this be as it may, what we are concerned with is the Lahore of to-day, and verily it is a dreadful incongruity of dirt and distress, coupled up to evidently abortive efforts at sanitation and drainage. The open bullock cart conveys away the town sweepings as it did in the days of Akbar, while close by may be seen the new-fashioned water-pipe stand, with its tiny streamlet of water issuing out to supply slowly but surely the patient crowd who surround it, and await their turn to approach the dribble. The gutters are open as they were 300 years ago, and the smell from them is killing in its strength and power. The city lends itself to very much better sanitary arrangements than those which exist, since it is a series of undulations which might easily be utilised for flushing purposes.—*Indian Engineering.*

MISCELLANEOUS.

BUST OF DR. ARNOLD, RUGBY.—The bust of Dr. Arnold, by Mr. Alfred Gilbert, R.A., which has been presented to Rugby School by the past and present members of the school and other friends, was unveiled recently by the Archbishop of Canterbury. The bust, which is of marble, is a large size, and is placed at the end of the new big school, in the head of the gallery of painted portraits or former head masters and distinguished Rugebeians. It now stands on a temporary pedestal, but this will shortly be replaced by a permanent one, made from the last of the three elm trees which stood in the school close at the time of Dr. Arnold's head mastership, after designs executed by Mr. T. M. Lindsay, art master to the school, and approved by the sculptor.

PRACTICAL TESTING COURSE AT THE SHEFFIELD TECHNICAL SCHOOL.—Considerable use is being made of the appliances at the Technical School, and a course is now commencing with the testing machines, the subject being "The Strength of Materials." A number of important points of interest and value to practical men will be dealt with by the demonstrator, Professor W. Rippea, M.Inst.C.E. The next ten demonstrations include tests of the strength of wrought iron, cast iron, the various types of steel, brass, copper, &c.; also the strength of pulley ropes, chains, and pipes. These must be of considerable interest to engineers and others engaged in a course of study. A further series of tests to be carried out by the students, architects, these including the strength of timber, stone, bricks, cement, &c. Instruction will also be given in the various types of measuring instruments and appliances now used in mechanical laboratories. A few years ago only a few of the largest works had such laboratories for the testing of materials, but now such laboratories are becoming much more common, not only with the manufacturers of metals, but with the engineers by whom the material is used. Scientific methods are finding their way into all departments of manufacture, particularly in the special departments peculiar to Sheffield. That the young men of Sheffield are aware of this, and appreciate the value of the instruction given at the Technical School, is shown by the excellent

attendance at the various classes.—*Sheffield Telegraph.*

CLOISTER ARCHES, GREYFRIARS CHURCH, ABERDEEN.—In the course of the demolition of the buildings at Marischal College to make way for the extension of the south wing, there has been revealed an interesting ecclesiastical relic, in the shape of the arches of the cloister of the Greyfriars Convent. The arches are contained in the wall which runs eastward from Greyfriars Church, separating Longacre houses from the quadrangle of Marischal College. At some time or other the arches had been filled up with masonry, so as to form a solid wall. Rev. Dr. Cooper has now noticed the existence of the old arches in the comparatively modern masonry, and he pointed them out to Mr. Marshall Mackenzie, the architect of the buildings, who gave instructions that the wall should be taken down carefully, so that the arches should be left standing for a short time in their original form before they are finally demolished. The Greyfriars convent was founded in the middle of the fifteenth century by the Observantist Order of Greyfriars. A church was built at the same time, but was replaced about 1515 by a new church, which is the building now existing. The arches are believed to be part of the cloister of the convent, and are thus a very interesting historical relic.—*Aberdeen Free Press.*

THE LATEST "REVOLUTION IN CYCLES."—Mr. Thomas Bennett, of "The Bennett Scooter & Steeplechase Cycle Company," has been good enough to forward to us a circular of what he is pleased to term the "Eureka driving wheel for cycles, motor cars, and railway locomotives," which we find very difficult to take seriously. Mr. Bennett seems to have been learning roller skating, and to have been struck amongst other things, with the speed with which his feet shot out in front when he lost his equilibrium, coming, as he naively remarks, "on to the back of his heels with a great deal of force, and a very heavy blow." What more simple, therefore, thinks Mr. Bennett, than to fit the back wheel of a cycle with a series of skate wheels, and use this "tremendous velocity (the heavier the rider the greater the velocity)" to propel the cycle? A rather fallacious we cannot conceive. The inventor of the "Eureka" proposes sixteen small wheels grouped round the main driving wheel, which cause the rider to rise on each small wheel comes directly under him, and to sink as it passes that point. In other words, the driving wheel is practically a sixteen-sided polygon which on a flat surface would cause the rider to rise and fall sixteen times per revolution—not a very pleasant sensation, we should think, at the best. The theory seems to be that having passed the point where the apex is directly under the rider, a forward motion would be imparted to the machine. Ever were this so, it would only be in proportion to the energy the rider had just stored up when raising himself on to the apex. Where, then, is the gain in speed? If we have correctly understood the woodcut and description, we should think the principle involved is about as sound as that of making a crank 12 in. long, and curving the end back again, so as to lift the pedal only 6 in. from the centre, and then considering the power as applied at a 12-in. average, which idea was actually patented not so very long ago. If Mr. Bennett is serious in what he prints we hope, for his own sake, he may have a friend with an elementary knowledge of mechanics who can spare ten minutes for his instruction.

THE OLD GRAMMAR SCHOOL, DUBLIN.—Monday in this week was the last day for the sending in of competitive plans for a new grammar school, the master's house on a site in St. James's-road. In connexion with this we may mention that the original free grammar school was founded in 1566 by Thomas Wattewode, of Stafford, clothier, and Mark Bysmore, of London, silk-throwster. Upon the decay of the old school house, the school, after a temporary sojourn in Wolverhampton-street, was removed to new premises built in King-street in 1842.

PROPOSED SCOTCH BUILDING TRADES FEDERATION.—A meeting was held in the Trades' Hall, Glasgow, on the 13th inst., to consider the question of a Scottish Building Trades' Federation. The chair was occupied by Mr. John Hardie, President of the Glasgow and Suburbs Building Trades. Mr. T. Anderson, secretary of the Glasgow Trade Union, explained the purpose of the meeting. The question of a Scottish Building Trades' Federation had been under the consideration of the various trades, and one and all were agreed that such a Federation would be a benefit to the building trade of Scotland. The Glasgow and Suburbs Building Trades' Federation, with the approval of the Aberdeen Building Trades' Federation, the Associated Carpenters and Joiners, and other affiliated trades in the local federations, were of opinion that the time had now arrived when it was their duty to take the initiative in bringing about a closer bond between the workers in the building trade. No working member of the building industry could fail to have been impressed with the strides federation had made of late years among the employing class. The composition of the conference was as follows:—Painters, 7; slaters, 3; labourers, 2; masons, 2; sawmillers, 1; bricklayers, 4; glaziers, 2; plumbers, 1; carpenters and joiners, 16; tilelayers, 2—total 38. After some preliminary business, Mr. Munro, Amalgamated Joiners, Edinburgh, moved:—"That we establish a Scottish Building Trades

Federation for the purpose of forming a closer bond of union between the workers of the building trades." Mr. P. Keenan seconded. Mr. Steven moved, as an amendment, "That we approve of the principle of a national federation." Mr. Henderson moved, "That we approve of the establishment of a Scottish National Building Trades' Federation," which was accepted by Mr. Steven. Mr. Riley, labourers, Glasgow, seconded the amendment. On a vote being taken, Mr. Henderson's amendment was adopted by twenty-one votes to sixteen. Mr. M. Lean, bricklayers, Glasgow, moved, "The object of this Federation shall be to maintain the right of combination of labour by trade unionism, by mutually supporting any of the societies within the Federation if individually attacked by employer or body of employers; to promote conciliation in trade disputes, and to advance and elevate the cause of labour generally." Mr. John Ure, tilemakers, seconded. Mr. Riley moved, in addition to the objects of the Federation, the words "organise the workers in connexion with the building trade." He was very sorry the word skilled labour had been introduced into the meeting. By twenty-six votes to thirteen, Mr. Riley's addition was adopted. The remainder of the business was taken up in discussing the constitution of the Federation.

THE "KLEINE" SYSTEM OF FIREPROOF FLOORING.—This is a patent invented and owned by a German Government architect, Herr J. F. Kleine, of Erbach on the Rhine. The essential point in the system is that the lower portion of the floor is formed of roughly-squared stones carried by the joint aid of a metal band on edge between them, and of cement; the top being finished with concrete. The metal bands (*hand-eisen*) assist in carrying the courses of stone between the main iron beams on which the ends of the floor is shown in fig. 1, and three forms of section in figs. 2, 3, 4. It will at once be seen that this is a far inferior fireproof floor to some with which we are familiar in England; but the author claims for it that as any stone can be used for it, with only rough squaring, it is far more economical than floors in which "expensive forms of terra-cotta are used." That may be; but the question is whether it would not be still more economical and even more efficacious (in a fireproof sense) without the stone, and will merely a thickness of concrete with the iron bands enclosed in the concrete. Certainly in England we

sitting later on was occupied in an unfinished discussion as to whether the Commission should oppose the Bills of the East London Water and New River Companies in Parliament.

MEDIAEVAL AND MODERN SCULPTURE.—Professor Baldwin Brown recently lectured in Moffat on mediæval and modern sculpture. Mediæval sculpture was partly Christian and partly antique, and about the thirteenth century they found it was largely used in connexion with architecture. In the French Gothic school it was found to be employed in the technical correctness of the Greek and Italian sculptors, it was carried out in a manner truthful, simple, and fresh, and always in connexion with the decoration of the building. The Early English work of the same period had similar attributes. The Italian workers in sculpture had benefited by their training in beauty and effect. Their reliefs in bronze of religious subjects were of a strongly pictorial character, showing a very special turn in the direction of painting. They crowded in many figures, and the result was florid and theatrical, without concentration. During the last century there had been a revival of the Classic style. Now, however, the feeling was becoming more Italian, and Greek was less looked upon. The influence of painting was days in Italy. Modern sculpture lacked the beauty and grandeur of Greek sculpture. The sculptor of to-day did not work so much for the type, and that was the reason that modern sculptors were less successful in the monumental style than in works of the domestic style.—*Glasgow Herald.*

NOTTINGHAM MASTER BUILDERS' ASSOCIATION DINNER.—Under the presidency of Mr. Enoch

a demand for an advance of wages, and alteration of rules from the bricklayers. By negotiations, and after they had had many meetings, that advance of wages was conceded, and certain alterations were made in the rules. The bricklayers conceded the members of the Association some small points, and the matter was amicably arranged. In connexion with this they had done something on which several of their prominent members had set their minds very strongly for a long time, namely, in the direction of securing a uniformity in working hours throughout the trade. The plumbers' strike assumed a very serious aspect indeed, and although the Association was not directly connected with it, the other branches of the workers decided to combine with the plumbers, and he was sorry to say that they combined with them outside their working rules with the builders. This was rather a new feature, and one which might crop up again in the future, and the members of the Association would be well advised to remember that, and be prepared for it. As they perhaps all knew, they had had a notice from the joiners for an advance of wages and certain alterations in the working hours. He considered that the joiners had made a very serious mistake. They had been offered the money that they asked for, if they would give a little concession on the winter working hours, and they had absolutely refused to accept it. He was afraid that the difficulties they had had were but an indication of what was to follow, for there was no doubt that while trade was good they would have plenty of opportunity for exercising unity, and in order to cope more effectually with the difficulties which might probably arise they had reconstructed the Association. They had now a committee appointed to deal with each branch of the trade, and every member of the Association was on one or more of the committees.—Mr. Woodsend, in replying, said when they became a strong Association and were thoroughly combined, they might, he trusted, be able to see their way to start a benevolent fund, as had been done by the National Association and other similar organisations. Mr. Hodson also responded. Other toasts followed.

TEMPERANCE PERMANENT BUILDING SOCIETY.—The report for the year ended December 31, 1896, states that the advances during the year amounted to 240,349*l.*, an increase of 59,134*l.* over the previous year. Of 3,328 properties mortgaged to the society, no fewer than 3,065 are for sums not exceeding 500*l.*, or upwards of twelve hundred more small properties than are held by any other building society in the United Kingdom. It is therefore claimed that the society is carrying out, to a greater extent than any similar institution, the object for which building societies were established, namely, to assist the industrious and provident classes to become owners of house property.

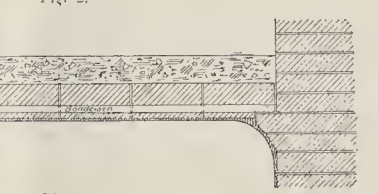
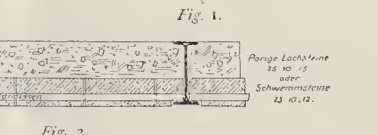
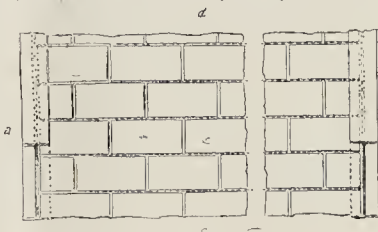
THE EAST END DWELLINGS COMPANY.—The report of this Company, to be submitted to the fourteenth ordinary general meeting on the 22nd, states that no building operations were carried on by the Company during the year, but an important leasehold site, with frontages to Columbia-road, Hassard-street, and Ravenscroft-street, in the parish of Bethnal Green, was acquired. Plans have been approved for building on this site, which show 112 lettable rooms, divided into tenements of one, two, three, and four rooms each, besides two shops and twenty-two workshops, some with living rooms attached. The work of excavating for the foundations has already been commenced, and it is hoped that the new buildings will be ready for occupation before the close of the present year. As was anticipated in the last report, the remaining tenements at Winton Houses were quickly taken up, and at the close of the year, with the exception of one tenement at Gordon Dwellings and another at Meadows Dwellings, the whole of the Company's properties were fully let.

GRAY'S-INN CHAPEL.—Mr. C. Herbert Shoppee writes:—"I regret to have to call your attention to an error in the lettering of the plate in which you put my father's name, Mr. C. J. Shoppee, instead of my own name, although the latter appears correctly in the letterpress." The copy for the letterpress was not received when the plate was printed.

CAPITAL AND LABOUR.

LABOUR IN THE BUILDING TRADES.—At the end of January the building trades were scarcely so busy as in the previous month, owing to the weather. Employment, however, was considerably better than a year ago. The percentage of unemployed in unions making returns for January was 24, compared with 37 in January, 1896. Six disputes took place, involving 309 workpeople.—*Labour Gazette.*

LABOURERS' WAGES, YORK.—A meeting of the York Master Builders' Association was held recently to consider the applications from the Operative Bricklayers' Society and the Amalgamated Builders' Labourers' Union for an advance of one penny and one halfpenny per hour respectively, from May 1, 1897. The secretary reported that the Bricklayers' Society had withdrawn their notice, and it was unanimously decided that an intimation be sent to the Labourers' Society that their application could not be granted, as the state of the building trade in the city does not warrant any advance.



should not consider the section fig. 2, with the naked stone soffit, as deserving the name of a fireproof floor at all. We give the illustrations and description of it, however, for those whom it may interest; and we have ascertained that one of the Kleine floors obtained high results at a fire-testing competition in Germany, which may very well have been the case with some forms of this floor, though not, we think, the section fig. 2.

CITY COMMISSION OF SEWERS.—On Tuesday a meeting of the City Commission of Sewers was held at Guildhall, Mr. H. G. Smallman, the Chairman, presiding. At the instance of the Finance and Improvement Committee it was resolved to serve notices to acquire ground in Fetter-lane for the widening of the public way. An arrangement was adopted to settle a claim for the freehold interest in the ground required to widen the thoroughfare in front of No. 100, Fleet-street, for 8,300*l.* It was also decided to give 8,05*l.* for the freehold and leasehold interests in 101, Fleet-street, for the same purpose. The Committee were given power to the London County Council in regard to applications for contributions towards City improvements. The

Hind, the members of the Nottingham Master Builders' Association, together with a number of guests, held their annual dinner at the Albert Hotel, Derby-road, on the 17th inst. The loyal toast having been honoured, Mr. H. Vickers submitted the "Mayor and Corporation of Nottingham," Ald. Bennett and Mr. J. Wright, whose names were coupled with the toast, responding. The Vice-President (Mr. Wright) next proposed "Success to the Master Builders' Association." They might congratulate themselves, he said, that up to then the Association, which had only been started about five years, had been a success. The past year had been one in which they had several little and some rather serious troubles. There were at first three or four little difficulties with the labourers, and while trade was good they were sure to have some little annoyance, but they had a right to claim that the Association had smoothed over the difficulties without any very serious trouble. The masons' strike was a somewhat serious matter, and to those who took an interest in it it must be a matter of most sincere regret that a strike should have occurred, which lasted four or five weeks, over so small a difficulty—simply a question of apprenticeship. Then they had

LEGAL. AN ARCHITECT'S CLAIM:

BEESLEY V. DANGERFIELD.

This case was before Mr. Ridley, Q.C., the Official Referee, on Monday and Tuesday last week. The plaintiff is an architect and surveyor of Westminster, and the defendants are printers, lithographers, &c., of St. Albans. The plaintiff was employed to prepare drawings and quantities for the erection at St. Albans of premises for the defendants. This work was carried out and tenders were received, the lowest being over 5,000*l.*, afterwards reduced to nearly 4,000*l.* The defendants dismissed the plaintiff, alleging that they had always stated that they could not spend more than 3,000*l.* This the plaintiff denied, and no mention of such a sum appeared in the correspondence. The defendants proceeded to erect a building themselves, and on plaintiff finding this out and being unable to obtain any payment at all for his services the action was commenced.

Mr. C. H. Brodie, architect, was called to show the resemblance of the building erected to the plaintiff's design, and Mr. Gilbee Scott, architect, for rebuttal. There was a counterclaim by the defendants for loss of time, &c., caused by the alleged neglect of instructions by the plaintiff.

The Official Referee decided that the defendants were wrong in dismissing the architect and not allowing him to come down the building and erect it as they themselves, in fact, had done. He must be paid for his services, and he, therefore, gave judgment for the plaintiff with costs, on the claim and counterclaim, which, he held, could not be sustained. He fixed the remuneration to which the plaintiff was entitled at 100*l.*, to include a small sum paid into court.

It transpired that the plaintiff, who said he was a member of the Society of Architects, had undertaken to erect the building for a commission of 3 per cent. on the cost, exclusive of the quantities, which were agreed at 2 per cent.

Mr. Saunt appeared for the plaintiff, and Mr. Harrison for the defendants.

THE LIGHT AND AIR DISPUTE BETWEEN BANKS.

The case of the London & Midland Bank *v.* the National Provincial Bank, Limited, was mentioned to Mr. Justice North in the Chancery Division on the 13th inst., it being an action brought by the plaintiffs to restrain the defendants by injunction from continuing the building of their bank in Park-row, Leeds, so as to cause an alleged interference with the light and air of the plaintiffs' bank which is opposite that of the defendants.

Mr. Seward Bryce, Q.C., for the defendants, said that he wished to have the trial expedited, and to have the case tried at the next Leeds Assizes. He also asked for permission to complete the building by putting on the roof, the defendants undertaking to pull down so much as was found by the Judge to interfere with the plaintiffs' light and air.

Mr. Swinfen Eady, on behalf of the plaintiffs opposed this course, and submitted that he was entitled to an injunction restraining the defendants from increasing the height of their building.

In the result the defendants undertook till the trial not to build any higher, except for the purpose of putting on a temporary roof, the action to be set down at once.

ALLEGED INTERFERENCE WITH AN ARCHITECT BY BUILDERS.

MR. R. G. PARKER applied *ex parte* to Mr. Justice Kekewich, in the Chancery Division, on the 12th inst., for an injunction to restrain J. Allen & Sons, who are building a large building for Messrs. Maple & Co. in Fitzroy-square, from interfering with Mr. William Woodward, an architect, in the discharge of his duties under the contract and specification of works. The learned counsel stated that in the building certain concrete made in a particular way had to be used for fire-proof floors. When the architect went to the building a day or so before he found that improper materials were being used for the making of this concrete, and, in pursuance of his powers under the contract, he required it to be removed. At the same time he said that if the good part were taken out and the rubbish were rejected he would pass it. The foreman undertook that that should be done. On the 10th inst. the architect received notice that it was not being properly sifted, and he then told Allen & Sons that if it was not properly sifted he should remove it. The architect went up on the 11th inst. and met with forcible opposition, ladders being removed and a gang of men being brought up to oppose any proceedings he might take under the contract. The architect, therefore, had to capitulate and came to his lordship and asked him to restrain the defendants from interfering with him in the discharge of his duties, and also from using improper materials in the making of the concrete floors.

His Lordship said that he did not see his way to grant the application as to compelling specific performance of the agreement. An injunction to restrain the defendants from interfering with the architect in the discharge of his duties under the

contract was quite another matter. He would grant the injunction as to that extending over that day week, the plaintiff to serve notice of motion on the defendants for that day.

PIRACY OF AN ARCHITECT'S DRAWINGS: IN THE CHANCERY DIVISION.

The case of Neale *v.* Harmer and others came before Mr. Justice Kekewich in the Chancery Division on the 12th inst., on a motion by the plaintiff, Mr. James Neale, F.R.I.B.A., and a Fellow of the Society of Antiquaries, for an *interim* injunction to restrain the defendants, Messrs. Harmer & Harley, and Architecture, Limited, the publishers and proprietors of a paper entitled *Architecture*, from printing, publishing, selling, delivering, or otherwise disposing of any copies of that magazine containing any drawings or plans copied from "The Abbey Church of St. Alban," a work published by the plaintiff and duly registered as copyright.

Mr. Warrington, Q.C., and Mr. Pattinson appeared as counsel for the plaintiff, and Mr. W. H. Uppjohn for the defendants.

It appeared from the statement of Mr. Warrington that the plaintiff was the author of a very elaborate work on the history and architecture of St. Alban's Abbey, containing about 200 measured drawings and plans of the details of the Abbey in its original state before the restoration, together with descriptive letterpress. The defendants had published an article on the Abbey, and copied the ground plan of the Abbey, and also reproduced, by some photographic process, three of the drawings taken from the plaintiff's book. The plaintiff did not complain of the insertion of the ground plan, because he had given the defendants leave to reproduce it. The defendants did not dispute that they had taken the drawings in question from the plaintiff's book, but they contended that they were entitled to do so. The defendants had prepared blocks of five or six more drawings from the plaintiff's work, intending to insert them in another number of the magazine.

The learned counsel read an affidavit by the plaintiff and correspondence which had passed between him and the editor of *Architecture*, from which it appeared that the plaintiff had declined to allow any of the drawings (with the exception of the ground plan) to be used.

Mr. Uppjohn contended that it was impossible to decide on affidavit evidence what the agreement between the parties was. But apart from that, and even assuming that there was no agreement permitting the defendants to reproduce the plates, he should contend that there had been no piracy. The law laid down that a man was entitled to make a fair and reasonable use of the work of those who had gone before him.

His Lordship, in giving judgment, said that the editor of *Architecture*, being anxious to obtain drawings of the old as well as the new part of St. Alban's Abbey, wished to do so cheaply, and applied to the plaintiff, the author of what was stated to be a standard work. He would assume for the moment that there was no licence given to the defendants to use the drawings. It was admitted that the three drawings in question were taken directly from the plaintiff's book, and these were the only three strictly architectural examples of the old Abbey given by the defendants. The defendants had simply cribbed the plaintiff's industry and knowledge, and had not exercised any ingenuity of their own, except such as was displayed in the copying. That seemed to him entirely wrong. With reference to the question of licence, it was said that there was no conflict of evidence, and that he (his Lordship) ought not to try the case then. He considered that there was no conflict at all—at least, worth speaking about. The affidavits and correspondence read together seemed perfectly plain. The plaintiff was applied to to allow these drawings of his to be used, and he said, "You may use the ground plan, but nothing more." The defendants applied to him again, and he objected to his drawings being used unless he wrote the article himself. He offered, for a certain price, to write the article, and to illustrate it. The defendants said that he offered to allow them to use the illustrations at a certain price, but that he did not offer to write the article; but it was impossible to put that construction upon the correspondence. He thought, taking the whole of the circumstances into consideration, that the plaintiff was entitled to an injunction as asked, until trial or further order; but the injunction would not extend to the ground plan.

Order accordingly.

AYLESBURY BANKRUPTCY COURT. RE SIAREY—EX PARTE THE OFFICIAL RECEIVER.

On the 27th ult., at a special meeting of this Court—before his Honour, Sir A. G. Marten, Q.C., a motion was made by the Official Receiver, acting as trustee of the estate of William Howard Siarey, of Aylesbury, builder, against John Sladen, of Amersham.

The Official Receiver was represented by Mr. A. Carrington, barrister, and Mr. Sladen by Mr. Arthur Powell, barrister (instructed by Messrs. Albin Hunt & Pourmy, solicitors, Chesham).

Several witnesses were in attendance to give evidence for Mr. Sladen, amongst whom were: Mr. H. Bushell, F.S.I.; Mr. Guest Luckett, architect,

Aylesbury; Mr. George Darlington, builder, Amersham; Mr. H. T. Grimsdale, builder, Aylesbury. The motion was for an order that Mr. Sladen should pay the sum of 117*l.* 18*s.*; alleged to be due from him to the estate of W. H. Siarey, being the balance for the erection of a villa at Amersham Common.

Mr. Sladen's case was that, under the agreement entered into between himself and Siarey, Mr. Sladen, Luckett, architect, of Aylesbury, and who was a architect employed, was to value and price the extras that might have been ordered over and above the original contract, which had been done, after paying Mr. Darlington, who had been called in to finish the work, the accounts showed that Mr. Sladen had been overpaid. The agreement stated that Mr. Luckett's decision should be binding and final on all parties in case of any dispute.

Mr. Arthur Powell applied to stay the proceedings on the ground that the parties themselves had made Mr. Luckett sole arbitrator. He objected to this Court assuming jurisdiction on legal grounds, quoting authorities in support. After long legal arguments, the Judge overruled the preliminary objections, and decided to hear the motion.

Mr. Carrington then opened the case for the Official Receiver, reading an affidavit of Mr. George Mallam and the shorthand notes taken on the private examination of Mr. Sladen and Mr. Luckett.

Mr. Herbert Quinton, architect, Oxford, was the first witness called for the Official Receiver. He stated that he had seen and examined the contract, specification, and plans for Mr. Sladen's villa. His (witness's) instructions were to price the quantities according to the schedule in the Architect's Compendium for 1895. He was to price the extras and omissions. He did so, and now produced his valuation. It amounted to 237*l.* 5*s.* 9*d.*, in addition to which there was 22*l.* 14*s.* for extras not allowed for by Mr. Luckett. In cross-examination by Mr. A. Powell, witness admitted that he had departed in his valuation from the prices mentioned in the compendium, varying it in accordance with local prices. It was perfectly reasonable for Mr. Luckett to do the same. The witness admitted that he had not priced the additional extras claimed for by the Official Receiver in accordance with the compendium, neither had he measured them up, but had simply taken the items from the bankrupt's account book.

Mr. Carrington here intimated that in the face of the admissions on cross-examination he must abandon his claim for the increase over Mr. Luckett's valuation.

Mr. William Siarey, the bankrupt, was then called, and stated that the whole of the additional extras claimed for by the Official Receiver, had been carried out by him, and that he had not been either paid or allowed for the same by Mr. Luckett in his valuation. He, however, admitted that the amounts charged were not in accordance with the Architect's Compendium; that some had been allowed for by Mr. Luckett, others were specified for and formed part of the original contract, either being included in the specification or bill of quantities.

Mr. Carrington here intimated that in the face of these admissions he could not continue the case, and acting under the instructions of the Official Receiver, who only desired to do what was right in the matter in his official capacity, he would withdraw from the case.

His Honour then gave his judgment for Mr. Sladen, refusing the motion with costs.—*Chesham Examiner.*

ACTION BY A BUILDING MANAGER: SOLICITORS AND THEIR SPECULATIVE BUILDING TRANSACTIONS.

MR. RIDLEY, Q.C., one of the Official Referees of the Chancery Division of the High Court of Justice, has had before him recently the case of Messrs. *v.* Saunders and others, in which the plaintiff, Mr. J. J. Messer, of Fernlea-road, Balham, seeks to recover from the defendants, Messrs. Saunders, Hawksford, & Bennett, of Colman-street, E.C., and Mr. J. Grayhurst Hewat, formerly carrying on business as solicitors under the style of Saunders, Hawksford, Bennett, & Co., a sum of 3,300*l.* 13*s.* 4*d.*, alleged to be due to him, and including advances made by him to enable defendants to finance certain buildings. Mr. Hewat, who had been carried off them, was admitted a member of which they engaged largely in speculation in land and buildings. They either purchased freeholds or got long leases of land suitable for building, and entered into agreements with various builders to erect houses on the land, using their own money, or that of clients, or money advanced by their clerks to finance the buildings. Plaintiff's first advance was in 1879. In 1885, the then surveyor for the firm's estate work having been dismissed, plaintiff was asked to undertake the management and superintendence of the various building estates, and in addition to the continuation

of his salary of 200*l.* a year, he was given a free residence and survey fees; he was to have the letting of the finished houses, the collection of the rents, and the execution of repairing jobs required from time to time, doing the latter as cheaply as possible, and charging such sums as might be slight to him a margin of profit. In 1890 a builder who had contracted with defendants for the erection of some houses in Pathfield-road, Streatham, failed to complete his work, and it was agreed that plaintiff should undertake the finishing of the houses as cheaply as he could; but this necessitated the purchase of a horse and cart, the hiring of stables, and a considerable increase of his ordinary plant and materials for repairing work on the firm's building estates. Thirty went on until 1894, when the defendants found they were losing money, and plaintiff, becoming worried about the large balance due to him, was seized with a severe attack of brain fever, and incapacitated from business. After his recovery he failed to obtain a settlement of his account, and hence the action. General account, according to the particulars of claim, showed a balance of 68*l.* 6*s.* 9*d.* and repairs account, 1,74*l.* 2*s.* (inclusive of 1,56*l.* 10*s.* the cost of finishing the houses in Pathfield-road); the other items comprising loans to builders and interest on the total debt sued for from June 24, 1894, to the date of the action.

Mr. Houghton, on behalf of Messrs. Saunders, Hawksford, & Bennett, said their case was that plaintiff was a trusted and confident servant of the firm, and on his representations as to the manner in which they were dealt with, the previous surveyor was discharged, an alteration of plaintiff's duties was arranged; he was to do no legal work in the office but, for the protection of the firm, to superintend and manage their estate building work. Plaintiff suggested that if money were found him he would buy materials and engage labour so as to avoid contractors' profits, and, practically, finish the house building at cost price, which was agreed to, and he was entrusted with the duty of certifying the builders' accounts. But when the latter "broke down," it was found that he had already certified for nearly the scheduled estimates of cost while the new buildings were nothing like completed. On complaint being made about this, plaintiff told the firm that everything would come out all right, that the houses were well worth all the advances, and that he would himself finish them, looking to the property for repayment. Plaintiff always encouraged the firm to go on, until Mr. Bennett took matters into his own hands, and after plaintiff became ill, investigations were made which revealed the state of things on which the counter-claim was based, viz.:—That plaintiff had received secret commissions for supplies of materials, used defendants' material for the purposes of his own business, and had been in partnership with certain builders. Altogether, counsel said, upwards of 30,000*l.* of the defendants' money had been handled by plaintiff, and the bulk of it had been lost.

Plaintiff was examined at considerable length as to his transactions with the defendant firm, and in cross-examination he denied any knowledge until March, 1894, that Mr. Hewat was not jointly interested with the other partners in the building undertakings, and when Mr. Hewat had him so he was startled and surprised. It was not a fact that the sums set out in his claim were substantially profit he had made on the moneys of the firm which had passed through his hands. He denied having received secret commissions.

Several witnesses on both sides were examined. A settlement was arrived at subsequently, and Mr. Ridley accordingly gave judgment against the defendant Hewat for 2,000*l.* and for 200*l.* as against the defendant firm, with costs.

A CLARE MARKET LIGHT AND AIR CASE.

THE case of Dye v. Patman and others came before Mr. Justice North, in the Chancery Division, on the 5th inst., on the application of the defendants for an adjournment of the case under the following circumstances. Mr. Dodd, who appeared as Counsel for the defendants, said that the plaintiff owned a public-house situated at the corner of Filders-street, Clare Market, the action being one for alleged interference with his light and air. His house, however, together with a number of other houses, had been scheduled as being in an insanitary area, under the Housing of the Working Classes Act, 1890. After representation had been made to the Medical Officer of Health, the London County Council complied with that Act, and gave the plaintiff notice of this representation, and eventually, under instructions from the Local Government Board, a person was authorised to make a report, to be laid before Parliament. If the plaintiff's house was in such an insanitary condition that it was not fit for habitation, and could not reasonably be made so, then the London County Council purchase it compulsorily, and they pay to the owner of the land compensation for the value of the land and the materials thereon. That report was expected to be made to Parliament shortly. Under those circumstances, if the case was set down and heard, it would be an injustice for plaintiff to obtain a mandatory injunction to compel the defendants to pull down their building, which was a new building, and which had been erected with the approval of the

London County Council. He (the learned Counsel) therefore wanted an adjournment of the trial, because the owner of the premises was not in England but in South Africa, and this was an important witness connected with the case.

His Lordship: How is that?
Mr. Dodd replied that he ought not to have suggested that he was a material witness, but he was greatly interested in the proceedings. His (the learned counsel's) substantial ground for asking for the adjournment was that if the plaintiff were to succeed in his action as it now stood he would have a mandatory injunction compelling the defendant to pull down a building which had already cost a large sum of money, and which had been built with the approval of the London County Council.

Mr. McSwiney, for the plaintiff, submitted that the application was merely an attempt to postpone the evil day when the mandatory injunction would be granted. If the area in question was condemned, the plaintiff would be purchased out, and the light would be a valuable easement which would have to be taken into consideration when the purchase took place.

His Lordship: Yes, and purchased out by the people who sanctioned the defendant's structure. After some further discussion, his lordship said that he thought that the case ought to be postponed, not because of the owner of the defendant's premises being away—because he could have had a shorthand note taken of the proceedings, and read it over afterwards—but it was quite possible that there might be a report which would prevent him (his lordship) ordering the building to be pulled down. If that report had not been made at the time of the trial, and if he went on to hear the case, and decided it in the plaintiff's favour, he certainly should suspend any proceedings under the order to pull down until he knew what the result of that report was, and it might turn out that the whole trial had been useless. The plaintiff could not, therefore, get any benefit from a decision, even in his favour. What then was the reason for wasting the time on a trial in the meantime? It was not unreasonable on public grounds to postpone the trial, and he should, therefore, adjourn the case. He thought that the best order would be that the case should stand over until further order, with liberty to either side to apply to restore. The costs of the motion to be costs in the action.

Order accordingly.

A BUILDER AND HIS PLANS.

THE case of Smith v. the Chorley District Council came before Mr. Justice Kennedy, in the Queen's Bench Division, on the 8th inst., for judgment. The action was brought by the plaintiff, a builder at Chorley, for a mandamus to compel the Council to pass the plans of a house in Back-lane, Chorley, which, however, it declined to do, on the ground that if the house was built it would make the street 24 ft. wide instead of 36 ft. 6 in., which was the minimum width allowed by the by-laws. The plaintiff's contention was that Back-lane was not a new street. The case was tried before his Lordship and a special jury at the Manchester Autumn Assizes, when the jury found that Back-lane was not a new street. The short point which his lordship had to decide was whether a writ of mandamus was the proper remedy.

His Lordship said that after having carefully considered the arguments of counsel, and the numerous authorities on the point, he came to the conclusion that the defendants' contention was well founded, and that the action for a mandamus could not be maintained.

Judgment accordingly for the defendants with costs.

A FEARDON BUILDING DISPUTE.

THE case of Harrison v. the Feardon Urban District Council came before the Court of Appeal, composed of the Master of the Rolls and Lords Justices Lopes and Chitty, on the 10th inst., it being the appeal of the defendants from the judgment of Mr. Justice Kennedy in an action tried by his lordship at the Leeds Assizes.

The plaintiff in the action, Mr. William Harrison, claimed an injunction to restrain the District Council from pulling down or otherwise interfering by themselves, their servants, or workmen, with a coach-house and stable which he was causing to be erected on a plot of land on the western side of Cemetery-road, Feardon, close to a number of cottages owned by him. The District Council in February or March, 1896, proceeded to pull down the buildings, contending that they were an infringement of their by-laws in so far as by their erection plaintiff was making a new street on the space in question, that the passage was not of sufficient width, and that if this building was suffered to stand the new street would only be 13 ft. 3 in. wide instead of 26 ft. 6 in. as required by one of their by-laws. There was no aperture or means of exit of any kind from the building, as erected, into the space or passage; the only access to the building, as constructed, was at its north end, and furthest away from the space or passage. The question was whether the plaintiff had by his erection been beginning to lay out a new street. Mr. Justice Kennedy decided the case against the Council, granting Mr. Harrison an injunction, with the nominal

damages of 40*s.* for the trespass. The defendants now appealed.

Mr. Lawson Walton, Q.C., and Mr. Scott-Fox appeared as counsel for the appellants, and Mr. Robert Wallace, Q.C., and Mr. W. R. Watson for the respondent.

Mr. Scott-Fox said that the question before the Court was one of construction of the by-laws, and although the issues were very complicated the question to be decided had narrowed itself to small limits. The plaintiff had built in Feardon certain property which for the sake of argument, though it was not named yet, might be called Carlton-terrace. It consisted of a row of nine houses, the fronts of which opened on to a narrow pathway, but the backs of which opened on to a road which gave the only access to carts. It was at the back of one of these houses on which the stable and coach house were built. He contended that the roadway was a new street and thereby came under the by-laws.

The court without calling upon counsel for the respondent dismissed the appeal with costs.

MEETINGS.

FRIDAY, FEBRUARY 19.
Architectural Association.—Mr. W. H. Bidlake on "The Architect and the Public," 7.30 p.m.
Incorporated Association of Municipal and County Engineers (Metropolitan District Meeting).—(1) Mr. W. Weaver on "London House Drainage," (2) Mr. R. W. Richards on "Hard Wood Pavements," 7.30 p.m.

SATURDAY, FEBRUARY 20.
Architectural Association.—Visit to the L.C.C. Working Class Dwellings, Boundary-street, Bethnal Green, 2.30 p.m.
Institution of Junior Engineers.—Visit to the Metropolitan Fire Brigade Headquarters, Southwark Bridge-road, S.E. 3 p.m.

MONDAY, FEBRUARY 22.
Surveyors' Institution.—(1) Adjourned discussion on Mr. J. Willis Bund's paper on "Allotments and Small Holdings," (2, time permitting) Mr. C. H. Hooper on "Fruit Growing as an Auxiliary to Agriculture," 8 p.m.
Sanitary Institute (Lectures for Sanitary Officers).—Lecture by Dr. A. Wynter Blyth, 8 p.m.
Society of Arts (Lectures).—Mr. C. F. Cross, F.C.S., on "The Industrial Uses of Cellulose," II, 8 p.m.

TUESDAY, FEBRUARY 23.
Institution of Civil Engineers.—Papers to be read: (1) "The Main Drainage of London," by Messrs. J. E. North and W. Santo Crisp; (2) "The Purification of the Thames," by Mr. W. J. Dibdin, 8 p.m.
Royal Victoria Hall, Waterloo-road, S.E.—Mr. J. W. Wagborn, D.Sc., on "X and other Rays of Light" (with experiments), 8.30 p.m.
Auctioneers' Institute.—Mr. J. Hepper on "The Law of Fixtures in Practice," 8 p.m.
Carlisle Architectural, Engineering, and Surveying Society.—Mr. A. W. Johnston on "Architectural Proportions," 8 p.m.

WEDNESDAY, FEBRUARY 24.
Surveyors' Institution.—Annual Dinner, Victoria Hall, Hotel Cecil: Strand entrance, East Black.
Society of Arts.—Sir Henry Trueman Wood, M.A., on "Reproduction of Colour by Photographic Methods," 8 p.m.
Sanitary Institute (Lectures for Sanitary Officers).—Inspection and demonstration in the Parish of St. George's, Hanover-square, 2 p.m.
York Architectural Society.—Rev. Canon Angles on "The History and Development of York Minster," Illustrated, 8 p.m.
Edinburgh Architectural Association.—Mr. Alexander Drew, C.E., on "The Practical Designing of Iron and Steel Roofing,"—V, 8 p.m.
Architectural Association (Discussion Section).—Mr. H. Rose on "Dodges," 7 p.m.
Carpenters' Hall, London Wall.—Professor T. Reger Smith on "Our Ancient Cathedrals," 8 p.m.

THURSDAY, FEBRUARY 25.
Society of Antiquaries.—(1) Mr. C. H. Read on "An Inscribed Roman 'Prow' Found in London," (2) Mr. F. Gann on "Antiquities Found in British Honduras," (3) Mr. C. E. Keyser on "The Figures of Saints Found on Devonshire Screens," 8.30 p.m.
Royal Institution.—Mr. J. W. Gregory on "The Problems of Arctic Geology," III, 3 p.m.
Society for the Encouragement of the Fine Arts.—Mr. G. C. Halcott on "Design and Designers during Her Majesty's Reign," Illustrated, 8 p.m.
Sanitary Institute (Lectures for Sanitary Officers).—Dr. A. Wynter Blyth on "Sanitary Laws and Regulations Governing the Metropolis," 8 p.m.

FRIDAY, FEBRUARY 26.
Institution of Civil Engineers (Students' Meeting).—Paper to be read:—"Rockers and Expansion-Bearings as applied to Girders of Short Span," by Messrs. A. F. Baynham and F. B. H. Doherty, 8 p.m.
Royal Institution.—Lieut.-Col. C. R. Conder on "Palestine Exploration," 9 p.m.

SATURDAY, FEBRUARY 27.
Builders' Foremen and Clerks of Works' Institution.—Annual Dinner, King's Hall, Holborn Restaurant, 6.30 p.m.
Edinburgh Architectural Association.—Visit to North British Distillery.

RECENT PATENTS:
ABSTRACTS OF SPECIFICATIONS.

1477.—**MEANS FOR OPENING AND CLOSING WINDOWS, &c.**—*E. Bateck and Another.*—The inventors employ a main pivoted lever, either in one or more parts, one end being connected to a sliding rod by means of a pivoted rod; the other end being connected to the window, &c., through the medium of a rod, a pulley being carried at the end of the main lever, and running upon said rod, and a guard rod being provided to prevent the window, &c., having independent movement from the lever. Any convenient arrangement, such as a rack and lever, may be employed to operate sliding rod.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Table with columns: Nature of Work, By whom Advertised, Premiums, Designs to be delivered.

CONTRACTS—Continued.

Table with columns: Nature of Work or Material, By whom Required, Name of Tender, &c., To be delivered.

CONTRACTS.

Table with columns: Nature of Work or Materials, By whom Required, Name of Tender, &c., To be delivered.

PUBLIC APPOINTMENTS.

Table with columns: Nature of Appointment, By whom Advertised, Salary, Applications to be in.

Those marked with an asterisk (*) are advertised in this Number. Competitions, p. iv. Contracts, pp. iv. vi. & vii. Public Appointments, pp. xvi. & xix.

3485—CARRYING AWAY WATER OF CONDENSATION FROM CONDENSERS. Inven. arranges the condensation water, constructed of zinc, aluminium iron, &c., around the sides of the building or shed, in such manner that a portion of the gutter projects upwards, so as to catch any drips or moisture, the condensation gutter being merely fixed upon the fascia or plate, and turned down into the ordinary gutter outside, after passing under the corrugated sheets.

NEW APPLICATIONS FOR LETTERS PATENT. FEBRUARY 1.—2,594, H. Jenkins and W. Addis, Chimney Cows, Ventilators, Air Extractors, &c.—2,634, W. Dunn, Gate.—2,667, A. Boulé, Preservative Paints, Pigments, &c.

closets.—5,87r, C. Wall, Building Blocks.—2,227, C. Wall, Building Blocks.—27,883, F. Clerc, Construction of Window Sashes and Frames to facilitate Cleaning and other operations.

By H. N. NEWTON & Co.

Strand—32, Stanhope-st., 5, 7, 9, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

BROMLEY (Kent).—For new school for juniors, Bromley Common, for the School Board. Mr. Chas. Bell, architect, 3, St. Mark's Hall-court, Cannon street, E.C. Quantities by Messrs. C. Stanger & Son, surveyors, 21, Finsbury-pavement, E.C.—W. Holt & Sons, 25, Abchurch-lane, Bromley. General Builders' Assn. 1, 277 St. Paul's Church-yard, E.C. 4. Clewson & Sons, 1, 277 St. Paul's Church-yard, E.C. 4. T. D. Gratz, 1, 277 St. Paul's Church-yard, E.C. 4. *Accepted.

BROMLYARD.—For the erection of houses for the Governors of Bromley Grammar School. Mr. F. B. Kempton, architect, 138, Widemash-street, Hereford. H. Davies, 1, 280, High-street, Hereford. G. Lewis, 1, 280, High-street, Hereford. W. James, 1, 280, High-street, Hereford. *Accepted.

BUCKINGHAM.—For erecting Christ's Almshouses, Buckingham. Mr. Charles Bell, architect, 3, St. Mark's Hall-court, Cannon-street, E.C. 4. Tibbitts, 1, 280, High-street, Hereford. G. Lewis, 1, 280, High-street, Hereford. W. James, 1, 280, High-street, Hereford. *Accepted.

BURTON-ON-TRENT.—For the erection of school buildings, Church Green, for the School Board. Mr. R. C. Clarke, architect, 1, 280, High-street, Hereford. Broadhead Bros., 1, 280, High-street, Hereford. J. H. Vickers, Ltd., 1, 280, High-street, Hereford. J. Oakford, 1, 280, High-street, Hereford. Slater & Harrison, 1, 280, High-street, Hereford. John Hind, 1, 280, High-street, Hereford. J. Corbett, 1, 280, High-street, Hereford. T. Barlow, 1, 280, High-street, Hereford. Wm. South, 1, 280, High-street, Hereford. J. Hutchinson, 1, 280, High-street, Hereford. *Accepted.

CARLISLE.—For the erection of the "Railway Tavern" and warehouse, Bocheigate (2 contracts), for Mr. Rickerby, Mr. H. Higginson, architect, 3, Londsdale-street, Carlisle. Quantities by W. F. Pickering, Weary, Carlisle. *Accepted for both contracts, subject to certain schedule deductions.

CHARLTON.—For paving, &c., Woolwich road, for the Lee Board of Works. Mr. John Knowland, Surveyor, Board of Works, Old Charlton, Kent. Quantities by Messrs. Adams, 1, 280, High-street, Hereford. Fry Bros., 1, 280, High-street, Hereford. W. H. Wheeler, 1, 280, High-street, Hereford. *Accepted.

HOVE (Sussex).—For the supply of 2,500 yds. hand-picked flints, for the Corporation. Mr. H. H. Scott, Town Surveyor.

Table with columns: Yards willing to deliver, Delivered at Farm-road depot, Delivered at Church-road depot, Delivered at Sackville-road depot, Return at the contractors' depot and carted thence by the Council's own cars as required. Lists various contractors and their prices.

LONDON.—For the supply of broken granite and granite spalls for the Vestry of Paddington. Mr. G. Weston, Surveyor.

Table with columns: PRICE Per Cubic Yard, PRICE per Ton, PRICE per Ton. Lists various contractors and their prices for broken granite and granite lumps.

CONTRACT PRICES, 1896-97.

Table with columns: PRICE Per Cubic Yard, PRICE per Ton, PRICE per Ton. Lists various contractors and their prices for broken granite and granite lumps.

† Not a proper form of tender.

CROYDON.—For the erection of an isolation hospital, Beedington Corner, Croydon, for the Rural District Council. Messrs. R. M. Chas. & Son, architects, Union Bank-chambers, Croydon. Quantities by Messrs. Franklin & Andrews, 25, Ludgate Hill, London. W. Wallis, 1, 280, High-street, Hereford. Rice & Son, 1, 280, High-street, Hereford. Peters & Son, 1, 280, High-street, Hereford. Josephine & Young, 1, 280, High-street, Hereford. Burnand, 1, 280, High-street, Hereford. J. Smith & Sons, 1, 280, High-street, Hereford. Potter, 1, 280, High-street, Hereford. *Accepted subject to approval of Local Government Board.

EGREMONT (Cumberland).—Accepted for paving, &c., Moor-row, for the Urban District Council of Egremont, Cumberland. Mr. C. Boyd, C.E., 33, Queen-street, Whitehaven. W. B. Wilkinson & Co., Newcastle-upon-Tyne, 35, ad. rd. super yard.

GOLSPIE (Sutherland).—Accepted for the construction of water supply works, Cairng, for the Sutherland County Council. Mr. John Baxter, C.E., Clynehill, Broca. Quantities by Engineer—T. Munro, Wick. *Accepted.

HADDINGTON (N.B.).—For the construction of two miles sewers, &c., Gullane, for the County Council. Messrs. Thomson & Wright, C.E., 32, Rutland-square, Edinburgh. Andrew Waddell & John Martin, 1, 280, High-street, Hereford. Archibald Fraser, 1, 280, High-street, Hereford. John Morris & Sons, 1, 280, High-street, Hereford. *Accepted.

LONDON.—For new shop-front and interior trade fittings, from plans prepared by Mr. D. H. Waddell, architect, 25, High Holborn. Suez & Co., 1, 280, High-street, Hereford. Drew & Cadman, 1, 280, High-street, Hereford. Speckley, 1, 280, High-street, Hereford. *Accepted as amended.

LONDON.—Accepted for erecting two cottages in Winchelsea road, Tottenham, for Mr. T. E. Baker. H. Knight & Son, Tottenham. [No competition.]

LONDON.—For alterations, additions, and repairs to "The Lord Derby" public-house, Woodpecker-road, New Cross, S.E. Mr. W. S. Harris & Wardrop, 1, 280, High-street, Hereford. H. L. Holloway, 1, 280, High-street, Hereford. W. Harbrow, South Bermondsey, 1, 280, High-street, Hereford. W. Gladding, 1, 280, High-street, Hereford. *Accepted.

LONDON.—For the supply of broken granite and granite spalls for the Vestry of Paddington. Mr. G. Weston, Surveyor.

Table with columns: PRICE Per Cubic Yard, PRICE per Ton, PRICE per Ton. Lists various contractors and their prices for broken granite and granite lumps.

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Table with columns: PRICE Per Cubic Yard, PRICE per Ton, PRICE per Ton. Lists various contractors and their prices for broken granite and granite lumps.

† Not a proper form of tender.

PRICES CURRENT OF MATERIALS.

Table with columns: Timber (continued), Metals, Oils. Lists various materials and their prices.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us not later than 10 a.m. on Thursdays. N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender, and we cannot publish announcements of tenders accepted unless the amount of the tender is given, nor any list in which the lowest tender under £100, unless in some exceptional cases and for special reasons.

ALDERSHOT.—For the construction of sewerage works, Lower Farm-road and Church-road, for the Urban District Council. Mr. Banks Rushford, surveyor, 125, Victoria-road, Aldershot. Lee & Sons, 1, 280, High-street, Hereford. *Accepted.

BECKENHAM.—For the erection of a wall, Alexandra Recreation Ground, for the Urban District Council. Mr. John Angell, Engineer. H. E. Stringer, 1, 280, High-street, Hereford. Thomas & Edge, 1, 280, High-street, Hereford. Woodrich, 1, 280, High-street, Hereford. *Accepted.

BIRMINGHAM.—For the execution of sewerage works, Bradley, for the Rural District Council, Birmingham. Mr. A. E. Curran, Surveyor. Quantities by Surveyor—J. Mackay, 1, 280, High-street, Hereford. S. Turner, 1, 280, High-street, Hereford. J. Adams, 1, 280, High-street, Hereford. W. H. Manners, 1, 280, High-street, Hereford. B. Bailey, 1, 280, High-street, Hereford. M. H. Heatley, 1, 280, High-street, Hereford. *Accepted.

BLYTH (Northumberland).—For making a macadamized road 1 mile 4 fms. in length between Blyth and Newbarn, for the Joint Committee of the Blyth and Cowpen Urban District Councils. Mr. Robert Croxall, surveyor, Blyth. W. I. War, 1, 280, High-street, Hereford. J. W. Robson, 1, 280, High-street, Hereford. H. Hudson, 1, 280, High-street, Hereford. A. Adams, 1, 280, High-street, Hereford. J. Manners, 1, 280, High-street, Hereford. B. Bailey, 1, 280, High-street, Hereford. M. H. Heatley, 1, 280, High-street, Hereford. *Accepted.

BROMLEY (Middlesex).—For the erection of refuse destructor buildings, &c., for the Rural District Council of Works. Mr. Wm. Octob, Chief Surveyor. Messrs. Deas, 1, 280, High-street, Hereford. G. Goddard, 1, 280, High-street, Hereford. W. M. Altham, 1, 280, High-street, Hereford. *Accepted.

LONDON.—For the erection of new factory at Bromley-by-Bow, E., for Messrs. Kemball, Bishop, & Co. Messrs. Jugg, Oliver, & Hudson, architects, 7, Bedford-row, W.C., and 80, Leaman-street, F., Quantities by Messrs. Goodman & Simpson:—
 H. A. Bishon £2,975 0 W. Sharman £4,493
 W. Greagar & Son 2,624 Atherton & Dolman 2,370
 M. Patnick & Son 2,439 * Accepted.

LONDON.—For alterations and additions to shop and premises, Nos. 116 and 118, The Grove, Stratford, E., for Messrs. Howes Bros. Messrs. Wigg, Oliver, & Hudson, architects, 7, Bedford-row, W.C., and 80, Leaman-street, E.:—
 J. Jarvis & Sons £2,279 Batley, Son, & Holmes 815
 Atherton & Dolman * Accepted. † Withdrawn.

LONDON.—Accepted for the erection of fireproof staircase, &c., to factory, Durdar-street, Whitechapel, E., for Messrs. S. Schneiders & Sons, Messrs. Wigg, Oliver, & Hudson, architects, 7, Bedford-row, W.C., and 80, Leaman-street, E.:—
 Brown, Son, & Blomfield £490

LONDON.—For alterations and additions to the "General Havelock" public-house, Perkhamp, S.E. Mr. W. M. Bruiton, architect. No quantities supplied:—
 Bryan £1,656 Barton £1,447
 H. Wall & Co. 1,274 Tysman 1,404
 J. O. Richardson 1,487

LONDON.—For the construction of an underground convenience, High Holborn, for Messrs. District Board of Works, Mr. Wm. Wallace, Surveyor, 127, High Holborn, W.C.:—
 Thomas & Edge £2,429 C. W. K. Killigback & Co., Neave & Son 3,652 Camden Town £3,697
 W. Thompson 3,915 * Accepted.

LONDON.—For wiring, &c., in connection with the installation of the electric light at Blackwall Tunnel, for the London County Council:—
 Laing, Wharton, & Dowd, Ltd. £4,710.

MELMERY (Perth).—For the execution of water-supply works, for the Rural District Council:—
 J. & W. Scott, Perth, £440 12 6

MENBOROUGH (Works).—For the execution of road works, Halgate and Crossgate, for the Urban District Council, Mr. G. F. Carter, Surveyor, Council Offices, Menborough:—
 Wm. Hobson Hill-gate. Cross-gate.
 C. A. Walker 453 8 2 301 6 8
 G. Frye 363 10 0 252 0 0
 F. Frye, Sheffield (accepted) 343 11 0 297 6 0

MOVILLE (Ireland).—For the erection of two dwelling-houses, for Messrs. M. Laughton, Londonderry, and Mr. P. Glackin, Moiville, Mr. Foster Nolan, architect, Greenacastle, co. Donegal:—
 Daniel Gillespie £471 0 Charles Doherty 636 0
 James Gallagher & Sons 435 0 M. McDermott, Moiville, 636 0
 Michael M'Daid 355 0 do, Donegal (accepted) 350 0

NEWPORT (Salop).—For the erection of school-buildings, Edgwood, for the Committee of Managers, Messrs. J. R. Veall & Son, architects, Wolverhampton, Quantities by the architects:—
 Willcock & Co. £2,476 9 11 Bradway & Lloyd £2,951 4 0
 T. Facer 1,464 4 11 J. G. Mulhead 863 10 6
 G. Bullock 1,476 8 6 E. Whittingham, New 863 10 6
 A. Roper 1,679 2 6 P. R. Salop 863 15 6
 H. Gough 1,623 16 9 Tommy Brock 855 11 21
 G. de Downing 795 0 * Accepted.

OLNEY (Bucks).—For additions, &c., to school buildings, for the School Board, Mr. C. Dorman, architect, 51, Abington-street, Northampton:—
 J. F. White £1,239 M. Clayton £1,035
 H. Coleman 1,189 G. F. Sherman 920
 W. Whitbread 1,150 J. C. Sherman 943
 E. T. Whitroy 1,110 G. E. Fother, Bedford 924
 Rootham & Jeakings 1,110 * Accepted.

REBOURN (Herts).—For the erection of "Bylands," Red-bourn, Herts, for Mr. J. M. Ashford, Mr. David Burnett, architect:—
 Thompson & Beveridge £2,135 Marriage & Co., The Oval, Croydon £4,510
 C. Ansell 1,990 S. C. Smith 1,470
 C. Miskin 1,737 * Accepted.
 F. Hall 1,605

SOLIHULL.—For the erection of ambulance depot at the Infectious Diseases Hospital, Lyndon Fud, Solihull, Mr. A. E. Carrall, Surveyor, Solihull:—
 S. Turner £1,110 H. W. Thompson £200
 J. Freeman 830 H. Gregory 760
 [Surveyors' estimate, £750]

SOUTHEND (Essex).—For works at the London Hotel, Southend-on-Sea, for Mr. A. Wilson, Messrs. Buries & Harris, architects, Clarence-street, Southend, Quantities by Mr. Henry Bushell, F.S.I., 33, New Bridge-street, City:—
 Contract A.—Structural Alterations and Decorative Works.
 A. E. Symes £285 F. Woodhams £500
 F. Dupont 785 T. Whit, Southend 590
 Contract B.—Bar Fittings and Hard Wood Finishings, &c.
 Brown, Kreuse, & Co. £160 Lascelles & Co. £725
 A. E. Symes 589 F. Dupont, Colchester 720
 * Accepted.

SOUTHEND-ON-SEA.—For wood paving, Clarence-road, for the Corporation, Mr. Harold Harlock, Borough Surveyor, Clarence-road, Southend:—
 The Acme Wood-Floor, s. d. The Improved Wood- s. d.
 Wrig Co. 13 0 Paving Co., 45, Queen- Wm. Griffiths £5,029 L. Whitehead & Co. * 10 6
 * Per yard super. * Accepted.

SOUTHEND.—For the erection of small new church, Southchurch, Southend-on-Sea, for the Rev. Phillips:—
 T. J. Hawkins, Ashford, Middlesex £144

STANMORE.—For the erection of a house on the Stanmore Park Estate, Stanmore, Middlesex, for Mr. W. S. Pritchard, Messrs. Boehmer & Gibbs, architects, 11, Spring-gardens, S.W.:—
 McCormick £5,029 L. Whitehead & Co. * £4,800
 Baley 4,950 * Accepted.

ST. ANNES-ON-SEA.—Accepted for providing and laying pipes, &c., for the Urban District Council, Mr. H. Bancroft, C.E. 88, Mosley-street, Manchester:—
 Josiah Dale, Northwich £693 1 2

WARRINGTON.—For the construction of four streets and thirteen passages for the Corporation, Mr. Thomas Longdin, Borough Surveyor, Town Hall, Warrington:—
 William Beaton * £537 13 0 F. T. Bennett £54 12 9
 Thomas Stringer 24 13 0 *
 * Nine streets and passages. † Seven streets and passages. One street.

WEMBLEY.—Accepted by the Wembley Park Company for the construction of exhibition buildings at Wembley Park, London:—
 T. J. Hawkins, Ashford, Middlesex £5,500

WIMLEEDON.—For the erection of five cottages, Hubert-road, for Mr. W. M. Gilbert, 22, Havelock-road, Hastings, Mr. Wm. Cooper, architect, 27, Havelock-road, Hastings:—
 General Builders, Ltd. £2,214 0 J. Barges £1,750 0
 H. E. Key 2,212 0 J. L. Inan & Co. 1,753 0
 T. L. Pearson 2,212 0 W. Greenfield 1,753 0
 William Beaton * 2,476 0 S. Southam 1,753 0
 Decekill & Son 2,285 0 F. Doubell & Co. 1,650 0
 C. Fryer 2,249 0 H. Brown 1,590 0
 C. Burridge 1,741 0

YARDBLEY.—Accepted for fire stations, for the Yardley District Council:—
 T. J. Hawkins, Ashford, Middlesex £134

TO CORRESPONDENTS.
 B. F. & S. (amounts should have been stated)—J. S., J. S., J. W. L. E., W. C. G. (below outline)—R. K. (too late; next week).
NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.
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 We are compelled to decline pointing out books and giving addresses.
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The Builder.

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Coutances Cathedral; South Side. From a Drawing by the late W. W. Deane	Double-Page Ink-Photo.
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The Question of the London County Council Offices.



THE debate on the London County Buildings Bill last week, in regard both to its tenour and to the vote which followed it, strikes one as a somewhat extraordinary precedent in Parliamentary procedure. Questions in regard to the propriety of the site, and the amount which that and the building cost, might very well have been matters for consideration before a Select Committee. But the House of Commons in this case constituted itself a court to decide on the question whether or no the London County Council required more room for its staff, a matter on which the Council itself certainly was entitled to know best, and acted as the champion of the London ratepayers in a spirit in which, as Sir William Harcourt truly observed, it would not have acted in respect of any other municipality in England. The idea prevailing in the minds of a majority of the speakers seems to have been that because the London County Council's Bill dealt with a metropolitan site, therefore it was to be treated as a State and not a municipal question. But this is a mere geographical illusion. In relation to the House of Commons, the London County Council is exactly in the same position as any other municipality in England. The County Council have established a *prima-facie* case of want of further accommodation, and it seems extraordinary that, under such circumstances, the second reading of the Bill should have been rejected. Moreover, for the House of Commons to reject a purely Municipal Bill of this kind, not after investigation by a Select Committee, but before such proceeding, introduces a dangerous precedent. It may be that the result of the decision is the same as would have occurred after the Bill had been before a Committee; but practically the House of Commons, by rejecting this Bill when they did, constitute themselves the managers of the Metropolis. There is no difference in principle between rejecting a Bill for a town hall and a Bill for a system of drainage.

Considering the importance and indeed urgency of the question—considering that, as Mr. Whitmore pointed out in moving the second reading, two-fifths of the County Council's staff of 500 persons are housed away from the central offices, at a cost of 6,000*l.* a year as well as of much delay and inconvenience in the transaction of business; that there are often as many as fifty Committee-meetings in a week, with only five rooms available for their use; with all these practical arguments it can hardly be supposed that the question of new offices will be allowed to be indefinitely shelved. In spite of the negative vote of Parliament, therefore, we may consider the question as one that we are likely to hear more of before long. Various objections have been raised against the proposed site in Trafalgar-square, of which the two really valid ones are that the site is of a rather awkward shape to deal with, and that the property upon it is expensive to acquire. The former objection however is rather apparent than real, when we consider what successful plans have been carried out on sites presenting quite as awkward lines: the Manchester Town Hall for example. Beyond these, there appear to be two quite opposite objections urged against it; the one that it is unnecessarily large, the other that it is too small. The former is the special cry of the daily papers, most of which know nothing about the requirements of such a building or the space necessary to provide for them, and merely court popularity by adopting what is supposed to be the ratepayer's view. The latter was the view urged on the County Council by the Art-Committee of the Institute of Architects, which has given a great deal of attention to the subject in a very public spirit, and from an architectural point of view. In the Report of the Establishment Committee of the County Council (June 9, 1896) it is stated that the present offices have an area of 37,400 square feet, and the proposed new site has an area of 84,000 square feet. At first sight this no doubt seems a very large increase in area; but when we consider that the present offices give accommodation for only three-fifths of the staff, that the supply of committee rooms is most inadequate, that the stairs and corridors are far too cramped, and that a large margin must be left for future increase of the business and of the staff (and experience shows that such institutions always are increasing), it will

not appear that this is too large a margin. The Establishment Committee, who must have had more information as to their own probable requirements in regard to accommodation than any outsiders could have, seem in fact to have been so satisfied as to the sufficiency of the space that they proposed to devote the ground floor of the new building to shops and business premises, an arrangement which they estimated would still leave double the present floor space available. This proposal, which we suspect was thrown out as a sop to the champions of the ratepayers, as promising a considerable recoupment of the cost of the site, strikes us as a double mistake. In the first place, a larger margin is needed than would be afforded by twice the present floor space, and this proposed employment of part of the ground floor would just throw away space which is likely to be ultimately required. But an almost more serious objection is that such a treatment would be most prejudicial to the architectural dignity and fitness of a building for so important a body and on so important a site. This is so obvious, in fact, that we doubt whether this part of the scheme was ever meant to be seriously adhered to. Wherever and whenever the new offices for the London County Council are built, we have a right to expect that every effort should be made to render them a building worthy of the great metropolitan district the business of which will be carried on there. Cutting and cheeseparing ought to be considered quite out of place on such an occasion.

The Art Committee of the Institute, who have kindly placed before us the information which they have been collecting and on which their views of the insufficiency of the Trafalgar-square site are based, compare this site unfavourably as to extent with that of several Continental Town Halls of which they have procured the block plans, and even, relatively, with the size of some English provincial Town Halls. They take the Paris Hôtel de Ville, which has an area of 14,566 square metres, and compare it with the 9,333 square yards of the Trafalgar-square site,* and ask how London is to be satisfied with so much smaller a site than Paris for its municipal buildings, which are stated to be already proving too small for

* A metre, we may remind the reader, is a little more than 3 ft. 3 in. linear measure.

the requirements of the Paris municipal service. But surely they have overlooked the fact that the Paris Hôtel de Ville is a building for municipal hospitality and fêtes as well as for municipal business. It performs, in fact, the functions of the Mansion House and the County Council offices united. The County Council offices is proposed as a business building only; a council chamber and offices. They cite the Manchester Town Hall, of about 7,740 square yards in area; with the natural inference that a metropolitan building for the same purpose ought to be at least twice as large. But they appear to forget, again, that a considerable portion of the Manchester Town Hall is occupied by a great public hall for entertainments, and that no such feature is in question for the London County Council offices. It certainly seems rather unfortunate that a committee representing the Institute of Architects should, with the best architectural intentions, have been advising the London County Council as to the insufficiency of their proposed site, while overlooking what we should have thought such a very obvious difference between the character and objects of the proposed building and of those with which a comparison was made.

The site favoured by the Institute, as suggested in the *Journal* of May 21, 1896, seems at present to be the only one which can be put in competition with the Trafalgar-square site. It consists of a large triangular plot of land proposed to be left at the south end of the new street from Holborn to the Strand, between the spur streets east and west, containing roughly about 17,000 square yards; situated centrally behind St. Mary-le-Strand. There is room enough for anything here, and of course the property taken would be much less valuable. Against this are to be set the three considerations that, for the County Council business, it is not so central as Trafalgar-square; that, as we understand, in the event of the Trafalgar-square site being adopted the present Council Room would be retained and incorporated in the new buildings; it is certainly quite possible to do this and the Council Room itself is a good room and quite as large as such a room can conveniently be for purposes of debate; and that the County Council wish to retain what may be regarded as their historic position in London. This latter predilection in itself may not be worth paying very much for, but it has its weight in connexion with other recommendations.

At all events, with the absolute and proved need, urgent need, of increased accommodation for the London County Council, we cannot possibly regard the Parliamentary vote of the 18th inst. as disposing of the question for an indefinite period; and though there are objections to the site the Council are seeking for we are inclined to think that on the whole the points in its favour predominate, and that most of the objections raised against it have been somewhat unreasonable.

GLAZED BRICKS.

THE use of glazed bricks is now rapidly extending, not only for internal walls but also for external. They possess several advantages over ordinary bricks and stone, and also over plaster and other wall-surfaces, but

they have also some disadvantages. They are practically impervious to moisture, easily cleaned, and proof against the acids present in the air and rain. On the other hand, some glazed bricks are easily chipped or cracked, and the glaze may soon be stripped by frost. We do not propose to enter into the question of faience, but to discuss briefly the two kinds of glazed brick in most common use, namely, *salt-glazed* and *enamelled*. The best bricks of both kinds are produced in the neighbourhood of Leeds and Halifax.

Salt-glazed bricks vary very much in quality, from the ordinary brick fused on the surface by common salt being thrown into the kiln, to the specially-prepared pressed brick, the face of which is dipped into a "slip" of fine clay before being fired and salted. Bricks of the former kind are known as "ordinary" or "common" salt-glazed bricks, and are chiefly used for sewers, manholes, and other places where a clean, impervious surface is required at comparatively little cost. They are not, as a rule, suitable for external or internal face-work in buildings. The dipped bricks, which are generally known as "best" salt-glazed, are also used in manholes, but more largely in urinals, and for dadoes and other internal work, and also for external work, chiefly in plinths, as in the Clerkenwell Town Hall; but occasionally for the whole front of a building, of which there is a good example in Great George-street, Westminster. These bricks are first pressed, and, while still green, their faces are dipped into a "slip" of fine clay carefully weathered and ground, and sifted through fine silk sieves. It is absolutely necessary that the slip should be of the same clay as the body of the brick, otherwise unequal contraction will occur during firing, and a "crazed" surface may result, or even the thin film may "shell off." "Best" salt-glazed bricks are hard, free from surface-cracks, clean, impervious, proof against rain, air, and frost, and almost as smooth as an enamelled brick. Their durability is now beyond question, as they have for many years withstood the atmosphere of London, and numerous smoky provincial towns. From an artistic point of view they are greatly to be preferred to hard-glaze enamelled bricks. The colour of the latter is too uniform, and the effect of a wall built of them is hard, cold, and monotonous; salt-glazed bricks, on the contrary, are full of variety in colour, toning from orange or light red to a deep red-brown, and this variety adds a great charm to the finished work. A further advantage of good salt-glazed bricks over enamelled is that the glazed surface is actually an integral portion of the brick itself, the face of the brick being entirely fluxed or fused by the action of salt; while in enamelled bricks, the glaze is really a thin plate of porcelain or earthenware fused to the face of the brick by heat, and never becomes actually part and parcel of the substance of the brick.

The best enamelled bricks are prepared from a special kind of clay which burns to a buff or "biscuit" colour. The clay is carefully weathered and ground, and then made into brick-shaped blocks, each of which is brought to the proper weight by having some portion removed from the side where a "frog" will be formed. After being weighed the blocks are passed through one or two presses, by which the frogs are formed and the name or initials

of the maker impressed upon the bricks. Two methods of adding the glaze are adopted, known as the "wet-dip" process and the "dry-dip." In the former, the bricks, while still green, are dipped in the glaze, while in the latter, the bricks are first dried in a heated shed, and then "biscuit," that is to say, burnt in a kiln to a biscuit colour. Each method has its advocates, but as a general rule, it may be said that the question is determined by the nature of the clay and "slip" used in the manufacture of the bricks. The dry-dip process has one advantage, namely, that all bricks which develop cracks or twists or any other defects in the preliminary burning will not be dipped, and consequently the average quality of the final product is often higher than that attained by the wet-dip process.

When the bricks are sufficiently dry to be dipped, or (in the dry-dip process) when they have cooled sufficiently after the preliminary firing, they are dipped three or four times (with intervals between drying) into a thin "slip" which will burn to the desired colour, and also into a transparent glaze. Sometimes, however, the colour is added in the latter instead of in the slip. The portion of slip and glaze overflowing down the sides of the brick is scraped off, and, when the face is sufficiently hard, the bricks are placed in the kiln (care being taken to keep the faces from contact) and burnt till the desired colour is attained. Small bricks are placed in the kiln with the others and drawn out at intervals in order to ascertain how the firing is proceeding.

Sometimes on account of the unequal contraction of brick and slip during firing, or from some other cause, the enamel "shells off" the brick, and may be gathered in shovelfuls from the bottom of the kiln. This is a bitter experience for the brickmaker, and the cause and remedy are often difficult to find. Shelling may be the result of using inferior or unsuitable clay for the body of the brick, or of using a slip which does not contain the exact proportion of materials necessary for insuring its adhesion to the clay under all conditions. Frequently all will go well for a time, and then a change occurs in the bed of clay which is being worked, and the bricks will shell until the slip is changed to suit the clay. With some clays it is impossible to use a slip of the finest quality. Yorkshire enamelled bricks have a good reputation in this respect, the enamel literally differing from that on bricks from some other counties as china differs from common pottery; common potter's clay, or ball-clay, is used in considerable quantity in the slip for inferior bricks, instead of the finest kaolin, or china-clay.

Even when the enamel does not shell off, its adhesion may be so slight as to be overcome by a blow or by the natural agency of wind and rain and frost. The nature of the adhesion may be easily tested by means of a hammer and chisel, or, better, by lightly striking the beds of two bricks together in such a way that the edge of the enamel in one brick is brought into contact with the other brick. If the enamel flies off, exposing a smooth surface beneath, the brick must be condemned. If, however, the enamel carries away with it a portion (however small) of the body of the brick, the bricks may usually be accepted as sound.

In the product of each kiln there is always a considerable number of more or less

damaged bricks—bricks with cracked or discoloured faces or with chipped edges. These are carefully sorted, and sold at reduced prices as "seconds" and "thirds." Only perfect bricks are sold as "best," so that an architect need have no hesitation in condemning defective glazed bricks, however slight the defects may be, provided that "best" bricks have been specified. Strict supervision in this respect is greatly to be desired, as otherwise the quality of "best" bricks is sure to deteriorate, as has been the case with timber and other materials.

Enamelled bricks of several colours can now be obtained—chalk-white, ivory-white, cream, buff, salmon, pink, and various shades of red, brown, blue, and green. Black bricks are also made. White bricks are the cheapest, some of the coloured bricks being nearly 50 per cent. dearer. Moulded bricks for plinths, string-courses, reveals, and other purposes, can also be obtained, and also embossed bricks, and bricks with patterns printed in one or more colours. Most of the patterns on enamelled bricks are, it must be confessed, almost as ugly or ineffective as they can be made.

Soft-glaze bricks of the nature of majolica are often made, but, while possessing a richer body of colour (somewhat like salt-glazed bricks in effect, but softer), they are frequently crazed on the surface. They are not considered as durable as the "hard-glaze" bricks, of which we have hitherto been speaking, and should not be used for external work, especially in towns, as the sulphuric and sulphurous acids in the air act injuriously on the lead which forms part of the glaze.

Of the sanitary advantages of glazed bricks there can be no question. In water-closets, urinals, lavatories, bath-rooms, sculleries, corridors, basements, areas, and other places where dirt and darkness are wont to abide, they may be used with vast improvement of "sweetness and light." They may also be adopted with advantage in larders, pantries, and kitchens, and even in dustbins and the inspection-chambers of drains. The "best" bricks of the best makers are now of such excellent quality that little fear of shelling or decay need be entertained; at the same time it must be acknowledged that the makers of some of the best of these bricks do not advocate the use of enamelled bricks in the open air in towns—at any rate, in exposed situations.

NOTES.

It is to be hoped that, in spite of the completion of the *non possumus* of the Treasury, the suggestion that the completion of South Kensington Museum should be taken in hand this year, as one method of commemorating the longest reign, will not be lost sight of by the Government. We have not heard hitherto of any proposal to celebrate the occasion by a work of art; this would be both a work of art and a work of utility. It is impossible to mention the subject without referring to the absurd attempt made by Sir Charles Robinson, in a letter in the *Times*, to urge that no architectural art should be represented on the exterior of the building; that all we want for an art-collection is a shelter. That is in the true English spirit; other objects of art are of interest, but when it comes to the question of a great building, anything that is

cheap will do. It is true that the competition designs for the completion of South Kensington showed an unnecessary emphasis in towers; that is an English weakness also; but in other respects an Art Museum is one of the most fitting occasions for architectural richness and beauty of treatment. In this case, besides, the keynote has already been struck by the rich and effective elevation of the Science Schools towards Exhibition-road, with which the new building must be in immediate contact.

A Sham Institute of Architects.

THE promoters of a society which calls itself the "Institute of Architects and Surveyors" are again sending round printed circulars to those who they presume to suppose will be attracted by their prospectus. The "Council" is composed of persons whom no one has ever heard of, and we observe that the President, one Mr. J. H. Wilkinson, places after his name the letters "F.S.A.," which are universally taken to stand for "Fellow of the Society of Antiquaries," but we find (as we expected) that no such person is known to the Secretary of the Society of Antiquaries. It appears to us that the Institute of Architects ought to take legal steps to prevent the use of a title of which the first and principal portion is identical with their own. Knowing as one does how ill-informed the daily press are, and what blunders they make, in regard to everything connected with architects and architecture, there will certainly be mistakes made in regard to this title—mistakes which may be prejudicial to the real Institute of Architects. Our own readers will not need to be put on their guard.

We have recently had an opportunity of examining the process by which "Petrifite" artificial stone is made, as well as many samples. In the manufacture of the material, sand, slate, dust, common earth or mould, sawdust, and waste products of various kinds may be used as a base, the loose particles being compacted by "Petrifite," which, therefore, acts as a cement. It is obvious that the value of the material depends almost entirely on the properties of the cement. Beyond well-incorporating the latter in the wet state with sand, or whatever base may be employed, and allowing the whole to set, nothing else is done, the process being exceedingly simple. The nature of the cement was not stated by the makers, but there is no difficulty in seeing that it is of an entirely different character to Portland or cements of that kind. Unless we are mistaken, "Petrifite" is composed essentially of magnesium lime: *i.e.*, lime prepared from the carbonate of magnesia—the magnesite of mineralogists. The cement certainly possesses many remarkable properties. In the samples submitted for our inspection many peculiar substances were used as bases. Amongst others were a piece of moulding consisting of "Petrifite" and slate dust; a corrugated roofing tile the base of which was slate dust and sand; iron oxide and slate dust cast; and billiard table slabs of slate dust and sand. "Petrifite" binds common earth quite readily. In making a path it is only necessary to dig up the surface mould, and mix it with the cement on the spot, then, smoothing it over, the whole sets in a few hours, producing a hard paving material. Tiles, stone blocks, slabs of marble,

paving bricks, and slabs made of "Petrifite," mixed with refuse of various kinds, were on view, and there are many additional applications of the cement for building and other purposes. Being a fireproof material it has its advantages in that respect; it may be used as a "fireproof paint," pieces of wood painted with it burning with difficulty. It may be used as wall plaster; for making sewer and other pipes, &c. It is almost non-porous, and in the shape of stone blocks bears a great crushing strain, quite as high as many good, natural stones. From the general chemical composition of "Petrifite," and from its structure, as seen under the microscope in thin sections, which latter show it to be of a semi-crystalline nature, we imagine it would stand well in the atmosphere. The material undoubtedly has a future; something like it has been in use in Germany for a few years, and has given satisfaction.

The Trial of Patent Cases.

SOME discussion has been taking place recently among those interested in the settlement of legal points which arise in regard to patents, on the desirability of having all patent cases assigned to one judge for trial. During the last sittings of the Courts Mr. Justice Romer was almost entirely engaged on the trial of patent cases. It is argued that if shipowners and merchants have, in the Admiralty Court and the Commercial Court, a special tribunal, why also should not those who are concerned in litigation as to patents. The reasoning is sound. There can be no doubt that it would conduce to the satisfactory and to the prompt disposal of patent trials if they came before the same judge. No new procedure is necessary, all that is required is an order by the Lord Chancellor assigning all the patent cases which are set down for trial to one judge. They should be placed on a separate list to be dealt with at the judge's discretion. Whether the patent cases should have priority, or the judge only take cases other than patent cases if none of the latter are ready for trial, is perhaps a matter open for discussion. We are inclined to think that if the lists of the other Chancery judges were freed from patent cases, the judge to whom this class of litigation is assigned might well give it priority over other business, and merely deal with the latter as a kind of extra work on such days as patent cases were not ready for trial. Such a change would be entirely in accordance with the tendency of modern business.

Continental Exhibition Finance.

As we have observed, there were last year a large number of national exhibitions on the Continent; we have at times specially referred to those at Berlin, Buda-Pesth, Nichninovogorod, and Geneva. The various reports of the financial results of these exhibitions are now accessible, and are practically all unsatisfactory. Commencing with the Geneva Exhibition, which we considered badly managed, the deficit is 20,000*l.*, whilst for the Industrial Exhibition at Berlin, if we are rightly informed, the guarantors will have to pay at least 75,000*l.* The exhibitions at Nichninovogorod and at Buda Pesth were not intended to be commercially successful, as they were primarily of historical importance. The extra expenditure above the estimates is, however, in both instances enormous. Of the smaller exhibitions at

Dresden and Malmoe (in Sweden) we at least do not hear of a deficit; but nowhere, even in connexion with the smallest exhibition, do we hear of good financial results. This, we think, should be a lesson to those who promote so-called "National" exhibitions, and who, during the early stages, are generally so optimistic as to the financial results.

It appears that the Department of Fine Arts in the French Ministry has appointed a special Committee to consider the question of making provision for the exhibitions of both the Paris Salons during the years 1898 and 1899, when the buildings in which they have hitherto exhibited will not be available owing to the preparations for the exhibition of 1900. What the result will be is very doubtful at present. It is much to be wished that this difficulty could be made an opportunity for amalgamating the two Salons, which would be a great deal better for the artistic standard of both exhibitions.

THE remarkable tribute of esteem and admiration which has been offered to Mr. G. F. Watts on the occasion of his eightieth birthday is a gratifying proof that, in spite of the prevalence of a taste in the present day for what is superficial and sensational in art and literature, there is at least among us a considerable leavening of persons who can appreciate and honour an artist of high and serious aims, and a personal character so noble and sincere as that of our greatest living painter. Probably one may assume that the tribute was paid as much to the man as to the artist. If, however, the remarks which we have read to the effect that it was felt that "Mr. Watts was something more than a painter," &c., are taken to mean that part of his claim to this honour arose from his attempts, in recent years, to render painting subservient to the reading of moral, philosophical, and historic lessons, we must so far dissent. It is rather, we think, Mr. Watts's one weakness—a noble one no doubt—that he has attempted of late to make painting do what cannot be done with it, without interfering with its purely artistic ends.

THE announcement that the most important portion of the great art-collection of the late Sir Richard Wallace is to be given to the nation is one over which all lovers of art may well rejoice. The collection included in it of the works of Meissonnier and Decamps, to which we devoted a long article a good many years ago, would alone render it a national art-treasure of a most precious kind. It is to be hoped that the condition that a special gallery should be erected for the collection will be carried out in a liberal spirit, and that the architectural framework will be worthy of the treasures it is to contain.

IN the north-west pier, 4 ft. from the face of the front adjacent to the passage, an owl's nest has been found, about 9 in. diameter of entrance; in it were the usual twigs, bones, &c. This is a demonstration by nature of the character of the material of the filling. The birds and bats take the view

of the Society of Antiquaries and the S.P.A.B., and resent the interference of the Dean and Chapter.

A RUMOUR of a rather alarming nature was recently circulated in the Isle of Wight to the effect that Carisbrooke Castle was to be "put into a state of thorough repair." The statement was made, in addition, that plans for this alleged future repair were to be laid before her Majesty in the early spring, for her sanction. Probably this apparently authentic report arose from the erection of the scaffolding at the gateway for the museum works inside it. However, no such "thorough repair" appears to be contemplated, and official information from the Secretary of the First Commissioner of Works and Public Buildings has been forthcoming, to the effect that not only is the museum being built under the control of the Board's officers, but that permission to construct it was granted under the express condition that the exterior should not be interfered with.

THERE are several new precautions recommended to be taken for protection against fires in the latest edition of the Liverpool, London, and Globe Company's Installation Rules. Contractors would do well to read the rules for "conductors," which have been largely rewritten; they will find several useful hints as to the methods of protecting casings under floors, passing vertically through floors, &c. Several additions have been made to the rules for electromotors; for example, that every motor should be legibly marked with the speed at which it may be run, and the volts and amperes it is designed to use at full load. The necessity for this rule shows that there must be a large number of inferior motors in use. Another rule, suggested by the recent fire at St. George's, Hanover-square, is that every motor should be enclosed in a fire-proof case which should form part of the motor itself, and not be an added removable covering. The company recognise that the switchboard forms the point of an installation at which fires most frequently start, and they should therefore be made as incombustible as possible. They point out that special precautions should be taken against earth faults arising from resistance and choking coils in the circuit, a point upon which we have always laid great stress. Electricians will be interested in the warning to central stations to run the conductors from the accumulators in such a way that if on fire they could not form short circuits destructive to the accumulators.

DR. R. BRUCE Low's report to the Local Government Board on the water supply of Long Buckby in the Rural District of Daventry, Northants, gives one of the worst accounts we have seen of the pollution of water supply by a bad drainage system. The village is not sewered. Larger houses have cesspools, some of which are so constructed as to allow fluid sewage to soak away, and therefore they require little trouble in emptying. Excrement is disposed of mainly by vault or cesspit privies situated in backyards, and emptied, usually at long intervals, by the occupiers on fields, allotments, or gardens. Some cesspits have recently been

cemented, but the majority have not, and are therefore not watertight. The ashpits and middens are emptied sometimes once some times twice a year by the occupiers. Large accumulations of house refuse that had long ago overflowed from the midden or ashpit on to the adjacent ground were frequently seen; the occupier's usual excuse being that some farmer had failed to fetch the manure when requested to do so. "In such instances the filth lies for some hours or days exposed to rain and sun, creating nuisance, sometimes by soaking into the ground and polluting it at others by being blown about in the village as excrement-laden dust. In several instances excrement from the privy had been spread on the garden close to the house. When after this we read that "Long Buckby derives its water supply from about 116 local wells," we are not surprised to find that there are serious complaints as to the character of the water.

SOME interior alterations, together with the erection of a additional gallery, or sale-room, are being carried out by Mr. H. Roffey of Putney, builder, under Mr. Emden's superintendence, at the premises of a well-known firm of auctioneers in this street. The firm of Sotheby, Wilkinson, & Hodgson was originally founded by Samuel Baker, in 1744, at a house in York-street, Covent Garden. In 1804 the business was removed to No. 141, Strand (opposite Catherine-street), and in 1818 to No. 13, since renumbered 13, in Wellington-street. Mr. John Wilkinson, late senior partner, died three years ago, aged ninety-one. Jacob Tonson's house, the "Shakespeare Head," over against Catherine-street in the Strand, was afterwards numbered "141"; as rebuilt, it was occupied by Andrew Millar, publisher, by the sign of "Buchanan's Head," and next by his quondam apprentice, Thomas Cadel, alderman, the friend and publisher of Gibbon. Messrs. Foster & Dicksee, of Rugby and Manresa-road, S.W., are contractor for the new buildings at the corner of Wellington-street and the Strand, the architect being, we are informed, Mr. A. N. Bromley of Nottingham. For those premises, which stand back 11 ft. from the former alignment, have been pulled down the houses numbered 134-138A, Strand, and Nos. 2-8 (even) Wellington-street, as far as the front (west) of Somerset House. Thus has disappeared Duchy-place, or court, a descent between Nos. 136 and 137, Strand, on the Duchy of Lancaster estate. It formed the boundary on that side, of the precincts of the Savoy and, moreover, marked the position of the Strand Bridge, as laid down on the Ordnance Survey. Vertue's survey and view of the Savoy was done in 1736 for the Vetusta Monumenta; an earlier plan, by Wren, is in the Soane Museum.

THE society of French artists under this title has just opened its fourth exhibition in the Durand-Ruel Gallery in Paris. The exhibition, which is an interesting one generally, includes a fine collection of the works of Théodore Chasseriau. Among other works of special interest may be noticed the studies of Algerian life by M. Gabriel Rigolot, the "École Arabe" of M. Taupin, and the paintings by M. Dinet, whose "Courtisane"

The Future of the Paris "Salons."

The Presentation to Mr. Watts.

The Wallace Bequest.

Peterborough Cathedral.

Carisbrooke Castle.

Electrical Fires.

An Insanitary Village.

Exhibition of the "Peintres Orientalistes."

in particular has a force and power of colour which recalls the oriental subjects of Delacroix. Among others of the most prominent works are the "Fête des Morts chez les Juifs" by M. Girardot, the "Vues d'Egypte" in which M. Morand has conveyed such a strange sensation of pathos; the "Cimetière de Tunis" by M. Nézière, and the "Etudes d'Orient" by M. Charles Landette. It may be observed that this exhibition is entirely free from the artistic commonplaces which are so abundant in many of the minor exhibitions in Paris.

SKETCHES OF LONDON STREET ARCHITECTURE.—X.

NO. 163, SLOANE-STREET.

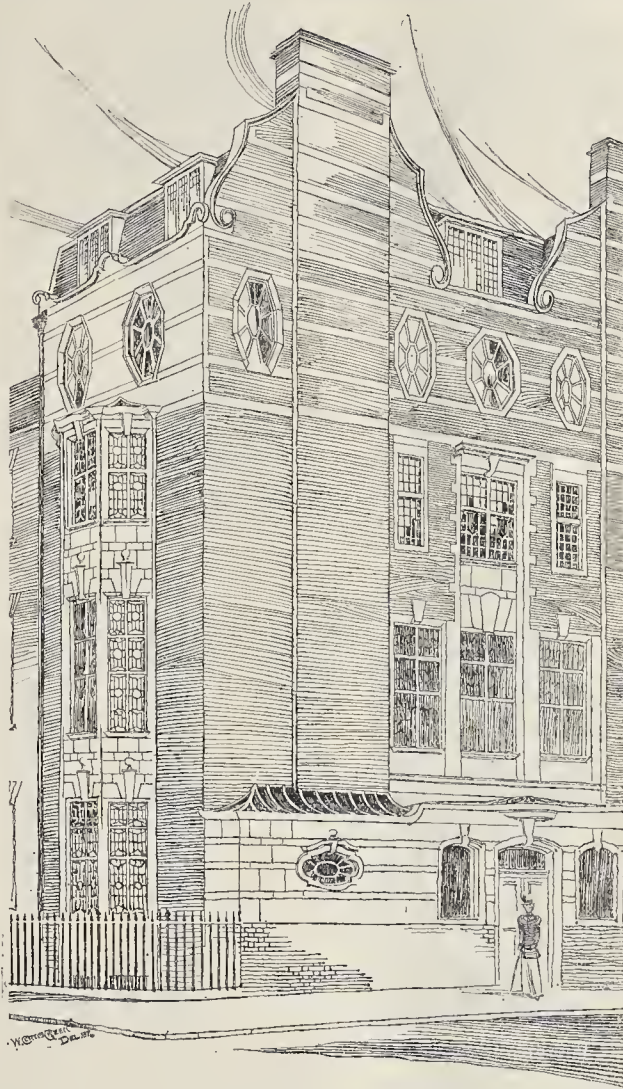
THIS is not a new house, but a conversion of an old one. The aim was to get away from the red brick mania; so the old stock brick walls remain, and Monk's Park stone is used for the window dressings, bay window, &c., and the stone is massed at the entrance and in the top story. Mr. Fairfax B. Wade is the architect.

THE ADVANCEMENT OF ARCHITECTURE*:

WITH REMARKS ON THE STUDY OF GOTHIC.

Plans.

PLANS are not only necessary, but are interesting in many particulars. They are necessary to show the sizes and arrangement of buildings, as well as the thickness of the walls, the sizes of the piers, and other independent supports. They are interesting to architects, at least, from showing certain peculiarities or excellencies of disposition, and of suggesting difficulties in construction, and the most important, perhaps, is that of suggesting how large spaces are to be roofed. In Greek times several temples remained hypothetical from the difficulty of roofing wide spans with the timber they had, and their knowledge of trussing. In Roman days, when almost all large and important buildings were vaulted, though their method was to abut the concentrated thrust of groined vaults by dead weight, yet we can see the care they took, and the ingenuity they displayed in utilising the walls of adjacent chambers for this purpose. And it must be borne in mind that as their vaults when once set had no thrust, being constructed of horizontal courses of rubble or concrete, yet this thrust was very serious while the work was green, and we see that what were practically flying buttresses were used to abut the vast vaults of the Basilica of Maxentius, those of Caracalla's Baths, and elsewhere. Gothic vaults were elastic, and depended for their stability on counter-thrusts, and where the dead weight was carried by slight columns, large buildings, such as abbey churches and cathedrals, were designed downwards from the vaults, the plan showing the directrix of every vault, thus giving the plan a great additional interest. Plans also suggest effects, such as that of extreme length or width, and the combination of agreeable forms, the size and situation of the windows, and the thickness of the walls; they give some notion, too, of the climate in which the buildings were erected. A rough idea of the purposes for which a building was to be used is also to be gained from the plans, but from its very vagueness it gives great scope to the imagination, as well as a stimulus to deduction. I may say that no detective story of Gaborian's or Poe's can require more patient investigations or more logical deductions than the plan formed by the walls of a destroyed building when we are not intimately acquainted with the particular occupations of the people who inhabited or used the building; and in this respect the uses of buildings and of particular parts of them are much more complex than the motives of crime, or supposed crime: plunder being the usual motive, occasionally jealousy, hatred, revenge, or madness, and sometimes the supposed crime was caused by accident. Take the Roman baths for example, nearly the whole of Latin literature teems with allusions to the bath and to bathing, and yet the uses of many of the chambers cannot even be guessed. To speak of Constantine's Baths alone, there were two galleries some 20 ft. wide, and 100 ft. long, shewn by Palladio



Sketches of London Street Architecture.—X. No. 163, Sloane-street.
Mr. Fairfax B. Wade, Architect.

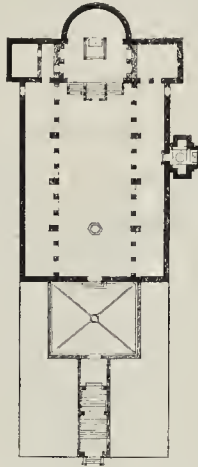
to have been vaulted, whose use we cannot even guess. We are perhaps not quite so badly off in respect to the cathedrals and great abbey churches, as there must be traditions, one would think, and we know some of the reasons for some of the shapes. Constantine gave some of the ancient basilicas to the clergy which were in the old Taw form; and I believe it is stated that he dreamt that some church he was having built should be of cruciform shape. We know, too, that some time between the sixth and ninth century each aisle of a church was dedicated to a separate saint, and apses were put at the east ends of the aisles. Sta. Prassede, at Rome, built in 817, has not got these apses to the aisles, and yet Sta. Maria, in Cosmedin, said to be built in 772, has them; though I cannot affirm that these aisle apses are not of later date. I merely mention these matters to point out that if the reasons of some peculiarities are unknown to us, the reasons might be found out by a closer attention to changes in ecclesiastical ritual, to favourite methods of decoration such as stained glass, to structural reasons, and to what I may perhaps be allowed to call taste, that is, the

æsthetic effect certain proportions had on the people who paid for the structure.

I begin by giving you the plan of the great Renaissance Cathedral of St. Peter, about whose area there seems to be the greatest divergence of calculation, as the area given varies from 227,069 to 150,000 superficial feet, and though one may have taken it at the line of the main wall, and the other at its extreme projection on the ground, one can hardly suppose this immense difference could be due to such a cause, but must suppose that it was due to one or both of the plans from which it was measured being inaccurate. I think, however, that it is agreed that its area of supports are more than one-fourth, or 26 of its whole area, the total area of Notre Dame at Paris varies in different authorities from 67,343 to 54,050 superficial feet, while its area of supports are little more than one half that of St. Peter's at Rome, or one-seventh '14, and I believe that this is a considerably larger percentage than other large vaulted French churches and cathedrals have; I think St. Ouen is said to be but one-ninth.

Some of the Roman baths have large halls,

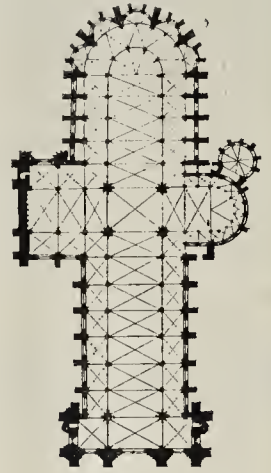
* Being the fourth Royal Academy Lecture on Architecture this session. Delivered on the 4th inst. by Professor Atchison, A.R.A.



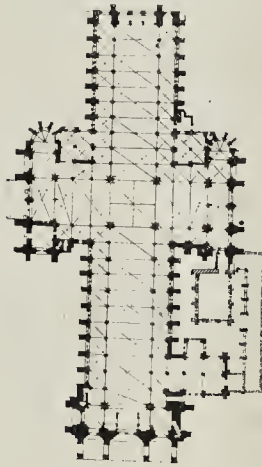
Santa Prassede, Rome: 817—824.



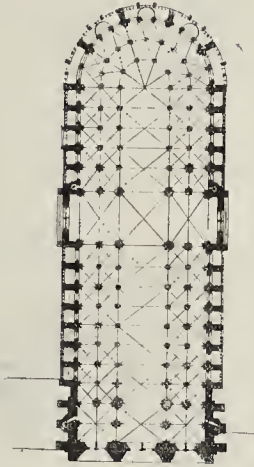
Mans: 11th—13th Centuries.



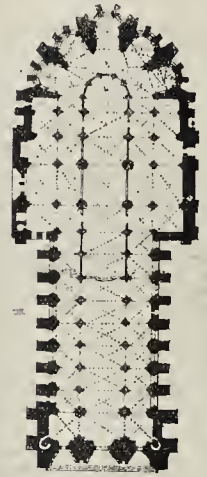
Soissons: 12th—13th Centuries.



Laon: 12th—13th Centuries.



Notre Dame, Paris: 13th Century.



Reims.

Illustrations to Professor Aitchison's fourth Royal Academy Lecture. Comparative Plans of Cathedrals. (No scale.)

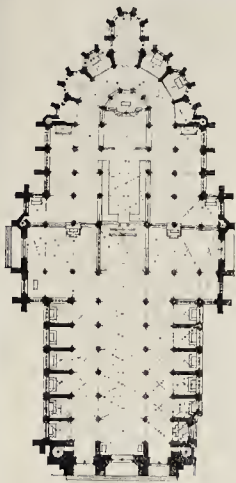
* * * As these plans were supplied to us by Professor Aitchison on various scales, and mostly without any scale appended, we have thought it best to ignore scale in this instance and reduce them to the same size, as the real object is not the comparison of size but the comparison of plan and of the proportion of piers to spaces.

something under 200 ft. long, 80 ft. span, and 100 ft. high, and these are mostly the warm rooms or Tepidaria, but these are not to be compared to the great cathedrals in length, which are often nearly 500 ft., nor in height can they compare with Amiens or Beauvais, which are respectively 140 and 153 ft. high; and though the cathedrals with the widest spans such as Seville, Milan, Florence, and Bologna, do not exceed about 56 ft. span, yet most of them are supported on comparatively small isolated piers. As far as towers are concerned, the Romans, we believe, never reached half the height of the Mediaeval spires. Those of Antwerp and Chartres are said to be 403 ft., Salisbury 404, that of the Cathedral of Vienna 441, Strasbourg 468 high, and these are by no means plain, sloping, corbelled out spires; for the spire at Strasbourg, at least, was of lace work. To revert to certain peculiarities, I may point to the five Absidiolles in the apse of Vezelay, which is so characteristic a feature in most of the French cathedrals; those at Vezelay were probably put in when the choir was rebuilt after the fire, 1167, and may be found

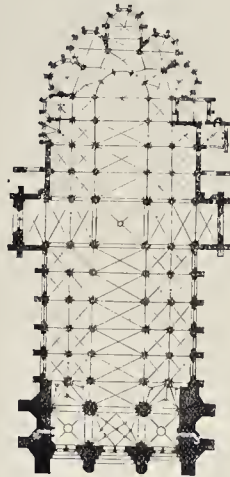
at Westminster Abbey; the fifth one, probably the Lady Chapel, having been removed to make an entrance to Henry VII.'s Chapel, but in most of the principal English cathedrals they do not exist, though there are the early adopted Absidiolles in the east transept of Lincoln, Canterbury, and Gloucester, and in the latter church there are two Absidiolles in the retro-choir. At Notre Dame, Paris there were three, before it was enlarged by taking in the space between the buttresses. There are five in the following cathedrals and churches: Chartres, Soissons, Clermont, Alby, St. Ouen, Narbonne, Limoges, and Tours. There are six besides the Lady Chapel at Amiens, at Contances and at Troyes, and ten at Le Mans.

As regards the east ends of cathedrals in France, they were mostly semi-circular or polygonal, except at Laon, which was possibly built under English influence, and has a square east end, while in England they are mostly square. The Saxons are said to have mostly had square ends to their churches; besides, square ended churches give less trouble in vaulting. When

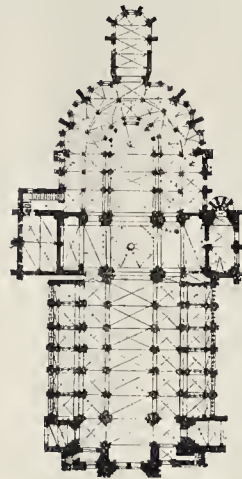
churches became a mere framework for stained glass, a large extra surface for glass was got by keeping the east end square, though at the expense of artistic effect. Probably two things then desired were gained, the certainty of the east window being looked at, and the avoidance of the worshippers turning their backs to the altar; but by doing so, the proper effect of the altar and its ministrants is spoiled, it ought to be well lit by screened side-lights, and stand out light against a mass of shadow, as may be seen at Strasbourg. When Justinian dreamt that the apse of St. Sophia ought to have windows, to say the least he had an unfortunate dream, for nothing destroys the effect so much as having the light right in front of you as you enter. Nothing, in my opinion, has a worse effect than boxing in the choir, it looks like a small building that has fallen into the large one, and merits Charles V.'s disgust at the clergy, for putting a new church into the middle of the mosque at Cordova. At St. Mary-of-the-Blossom at Florence you see the altar as the main feature on entering at the west, with the vast dome as its canopy. The greatest mistake in



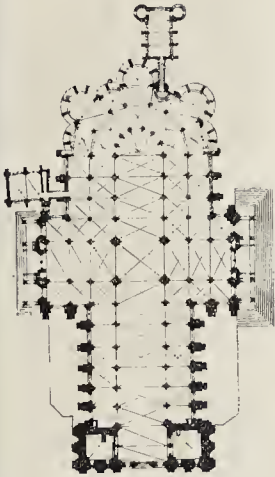
Amiens.



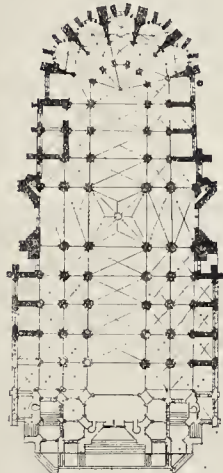
Troyes: 13th Century.



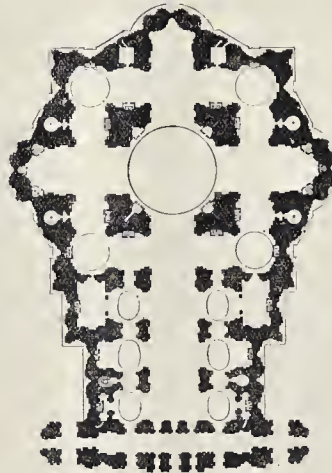
Coutances: 13th Century.



Chartres: 13th Century.



Clermont: 13th-14th Centuries.



St. Peter's, Rome.

Illustrations to Professor Aitchison's fourth Royal Academy Lecture. Comparative Plans of Cathedrals. (No scale.)

cathedrals and large churches is the uniform lighting, which destroys all effect. Certain parts want the most brilliant lighting attainable, but these light spots should be set off by a proper background of gloom. In those buildings especially that are dedicated to emotional use, and where mystery and awe should be awakened, no artistic blunder is so colossal as to sacrifice a grand emotional effect to uniform lighting. As a rule the cathedrals at home and abroad miss the emotional effect of lighting altogether, except at dusk or when there is evening service in the winter, when there are violent transitions from brilliant illumination to the deepest gloom. The finest daylight effect is to be seen at the Pantheon at Rome lit by that single eye, which is quite worth a journey to Rome and back to experience the emotion it causes. Admirable effects are to be seen in cathedrals and churches when it is dark or even dusky, and there are artificial lights. At the Basilica of St. Mary the Greater at Rome one chapel is occasionally illuminated at a night, and you have to pick your way to it through the gloom, lit perhaps here and there by a small dim lamp. The effect of one illuminated chapel amidst "this mighty contiguity of shade" is not only picturesque but wondrous. The only time that Milan Cathedral is impres-

sive is at early service in the winter. The vaults and even the capitals of the vast piers, hidden by rolling wreaths of mist, while dim figures, but partially outlined, are seen hurrying to the chapel, lit, perhaps, but by one lamp, whose light pierces through the darkness. In the old days, the two bronze pulpits stood out blacker than the gloom, and marked out the extent of the enclosed choir, now they are benedized like a French plum-box, and utterly cease to be effective in daylight or at dark. One aim of the late Gothic architects was to make a whole church nothing but a picture-gallery of stained-glass, wonderful as a constructive architectural effort, but mostly destitute of effect, for when the glass painters began to pride themselves on their drawing, you have large Scripture subjects with the principal figures transparent, and generally of poor colour. In the old glass the painter's aim was to get colour and to be careless of form, so he made most of his Scripture subjects to a small scale, but he got glorious and divine colours from the sunshine streaming through the windows. At Chartres you get a heavenly effulgence of resplendent and harmonious colours through the windows, throwing beams of loveliness around, which "dissolve me into ecstasies and bring all

heaven before mine eyes." We can now admirably imitate the bad drawing and miss the divine harmonics of colour! The early Saracen conquerors believed that the Almighty had given David that power over iron that it could be woven like thread in his hands. Stone was like this in the Gothic architects' hands, they knew its powers thoroughly, and could do what was possible with it. I do not think its tensile strength was ever turned to architectural account in Europe until Late Gothic times, when you see vaults springing from pendants, as at Henry VII.'s Chapel, and at St. Ouen, and it was then that the men of genius did those feats with stone which astonish and almost awe us; just as a great composer, who is a great performer as well, throws his rules and canons to the wind, and lets his emotions carry him where they will, so that he may captivate and enchant his audience and carry them to the summit of ecstasy or to the depths of despair. If we want to attain this power we must submit ourselves to the training that the Romanesque and Early Gothic architects went through. There is every reason to believe that all the great building races, Egyptian, Greek, Roman, and Medieval, had some set proportions for their

buildings arranged by some method of triangulation. Cesare Cesariano tells us in his edition of "Vitruvius" of 1521, that the Cathedral of Milan was set out by the German architects on a figure of two equal equilateral triangles put base to base, the apexes of both triangles being on the vertical centre line of the building, and that the east face of the polygonal apse was drawn at right angles to the centre line from this apex, the other apex gives a point a little inside the west wall, the base of the two triangles giving the east walls of the western staircase towers of the transept, and although the plan does not exactly agree with this statement, it may be from bad drawing, bad engraving, or the unequal shrinking of the paper. Cesare also speaks of many more systems of triangulation inside than those I have just spoken of, but it seems to me that the German architects gave him very vague or imperfect information, for he gives the main dimensions of the building in Braccia. There is, though, one triangle in one of the sections that gives us something definite; an equilateral triangle, whose base is the distance between the internal faces of the walls on the pavement line, settles the central vault of the nave, as these lines are tangential to the sides of the pointed arch. Viollet-le-Duc believes that there were some general proportions adopted in cathedrals and other Gothic buildings, but he is not much clearer than Cesariano himself; so I think we may say that, though it is most probable that the Gothic architects had some rule, it has not yet been discovered. We know, however, as regards the insides that one great aim was to strike awe by disproportion, *i.e.*, by making the naves and choirs enormously high in proportion to their widths.

It is most extraordinary what strange views are taken of the importance of certain measurements as compared with others; for instance, as regards width, the span of the widest vault is the most important; and next to that the height of the nave looked at from a constructive and from a certain æsthetic point of view. Even in so common a thing as a bandbook, one might expect that the width of the nave could be taken by a local antiquary, with the help of the verger and a tape, and now, with one of those gas inflated india-rubber balls and some string it is not difficult to get the height of the nave. Even architects mostly decline putting on the general lengths and widths in figures, leave out the scale, and put on the ratio in writing, which is aggravating enough when the scale is in English feet, but when it is in metres it renders the task impossible for the time, *i.e.*, until you get a metre scale. We have to thank M. Gosset for putting a scale to the plates in his monograph on Reims Cathedral.

I append a list of some French cathedrals, with the length, span, height of nave, height of towers, with a note of their transepts and their aisles.

Also a list of some of the English cathedrals, with their areas and the other particulars, as in the French cathedrals. The dimensions are taken partly from Ferguson, and partly from Lord Grimthorpe's book.

[The lists referred to will be given as an appendix at the end of the lectures.]

THE ARCHITECTURAL ASSOCIATION: THE ARCHITECT AND THE PUBLIC.

An ordinary fortnightly meeting of this Association was held on Friday last week, in the Meeting Room of the Royal Institute of British Architects, No. 9, Conduit-street, Mr. Eresford Pitt, President, occupying the chair.

The minutes of the previous meeting having been read and confirmed, the following gentlemen were elected members of the Association:—Messrs. S. E. Barrow, C. B. Cheshire, and T. M. Wilson.

On the motion of Mr. E. Howley Sim, Junior Hon. Sec., a vote of thanks was passed to Mr. Sidney R. J. Smith for recently conducting the members over the National Gallery of British Art, Millbank, and for providing refreshments on the occasion.

Mr. Banister F. Fletcher, Senior Hon. Sec., said that Mr. Wallace Rimington had kindly made arrangements by which members of the Association might be admitted to the exhibition of his drawings at the Fine Art Society's Gallery. Members would be admitted by presentation of their tickets of membership.

The Chairman then called upon Mr. W. H. Bidlake to read the following paper, entitled "The Architect and the Public":—

The public is not inherently or intuitively antagonistic to the architect, nor the architect to the

public. Some assume that this state of hostility does exist. On the contrary, each stands for a mutual help to the other. I must live and he sheltered. This want you will satisfy, and you will make my shelter beautiful for me. For all this I will assist you in turn towards living and being sheltered. What arrangement could be more just? Quite true, but yet the working of the arrangement might undoubtedly be more harmonious. Then comes the question, How? That is the subject for to-night's discussion.

The world is divided by the English schoolboy broadly into two classes: What is good to eat, and what is not.

To the architect society appears in similar fashion divided into two groups—clients and non-clients. The architect has the advantage of the schoolboy; he can regard any member of the public as a potential client—perhaps would be wise to do so—but the small boy cannot regard, in the same way, his rod of chastisement as a potential plum-cake. Literally, too, every taxpayer and ratepayer is a client where state or municipal buildings are concerned. Of course, he will take an interest in the matter, will see, as far as he can, not only that money is wisely expended in a well-constructed and convenient building, but that its architectural beauty shall gratify his citizen pride. In securing economy he will undoubtedly take an interest, beyond that, not the slightest.

The unwelcome fact may be faced at the outset. The British public is profoundly indifferent to architectural matters. Some one perhaps says no. I reply, "Brompton ho!" From this lethargy one will occasionally awake, and with a volume of Ruskin in his hand, vehemently denounce the modern architect and all his works. To me it seems immensely to the credit of architects that in the teeth of this public indifference so much good work is done.

No wonder Seti or Rameses could count upon the production of a hypostyle hall at Thebes, superbly grand. The services of the architect were then regarded as amongst the highest in the State.

Under Pericles every Athenian gloried in each fair jewel of that architectural diadem that crowned the Acropolis.

At Florence, in the days of the Renaissance, the same keen interest in architecture invigorated the air her great builders breathed. It braced them to surpass each other, to surpass themselves, to rear works that should be the subject of public praise, even of public gratitude. And of the many great men of that period who practised Architecture some have achieved immortal fame.

When a people is deeply touched in its heart and emotions, especially when it has been emancipated from some yoke and is intoxicated by the spirit of freedom and hope, then is there an outburst of music and song, and exquisite and grand creations of Art.

Such was the case amongst the Athenians after the overthrow of the Persians at Marathon and Salamis, and such, when at the Renaissance, men threw off the superstition and tyranny of the Church which had held them in moral and intellectual slavery.

A certain degree of wealth ungrudgingly spent is necessary before the enthusiasm of a people can express itself in grand architecture. But easy commercial prosperity makes men content with the uneventful commonplace present; it does not set them longing or idealising. Physical luxury and social position is what they ask, and that they may be left alone to make money. Life runs smoothly, and surface currents do not disturb deeper emotions. The arts, however, minister to the pleasures of life amongst those who are cultivated to feel their influence, and so, even in easy commercial days like these, they may not only flourish, but progress in a steady, quiet fashion, provided that public apathy be replaced by a keen appreciation. For no lovely flower blooms in the garden of neglect.

An architecturally appreciative public would stimulate the architect to produce his best. He would produce better work than then he could do in an indifferent world. All his faculties would be awakened. The prospect of public commendation would stimulate him to create something worthy of public praise. But, gently! He will need more than that. Public praise is very well, but what if it be the applause of ignorance. Public appreciation, to have any worth and to be capable of influencing the best men, must be critical, and founded on knowledge and good taste. Else will it only be despised.

This leads us to consider a second unwelcome fact. The British public is profoundly ignorant in architectural matters. How could it be other-

wise? Indifference breeds ignorance, and ignorance indifference.

People for the most part do not even know what architecture consists in. Some seem to regard as the application of archeology to modern building, a view which has been fostered by architects themselves. There are some clerics, for instance, who have studied Park "A.B.C. of Gothic Architecture," or have mastered the terms in a glossary, whose lecturing on correctness of style the architect—much more trying than modest ignorance. As we may, no doubt, recall one or more amateur architects whom a little knowledge has made extremely dogmatic.

The popular idea of architecture is that of ornamenting buildings. Here is a barn or factory. Ooly cover it with sufficient ornament and it will become architectural. The ornament may be inappropriate and misplaced, it matters not. Before it was a plain, ugly building, now it is a beautiful one; it is a work of architecture. Such a view might be pardoned in an uneducated man, but it is the view of many an otherwise well-educated man. It is notorious that men of taste who can appreciate good music and painting, and literature, fail in understanding the excellences of good architecture.

If a building is treated in simple broad masses it is called plain and ugly—that is, unornamented. The grandeur of breadth and mass is the thing that the public will admire, unless it is that equally fine quality of reticence. No doubt there is a winning grace in modesty, theoretical; but the Englishman likes to see a man push himself to the front, and he likes to see a self-assertive building, too. He calls it a "hard structure."

This popular architectural taste is especially to be deplored, because it is answerable for the production of an ostentatious class of building which is vulgarising whole districts. And we must suppose that there are architects as insensible to their clients to modesty and refinement in design or else that they are content to sacrifice whatever principles they may have to captivate the popular taste.

Another popular fallacy is that the planning of buildings and the designing of them are two separate processes, and, further, that a building may be designed on paper. So it may be by the experienced man who is reading the perspective value into every part of his drawing. But the paper and T-square designing is, I fancy, one of the chief causes of architectural failure. The right treatment of building material is a matter about which the public has no ideas at all—fact, does not even know that there may be right and a wrong way of using material, still less that this is an important factor in judging the excellence of a building.

The effect of this widespread ignorance is not only that architects are deprived of the stimulus of cultivated public opinion and approbation, but the public itself is a loser. For not being able to criticise its architects intelligently, and being perhaps, conscious of the fact, it is at their mercy—and the tender mercies of an architect may be very cruel. Having revived Greek, Mediaeval, Gothic, or some other more or less unsuitable style, the architect will tell his client what is the present fashion, and what is the proper thing to have, and the client, with British long suffering will pay heavily for being made miserable and uncomfortable until his lease or his life runs out.

But why should this public ignorance of architecture surprise us? From our youth up we have been taught music, and have studied English literature. We have also been taught English history—as being for the most part a series of sanguinary conflicts between England and France, with occasional civil wars at home; but no one has instructed us how to read for ourselves the history of our forefathers written in the stones of our village church. Is it not astonishing that the study of English architecture is not part of a school, or at least college curriculum? What better method could there be of teaching a boy to observe accurately, and reason from his facts. Even in the schools of art throughout the kingdom, we may find, perhaps, building construction taught, but the study of architectural history and design is conspicuous by its absence.

A man ought to be considered as lacking in the cultivation of an English gentleman if he did not possess more or less knowledge of English architecture at least.

Can this be remedied? If architects who have presumably studied the subject exerted themselves to further its claims by bringing it before public notice, by assisting in the appointment of architectural professorships and lecturers

ships, and the foundation of architectural scholarships, and by exciting an interest in their own neighbourhood in architecture, much might be done towards securing public recognition of the claims of architectural study. This, of course, would not necessarily mean a purification of architectural taste, but it would assuredly tend in that direction. It is vastly more important than that our streets, wherein we walk every day, should be adorned with beautiful buildings, than that we should be able to listen to grand music for a few hours in the winter season. Yet we think much more of our concerts than of our street fronts.

One of the most important departments of municipal government nowadays is that which deals with the erection of new buildings. Never by any chance is an architect, whose experience might be invaluable to his town, found to offer his services on its Council. No; architects neglect their opportunities of advancing their art, and instructing public taste, and stand by and whimper.

Indifferent as the average Englishman may seem towards architecture, he is not so any longer when his interest has been excited. He really wishes to know what is good and what to admire, and if he is authoritatively told to do so he will admire it. But he must be taken in hand first; he will not take the initiative, and it is the architect from whom he has a right to expect this leading.

He is for the most part unimaginative and commercial. He worships a fact, especially if that fact is a bargain sealed to his own advantage. So when he builds he likes to see his money's worth. Refinement of proportion is a quality which eludes him. Ornament is tangible. Let him have plenty of it, and full flavoured, and he will be content; he will even praise his architect. But if beauty of proportion and grouping, breadth of mass, and contrast of light and shade, elegance, and all those other evidences of refined thought were pointed out to him, he is so insensible but that he would learn to admire them. But who will point them out to him? Not architects; they are too busy with their private practice.

If this be the attitude of the public towards architecture, how does it regard the individual architect? Frankly, it cannot see the reason for his existence. It does not regard him as the practical man—that term refers to the builder. It is a luxury, and an expensive one, and his services may be dispensed with, especially in these days of municipal and rural inspection, when one can rely on the "authority" for seeing that our drains are right and walls dry.

People are quite ignorant of the *modus operandi* of designing and erecting a building. They think that when an architect has made a plan and designed an elevation, and obtained a builder's estimate, he has practically finished his work. They have no idea of the immense amount of detail work necessary, of the varied knowledge required, of the responsibility, anxiety, and labour entailed.

It comes as a surprise to most clients who have had no previous experience of building to see the number of drawings required, and to find the architect actually giving his attention to the most minute details.

If this knowledge were generally diffused it would save much misunderstanding. "Well," says a client, "I really had no idea you architects had to do so much work for your money. Why, I should not think the 5 per cent. pays, does it?" And you answer, "Well, perhaps not."

As it is, however, 5 per cent. commission is usually considered a high rate, and architects are frequently asked to take less. Not a few do so rather than lose work, even though they are men of established practice, and it becomes a difficult matter to obtain more than 5 per cent., even for the most elaborate church fittings or church decoration.

If a building is to be erected for a religious or charitable purpose, the architect is often asked to forego part of his commission on those grounds, and if he demurs he is reminded that a subscription towards the organ would be very acceptable. Perhaps it is desirable to have an imposing ceremony of foundation-stone laying because that stimulates the subscriptions, and the architect is asked to present a silver trowel. Later on, he may have to present a silver key for the opening ceremony. As a result, the architect whose practice lies not amongst the commercial, but amongst religious and charitable bodies, is subjected to a perpetual fine, while at the same time the work probably requires a larger amount of attention.

Not infrequently a committee will act with contemptible shabbiness towards its architect. In fact, a committee may sometimes prove a very good instance of individual morality and collective immorality. Happily, I have not suffered from these experiences myself, but I know I am fully justified in these remarks from the experiences of others.

On a committee there is usually at least one member who has already had some experience of building, and he assists in formulating the requirements of his colleagues, but the private client is often incapable of forming an idea of his own wants, and the architect has to find them out for him. This sometimes entails a number of alternative sketches, and then, perhaps, the client will decide not to build. He is astonished if his architect then sends in his bill. "Why," says he, "I did not approve of any of the sketches you made me." But he knows at the same time that sometimes his doctor's prescription has done him no good, but he has still paid for it, even if it has done him harm.

Many a patient architect will continue to lay one after another of his most exquisite ideas before unrefined and uneducated wealth to find them brusquely set aside, and will meekly endure with only a sigh for the ill association of beauty and the beast.

Another method by which a client realises his own wants at the expense of the architect is the private competition. This method is becoming alarmingly prevalent owing to the folly of architects in ministering to it. It appears to me a very mean way of getting £100's worth of brains and paying £10 for it. For undoubtedly the client, if he saw good points in the unsuccessful drawings, would not hesitate to incorporate them in his building. I wonder if painters will in time be asked to compete for painting portraits.

Public competitions, on the other hand, provided that a professional assessor is appointed, seem right and desirable. But the offer of a first premium is a delusion and a snare. Why, it always merges in the commission. The architect competes under the tacit understanding that if placed first by the assessor he will be employed to erect the building. It would not pay him to do the immense amount of work necessary in a competition for the paltry and wholly inadequate amount of the first premium. The competition drawings will not serve as the working drawings. All the work must be done over again and it is right that the architect should receive some compensation for his preliminary labours. There are others, however, to whom these labours have been just as great and who have not the consolation of carrying out the work. Should not these, too, receive compensation for their work in all cases wherein they have been personally invited to compete, and would it not be far more satisfactory to divide the amount offered in premiums, including, of course, the first premium in equal honorariums to all those who had been invited to compete, than the present system of prizes?

Further, would it not be to the interest of all, to limit the number of competitors in any competition and so avoid the enormous expenditure of labour and bad language which the Exeter Church Competition must have entailed. It is practically impossible for an assessor to select the best out of four hundred drawings unless one chance to be of conspicuous merit. No competition should have more than twenty competitors, and these should be taken in the order of their application or by some system of ballot. Those of them, however, who had been invited would, of course, receive precedence.

In the case of one of the competitors submitting a design of great excellence, but at the same time omitting to fulfil one or other of the conditions, it seems wrong towards the public and posterity that they should be deprived of a great or beautiful building on trivial or ephemeral grounds. The right course seems to be undoubtedly to erect such a building, but part of the commission payable to its architect might be deducted and paid over as compensation to the first of those competitors who had observed the conditions. In any case the latter should receive a substantial compensation, and any course of procedure which might be adopted by the committee in such a contingency should be clearly made known to the competitors from the first.

Now, while the public generally knows little of the extent and character of the architect's work, the attitude of the public towards the architect himself, I believe, one of distrust. This is the underlying sentiment, the fundamental note, engendered both by prejudice, hearsay, and experience. We may be inclined to deny this, we

certainly should wish to be able to do so. But is it not true? If it is true, what are the causes? There may be many, but I believe there are two chief ones, the distrust of the architect as included in the general distrust of the term "artistic," and the particular distrust of him on financial grounds. As a red rag to the Britisher is the very word "artistic," except as restricted to washed out colours and painted drain umbrella stands, to which his wife and daughters, instigated by the various ladies' journals, have accustomed him. To him it means feckless, want of common sense, the sacrifice of comfort to architecture, an unnecessary outlay of money without any compensating gain. It means a complex system of gables and gutters which are always needing repair. Sham half-timber work which warps off in the sun, small windows with a transome at the eye line, leaded glass so arranged that it distorts the outlook, angle nooks with very uncomfortable straight backed seats. Ask the Britisher himself, and he will say that if he has to go to an architect at all he will go to a practical one, and not one of those "artistic chaps."

Now, architects have to blame themselves for this conception of the artistic. The Britisher has shrewd common sense, and his idea of a home is comfort; further, he has an idea that every building should be made as serviceable as possible for its purpose. He does not think it proper to make a building dark in order that its exterior should be in the style of Medieval Gothic.

I am aware of the extreme excellence of much modern domestic work, and how possible these examples prove it to be to combine the greatest comfort with the artistic in its best and highest sense, but we must remember that the public judges from the rank and file of buildings and the rank and file of architects.

Undoubtedly most architects set themselves sincerely to interpret their client's wishes, but there are others—a minority—who seek their own reputation at their client's expense, practically compelling him against his will to accept a certain design or certain features of that design.

Now, if a private client consults an architect, and has definite wishes, it is the duty of the architect to respect those wishes if he feels they are wise and reasonable. If not, it is equally his duty to persuade his client against them, to, so to speak, save him from himself. This is especially the case in an uneducated man, or one who is possessed of some fid of which he will probably tire. If the architect acquiesces without protest, his client will turn upon him afterwards, and say: "It is true I wanted such and such, but I did not know much about the business, and I certainly did not foresee the effect of it. I came to consult you as a specialist, and I expected you to advise me. I was quite open to argument."

If he cannot persuade his client, then he must carry out his wishes, and make the best of the circumstances, for it seems only reasonable that if a man is going to pay for the work he should have it to suit him.

With public work the case is different. The committee stands for the public, and the individual opinion of any member ought not to override that of the architect, who, presumably, better understands the subject. The architect, it appears, convinced of the rightness of his view, should then maintain his position, not dogmatically defending it so much as winning his opponents to his own side by persuasion. The fact is, both a client and a committee will allow themselves to be persuaded by their architect if they put confidence in him.

A further question remains to be considered, one of the greatest importance—the public distrust of the architect on financial grounds.

It is often said that if you go to an architect to build you a house you never know when the expense will end.

The client lays his wants before his architect, and tells him how much he is prepared to spend. Usually the sum is quite inadequate. Of course the architect tells him so? Not at all. He tells him that it will need economy, and implies that the design which he submits, and which meets his client's approval, can be carried out for the sum named. All goes well until the builders' tenders are opened, and then comes the disillusionment of the client. The lowest tender is half as much again as the sum to be spent. The architect anticipated as much, but he trusted to his power to surmount the difficulty when the time came. This misleading of a client as to the cost is of most frequent occurrence. How much more

confidence a client would have in his architect one would think if the latter told him at once that it would be impossible to erect the building for the sum named. Not at all; he would doubt the architect's judgment, and say that Mr. So-and-So had built a house of similar size for less money, and eventually he would consult another architect, who was willing to mislead him. Every architect knows that if he is thus frank and straightforward with his client he runs the risk of losing him. Notwithstanding this, it is better, even as a matter of policy, and certainly as a matter of professional morality, to let the client know the worst. For you will in time obtain the rare distinction of being regarded as an architect whose estimate can be trusted, and that means in time a practice based on the most solid foundation.

A similar difficulty occurs in competitions. A fixed sum is stated, and competitors must design a building which can be carried out for that sum. Each competitor must give an estimate of cost. Some of them conscientiously endeavour to carry out the instructions in the spirit as well as in the letter. They have to somewhat cripple their design in consequence. Others make elaborate drawings of an equally elaborate building, and give every accommodation that could be desired. They arrive at the probable cost by dividing the sum allowed by the cubical contents of their building, and then, having found a constant—42d. a foot, perhaps—they multiply this by the cubical contents and find to their satisfaction that it works out at exactly the sum they have to spend. This operation, if judiciously described in the report, is sufficient to throw the committee off its guard, and has even misled the professional assessor. In due time the builders' tenders are opened, and then comes this disillusionment of the committee, and the suppressed growls of the fellow competitors.

But if the public distrust the architect on account of the unreliability of his first estimate, how much is that distrust deepened when the bill of extras is presented.

Here, again, the architect has himself to blame. He cannot, perhaps, prevent extras altogether, but he can do much to spare his client from the extreme annoyance of an unexpectedly heavy bill.

The two most fertile sources of extras are the absence of a thorough thinking and working out of the scheme before the quantities are taken out, and the subsequent alterations made by the client himself. Every building ought to be worked out in half-inch detail, and an exact specification written by the architect himself, and not by the quantity surveyor, and then, and not before, the quantities should be taken out. And if a client is inclined to order extras he should be kept informed by the architect of how the bill is mounting up, and he will not then be taken by surprise at the total.

All this takes much trouble, and a client in his hurry to commence work grudges the time spent in making details. Besides, the work may fall through, and then a large proportion of the work will have been done in vain, although the architect will certainly be entitled to claim payment for it.

Notwithstanding these drawbacks, the reputation of being able to build without extras is so unique and so priceless to the architect that it is worth some trouble to win. It will increase his practice more than any misleading shifts, or engaging to do work for less than 5 per cent.

There remains but one more subject for consideration. The public has heard from time to time some talk of illicit commissions associated with the practice of architecture. There have even lately been discussions on the subject in the Press. There may, of course, be no truth in it but the public is naturally suspicious.

Now, while it cannot be doubted that the majority of architects, as upright and honourable men, would not stoop to receive indirect commissions, yet it is an equally undoubted fact that there are some who do. It is useless to disguise the fact, as it is too well known. The opportunity of increasing his income by the acceptance of those commissions is no temptation to the well-established architect. But all architects are not well-established; some have a struggle to make a living, and others are just starting in practice and have not thoroughly grasped the moral question involved. Very severe blame, therefore, rests with those manufacturers and others who offer these temptations, and it is the duty of every honourable architect to endeavour to attach a public stigma to the name of any such firm. In fact, a black list ought to be kept by each local association, and the members of that

association should undertake to boycott all manufacturers and tradesmen whose names appear on such a list.

But it is not from tradesmen only that architects sometimes receive indirect payments. It is a practice far too prevalent for architects to take a share in the quantity surveyor's fees. It is not, indeed, to the credit of either architects or surveyors that the practice should exist at all. The architect employs a surveyor to take out quantities, and for this the surveyor charges certain fees, of which he pays the architect a certain proportion. What for? If the architect has properly worked out his plans and written his specification, both of which are supposed to be included in his own fees, it gives him no extra trouble to employ a quantity surveyor. The payment is as much an illicit commission as if it were paid by a tradesman, although a specious defence is sometimes advanced by those who receive it on the score of custom. It is not that the surveyor is paid less for his work; the extra charge comes indirectly out of the client's pocket.

It is the architect, as the client's agent, and not the client himself, who employs the surveyor, and the latter is, therefore, largely dependent on the architect for his work. The same may be said of the builder, as it is usually the architect who invites him to tender. The client meantime, who is entirely ignorant of the preliminary methods of procedure in building a house, is very existence of the quantity surveyor, and as the latter is paid, not by the client, but by the builder, there is no very evident way by which a client should get to know of his existence, or that he had been indirectly paying him through the builder. Still less that he had even been paying the architect in turn through the quantity surveyor. The relationship of architect, quantity surveyor, and builder is a closed ring, and the client remains outside.

Now, while I would most carefully guard myself from implying the slightest motive of dishonourable practice in thus keeping the client ignorant, I do say that the present system of an architect, practically on his own initiative, employing a surveyor, and the latter receiving payment directly from the builder, so that the amount of that payment is hidden in the builder's charges, is one which might readily lend itself to the practice of dishonesty and fraud. I do not say that the fraud exists, but that when the means for it exist without the likelihood of discovery, there is a probability amounting to certainty that some one will sooner or later be found to avail himself of them.

The wise architect will explain everything to his client in the fullest detail at the very first. He will explain the functions of the surveyor, and mention the name of the one whom he proposes to ask. He will state his charges. He will also explain that if the building is not proceeded with the surveyor will none the less be entitled to his charges in full. And he will also consult his client as to the builders who should be asked to tender. And I think it would be wise if he arranged that the surveyor should be paid by his client direct. It may come to the same thing in the end, but in an evil world one must consider appearances.

It is only by the utmost frankness on the part of the architect, combined with loyalty and justice towards client and builder alike, and associated with the most assiduous care in sparing his client unexpected or excessive expense, that that distrust to which I have referred, and which undoubtedly does exist, can be removed. That is a consummation devoutly to be wished. It devolves upon each architect individually to assist in its realisation.

Mr. Osborne Smith, in proposing a vote of thanks, said he had a recollection of a previous paper which Mr. Bidlake had read to members of the Association, and the pleasure which he derived from listening to his previous address was equalled on this occasion. Mr. Bidlake had referred to certain defects, which he, the speaker, had been conscious of in the course of his practice and which he thought ought to be called attention to. He had been extremely interested in all that Mr. Bidlake had said, and he was prepared to endorse most of it. As to the difficulty that the average client had in realising the vast amount of thought that was required in the preparation of drawings, he took every opportunity to show clients how much work was required in the erection of a building. In his opinion every architect ought to do the same, so that clients might see the difference between the erection of a dwelling house, for instance, under the super-

vision of an architect, and in its erection by speculative builder. He was very much surprised to hear Mr. Bidlake's remarks as to irregular financial relations between some architects and quantity surveyors. He did not think the remarks applied to first-rate or even second-rate surveyors in London, and it certainly was not the custom for quantity surveyors to pay architects any portion of what they received for taking out quantities; and as to the trouble an architect was put to in giving the surveyor the necessary information, if he prepared the drawings and specifications properly the necessity did not arise, as many architects did, and to a small scale and with no specifications whatever, except a few notes, it was obviously necessary that the quantity surveyor would require information on innumerable points; and this would take up the architect's time, which ought to be spent in the client's interest in preparing the specifications and the details. He had heard some of the best builders complain a good deal about that; they also said that the sections were too frequently taken through the worst place—through the line of least resistance. He believed that in too many instances architects did not take the trouble to properly prepare working drawings for the use of the workmen. Many draughtsmen were now in the habit of making details without a plan, relying only on an elevation and section, which was an unintelligible method. A remedy for all that was entirely in the hands of architects, who must develop their ideas before the work was proceeded with, and they must not neglect their drawings in the hope that the work would come right in the end; no work ever did come satisfactorily unless proper control and attention was given to it. He particularly agreed with the lecturer that it was very necessary to be candid with the client and to make everything clear to him—to tell him, for instance, that the quantities were being taken out by a surveyor who would have to be paid. Many difficulties, and a lot of distrust, would disappear if the client were taken into the architect's confidence. It was quite evident that the distrust did exist, and candour would not only remove this, but it would have the effect of getting the client to think and act with his architect.

Mr. Banister F. Fletcher, in seconding the vote of thanks, said that he did not agree with the lecturer on many points. One of the lecturer's theories was that of the indifference of the British public to architecture—a theory which was very well worn—and in this connexion I had quoted the "Brompton Boilers." But who else could be expected from the public in regard to architecture? Architecture was one of the most difficult, and should be one of the most progressive arts, or sciences, or professions; it was a subject that required the lifetime of any man to learn the elements of, and yet there were people always crying out about the ignorance of the public in regard to it. Let them think of the ignorance of architects as to architecture, to see how much room there was for improvement there. In his opinion, the public were just as ignorant of medicine, law, or military tactics, or any specialised subject, as they were about architecture, and not much else could be expected. It was probably because the public did not know a little about architecture, and because of the connexion of antiquaries with architecture, that there had been brought about so many revivals. If there had been no Parker and no Parsons to reach him, some progress might have been made by architects in evolving new forms and new ideas. As it was, such progress had been prevented by those who had merely a smattering of architectural knowledge. The same might almost be said of proportion; architects knew very little about it, and really they could not teach it. They could not tell people the right proportion of anything; the knowledge of it was innate, and the capability of producing proportion in any building was not to be taught by rule of thumb; it was simply found by experience and by the natural artistic qualifications which a man, assisted by long study, possessed. So that if they had to wait until the public valued buildings for the sake of their proportions, they would have to wait a very long time. Then, again, as to the right use of material, it seemed to him that that was the very last thing the public would learn about. A knowledge of construction, on which material was most firmly based, was a very difficult and laborious study, and architects could not expect the public who had had no training in a knowledge of building materials, to estimate the value of a building by the knowledge of whether the materials composing it were used in the right way.

or not. It was an instance of a little knowledge being a dangerous thing with the public in regard to architecture. It was his firm conviction that the more the public knew up to a certain point about architecture, the worse it was for architecture, because the public only looked at the form produced, and they often unconsciously admired very bad forms. The five per cent. system seemed to have taken a firm hold of the public because they liked to understand what they were going to pay, and they would never care to be told that the sum depended upon the amount of work the architect did. Then as to extras, it was almost impossible to huild without them, unless they had no end of provisions. As to the question of commission, that hardly came within the scope of the paper. The latter part of Mr. Bidlake's paper should have been entitled, "Architects and themselves." He agreed with the previous speaker, in thinking that what Mr. Bidlake had referred to in this connexion did not exist in London to anything like the extent that it appeared to do in the provinces.

Mr. Hampden W. Pratt, in supporting the vote of thanks, said he was not aware before that the practice of sharing commissions with surveyors was so general on the part of architects as Mr. Bidlake seemed to make out. In fact, he took leave to doubt whether it was so at all, at any rate, in London. It might exist to a very slight extent, and, in any case, he was opposed to it in every shape and form, and he did wish that architects would look at the matter conscientiously and honestly. Architects should not mix themselves up in this way with surveyors or builders, and if five per cent. was not a sufficiently large commission, the client was the man to go to. He, the speaker, had a little quarrel with architects for taking commission in another way, viz., in kind; and that was in compelling the surveyor to prepare the specification. Surely that was sharing the commission! It was putting work on the surveyor which the architect ought to do, and by thus getting some one else to perform it, the architect was getting work done without paying for it. In his opinion the architect should write the specification himself, and it was a very prevalent thing, he believed, for the quantity surveyor to write the specification. He was sorry that Mr. Bidlake had raised the question of commissions because, owing to the publicity which it would receive, it would be quite a revelation to the public of what was supposed to go on between architects, surveyors, and builders, and it would thus receive an importance which it did not deserve. The question might have been more appropriately discussed among architects themselves, but not in public, although generally he was not disposed to hush up matters of this kind. He was glad that Mr. Bidlake had pointed out some of the work which architects had to do, and of which clients had no idea, for he quite agreed that the client had no idea, as a rule, of the amount of work which the architect had to perform. Then another point was as to the question of competitions. Clients had an idea that when an architect had sent in his competition drawings he had prepared drawings which would be useful at subsequent stages of the work, and that those competition drawings could be used as working drawings. That was entirely incorrect, of course, but it was believed in. Then, as to private competition among architects. He believed that it was a fact that in the provinces more than in London, the practice was for clients to call on leading architects to send in designs, and generally, he could see no objection to the practice. Mr. Bidlake had referred to the defects of architects in their practice, and it was to be hoped some of his remarks would be taken to heart. No doubt if architects put a little more business capacity into their professional work and ways it would be of considerable advantage to them and to the client. Unfortunately the public had some ground to mistrust architects in regard to estimates, and architects had themselves to blame for the trouble they got into sometimes for extras. He did not agree with Mr. Fletcher that extras were a necessity. He did not think that there were unavoidable extras, and if an architect carefully worked out his drawings, and thought out his specification, in nineteen cases out of twenty there would be no bill of extras. As to the commission question, he hoped that Mr. Bidlake would be able to modify his remarks as to "closed rings." He never heard of such a thing before, and he really could not believe that such a ring existed, and he was afraid that the idea would give a false impression generally as to the relations of architect, surveyor, and builder. He could not believe that such a thing existed either in London or the provinces,

and at all events he hoped that Mr. Bidlake would believe that it did not exist in London.

Mr. E. W. Mountford, in supporting the vote of thanks to Mr. Bidlake for his interesting paper, said he also regretted that prominence had been given to matters which would have been better discussed in private. At the same time, he was sure that there existed nothing like a "ring" with which architects, surveyors, and builders had anything to do. Of course it was possible for both architects and builders to make arrangements, and for the builder by that means to make more than a legitimate profit; but it was the object of every honest architect to see that the builder did not make any undue profit. Of course the builder was entitled to a fair profit, and the ideas of builders differed as to what that profit should be. Some were content with ten per cent., while others thought it should be fifteen per cent.; in his opinion anything from ten to fifteen per cent. was a fair profit for a builder. Anything above that the architect ought to be able to prevent; and if he did so, as all good architects would, there was an end to the "ring" at once. As to commissions, he agreed with Mr. Pratt that no respectable architects did accept them. That commissions were offered by tradesmen and accepted by architects he was afraid was true to some extent—he said "afraid" because in his younger days he had commissions offered him. He was glad to say that they had not been offered to him in recent years, because he made it a rule wherever a commission was offered to terminate his relations with the firms who offered it. He did not think that the practice existed to anything like the extent that Mr. Bidlake imagined, though he believed that clients generally credited architects with accepting commissions. Either in the provinces or London he did not think that it had been formerly; and if any one would provide him with particulars he would undertake to bring the case before the Institute. They had heard a good deal that evening about the number of drawings architects had to make in designing a building. It was absolutely true that if the quantity surveyor was to do his work properly, architects must provide him with full details before the work commenced. Personally he did not attach the same importance to specifications as some people did. If they made full details of every part of the building, with plenty of notes upon drawings, any other specification would be unnecessary. He could not agree with Mr. Pratt that the architect was dividing the commission with the surveyor, by allowing the surveyor to prepare the specification. In actual work they would find that the specification was thought very little of as a rule, because the builder invariably took the quantities as the standard of what he was to supply. It was the quantities which would bind him and not the specification. It was true that the public were quite ignorant of architecture, but what else could be expected? It was also a fact that clients had very little idea of the large number of drawings that architects had to prepare in designing a building, and as to the general public regarding the architect as an artist, they never regarded him in that light at all.

Mr. H. B. Creswell said that Mr. Bidlake's remarks seemed to suggest that his bitter experience of the public arose from expecting too much from them. If he had taken a less exacting and a wider view of the public, he would have seen that the public was deserving of something besides condemnation.

The Chairman, in putting the vote of thanks to the meeting, said they would have to recognise the fact which would clear the ground of a large amount of difficulty—a fact which architects were very loth to recognise—viz., that they were never paid for design. The client never contemplated for a single moment that they would put sufficient time into their work to evolve a thoroughly satisfactory artistic design. The client did not understand that such a practice was implied, and he certainly would be very much surprised if they asked him to pay them for the time they spent on the design; and they had really to regard themselves as men of business—surveyors pure and simple—to prepare the necessary plans for the execution of the building. Under these circumstances the temptation to a young architect to fing artistic impulse and sincerity to the winds, and to merely prepare his plans, was very great indeed, and only those men who understood the unfortunate fact that an architect was a self-denying artistic philanthropist were able to do good work at all. Did the client care how many times the architect rubbed out his detail? What did he

care for their particular intention of satisfying some definite ideal that they had been cultivating with care, and study, and practice? It did not matter to the client, though it mattered to them a very great deal; for they would sacrifice anything and everything—they would make the whole set of drawings over again if need be, in order to get me pet idea of their own (an idea that they had developed and cultivated and were enthusiastic about) embodied in stone and mortar; at the expense of some one else. A client did not know anything about that desire, and under those circumstances he did not think that they ought to ask him to pay for the exercise of their ideas. Had it ever occurred to them that they ought to pay a client for the opportunity he gave them of erecting in a public position their dreams of Gothic architecture, for instance? Recently he, the speaker, had overheard in a train a conversation upon architects and architecture between two electrical engineers. One of them summed up the whole question in this way, viz., "The worst of architects is that they will expect other people to carry out their own ideas!" Clients paid architects to carry out their ideas, and architects took the opportunity of carrying out their own. This was a fact that architects were conscious of and would have to plead guilty to. There was no doubt that the amount of work demanded of the architect had increased very largely, and that the amount of work for the ordinary 5 per cent. remuneration was of a very onerous character, and in his opinion the architect has just cause for complaint. Since the practice of architects refraining from taking out the quantities, which had been established in London principally at the instigation of the Institute of Architects, and which could not be called an unreasonable practice in view of the relationship existing between the architect and the builder, the architect had been deprived of a very definite source of profit—a source of profit which, added to whatever profit there might be on the usual 5 per cent., made his practice a little more remunerative than it was at present. He could not help thinking that many of the difficulties under which architects laboured would disappear if the architect was able to take out the quantities as of yore, and as he still did in the provinces. He did not think that the client would run more risk of suffering injustice than he did at present, and the work would not be more expensive to the client, and would be more expeditiously carried out. He advised his hearers to take to heart all that had been said that evening as to slovenliness and uncertainty in drawings. Unless they cultivated the habit of thoroughness in preparing their working drawings, they would never do much good as architects or surveyors, or as artists. They must get to the bottom of their work and thoroughly understand it before they embarked upon an estimate. In preparing the quantities the surveyor was apt to measure very heavily in order to magnify his office—he expanded the bill of quantities into a large number of folios, to do which he measured labours up and he measured labours down, while the architect used to be able to get all that was necessary into a small number of folios. This was an absurd state of things which must sooner or later come to an end, and it seemed to him that the London architect ought to take out his own quantities again. In regard to architects taking commissions from quantity surveyors, he did not know any case that had ever come before him in London, though he had heard of cases in which this was done. The state of things which Mr. Bidlake had described could very well be discussed at a meeting of that kind, so that young architects could understand the view of the practice taken by honourable men. But one fact ought to be remembered in order that the ethics of the matter might be understood. When an architect took a commission from a tradesman when placing an order with him, that architect was prevented from exercising a *bona-fide* judgment on behalf of the client, but when the architect took from the quantity surveyor 3 per cent. or something of that sort, he did not see in what way the client suffered. He did not desire to defend the practice, but he wanted to know where the mischief existed. As to architects taking commissions from tradesmen, a large number of clients—commercial men principally—in London and elsewhere, did not regard it as a moral obliquity, or as in any sense improper; but, whatever they thought, it was wrong, and ought to be discouraged in every way. As to competitions, he thought that the adjudication of competitions as conducted at the present day was mischievous and very unsatisfactory, and that the payment of large fees to the assessors could be avoided. He

did not see why, in a large competition, the decision should not be left to the competitors themselves, who were the best qualified, by their study of the conditions and in preparing their designs, to be adjudicators; but failing that, he suggested that the Institute of Architects should offer, on behalf of the profession, to adjudicate in all competitions without charge, and solely in the interest of the profession. The honour which would fall to the Institute in so acting would soon make itself felt. Mr. Bidlake had given them good advice as to how they could succeed with their clients, viz., to be perfectly reliable in matters of estimate, and that meant that they were to be perfectly frank with themselves. He (the speaker) believed that an architect must succeed who made it his business to please his client and to satisfy him in his reasonable wishes. On the other hand, they must never do anything against their better judgment without protest, and remember not to apply that principle merely to ideal matters. A client was generally able, in the long run, to appreciate the architect's artistic work, and it must not be forgotten that the artistic question was less important to the man who had to live in a house than his own common-sense requirements.

The vote of thanks was then put to the meeting and carried unanimously.

Mr. Bidlake, in reply, said he had no wish to speak disrespectfully of the British public, for he was part of it himself. He rather pitied the public, because they had no architectural leaders. If the public was ignorant it was its misfortune, and not its fault. Mr. Fletcher had said that it was impossible to get the public to appreciate all those subtle questions of proportion, &c., which architects themselves found very difficult to understand. That he allowed, but the question was: Is the present state of knowledge of the British public a fixed quantity? If it were not then there was a possibility of that ignorance being lessened. That was the whole question. Why should not architects set about trying to lessen that ignorance by taking the public more into confidence, and pointing out what buildings were beautiful, and wherein they were beautiful? If the public generally had no power of appreciating or finding out for themselves beautiful proportion, still, if they were taught to believe that a certain building was beautiful and of fine proportions, and they became acquainted with its details, then a standard of taste was set for them; but at present there were many who had no standard of taste, and he thought that architects might do more to help in establishing such. With regard to the question of extras, he still maintained that an architect ought to be able, if he thoroughly worked out his drawings and studied the building in detail before the quantities were taken out, to avoid extras to a very large extent, although perhaps not altogether. He thought that the endeavour to see how a building was working out was to some extent a function of the architect's imagination. An architect ought to be able to picture his building and every part of it while he made the drawings. If he was incapable of doing this until the building was half finished, no doubt he would soon incur extras. As to the relations of quantity surveyor and architect, he adhered to his statement that the sharing of fees was practised possibly to a larger extent than was supposed. He did not mean by the expression "closed ring" to accuse either architects or surveyors of fraud, but he repeated that all the machinery for fraud was there, and it was that which he denounced.

The Chairman announced that the next meeting would be held on March 5, when a paper would be read by Dr. F. S. Granger on "Greek Sculpture and Greek Legend" with lantern illustrations. The meeting then terminated.

THE COX THERMO-ELECTRIC GENERATOR.

An account of this generator appeared in the *Electrical Engineer* of New York about two years ago, and although it attracted a good deal of attention at the time, yet very little further information regarding it has been given to the public. On Friday last week, on the invitation of Mr. Cox, we went down and inspected his laboratory and workshops at St. Albans, and saw his thermopile in all stages of its construction, and a large number of them in operation. Our experience with the Clamond and Noé thermopiles had made us sceptical as to the practical use of this class of apparatus, but what we saw convinced us that this generator is a very great improvement on the older types.

At present the Company confine themselves to

the manufacture of a small generator suitable for a large variety of domestic purposes, and we shall confine ourselves to describing and discussing this apparatus, without following Mr. Cox into his interesting but sanguine speculations as to the future rivalry between his method of generating electricity and the ordinary dynamo and steam-engine method.

The great defect of the ordinary types of thermopiles met with in physical laboratories, is that the junctions oxidise and the cells soon deteriorate. In this thermopile the couples are made by casting, no soldering or brazing being used, and as copper and a graded alloy of antimony and zinc are the two metals, it is claimed that oxidation is completely prevented. The cell is formed by successive rings of these castings completely enclosed in a vitrified cement, which, after baking, is turned into a hard stone cylinder. A metallic annular chamber is cemented to the exterior, and water is kept trickling through this while the cell is in action. A plastic cement is applied to the interior and vitrified, and this is heated by means of a small gas jet, which plays on a series of deflectors, heating them uniformly. The reflected heat keeps the inner side of the cell, and, therefore, one set of junctions hot, the other set is kept cool by the water jacket.

These cells are made with voltages varying from two to ten, and the maximum power given out is about ten watts. They consume from two to four cubic feet of ordinary illuminating gas per hour. They are well finished, being, in appearance, small cylinders with old bronze sides and polished nickel rims. This is a simple and strong piece of mechanism, even a fortnight's immersion in a bucket of water doing it no harm. To start it all that it is necessary to do is to light the gas and to turn on the tap to let the water flow slowly through the jacket; in about ten minutes it attains its maximum activity, and can be left in continuous action for months, as it requires no attention. Short circuiting does it no harm, and in this respect it compares favourably with small accumulators. It is, of course, expensive, as compared with a primary battery, but there can be no question as to its convenience in many cases, provided that its average life is found to be several years.

The New York office of the Commercial Cable Company has operated its entire lines successfully with these generators, and for cable and telephone work it will prove a formidable rival to the motor generator.

The following are the cases where, in our opinion, it can be usefully applied, and for which it is worth considering as an alternative to the ordinary methods: for charging small accumulators, for working fan motors, electric bells in hotels and flats, and for X ray apparatus. The small accumulators, for instance, used for lighting bicycle and carriage lamps are ordinarily charged by primary batteries, which require continual attention, and any one who has kept his bicycle accumulator in good order for two or three years by this method will not grudge the expense of one of these generators.

Since writing the above we regret to learn that the laboratory and workshops of this company, containing many hundreds of these generators, were totally destroyed by fire last Tuesday morning. The cause of the fire is unknown. The general contents of the building were insured, but the destruction of all his valuable testing apparatus, and the records of the experiments he has made during the last ten years, must be a heavy blow to Mr. Cox, who has our sincerest sympathy.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

The thirtieth annual general meeting of this Institution was held on the 23rd inst. at the offices, 21, New Bridge-street, E.C., the President-elect, Mr. Thomas Hall, occupying the chair, supported by the retiring President (Mr. R. E. Nightingale), the Treasurer (Mr. E. Brooks), and others.

The annual report stated that the income for the past year consisted of 2137. 3s. in subscriptions, 3007. 17s. in donations, 1407. 5s. in dividends, and 17. 3s. interest on deposit, expended a total of 6557. 8s. The amount expended was 4534. 10s. 5d., which included 3907. paid in pensions, and 107. in temporary relief. One of the widows had re-married, thus resigning her pension. An election was held in December, at which James T. Gough, being the only candidate, was elected. The number of pensioners on the books is twenty. The total number who have been elected is forty-three.

There are three children in the Orphan Working School, per presentation of the Builders' Clerks' Benevolent Institution. The eighteenth annual dinner was held on March 24, 1896, in the King's Hall, Holborn Restaurant, Mr. B. E. Nightingale in the chair. The Committee, in thanking the Chairman for his services, wished to express their great appreciation of his kindness in serving the Institution as President, and for his efforts in promoting its welfare. Mr. Thomas Hall (Messrs. Hall, Beddall, & Co.) had kindly consented to act as Mr. Nightingale's successor in the Presidential chair.

The President-elect (Mr. Hall) moved the adoption of the report, which was seconded by Mr. Nightingale and agreed to.

Mr. E. C. Roe, in proposing a vote of thanks to the outgoing President and other retiring officers, said that all present knew of the great advantage Mr. Nightingale's services had been to them. He had taken much interest in the Institution, and the result was known to all.

Mr. Newling seconded, and the resolution was carried unanimously.

Mr. Nightingale, in acknowledging the vote of thanks, said that the Institution would always have his good wishes.

On the motion of Mr. Oldham, seconded by Mr. Gammon, the officers for the present year were elected.

A vote of thanks, on the motion of Mr. Turpin, seconded by Mr. Brooks, was then passed to the Chairman, who replied, and the proceedings closed.

THE ARCHITECTURAL ASSOCIATION SPRING VISITS:

LONDON COUNTY COUNCIL WORKING-CLASS DWELLINGS, BOUNDARY-STREET.

On Saturday, the 20th inst., the second Spring Visit of the Architectural Association was paid to the L.C.C. Dwellings, Boundary-street, Bethnal Green.

This being the most extensive scheme for housing the working classes yet carried out, the visit was of considerable interest. The area included is about fifteen acres, and it has been entirely cleared with the exception of a Board school and a church. The leading feature of the plan is a circular garden, 270 ft. in diameter, radiating from which are seven streets, 50 ft. wide. In order to save the expense of carting, all the earth removed from foundations has been placed in the garden, forming a mound some 20 ft. high, and crowned with a bandstand.

The blocks of dwellings have been planned so that the front and back face respectively east and west as far as possible, to ensure the largest amount of sunshine; this produces a curious effect, as the buildings in consequence are not at right-angles to the streets, and the method on plan appears to waste a considerable amount of space.

About half the total number of blocks have now been erected, and it is possible to judge of the general effect, which is decidedly spacious, and a considerable amount of money has been spent in ornamentation, bay windows, turrets, gables, and chimneys. The total number of persons displaced by the clearing of the site is 5,719, and the total number provided for is 4,700. The accommodation for these is divided into one, two, three, or four room tenements, chiefly either two or three rooms, in which families of four or six persons can be accommodated. Each tenement is a self-contained dwelling, approached from a wide passage or staircase, at least 3 ft. 6 in. in width. The living rooms have a floor measurement of 144 ft. super, clear of all obstructions; the bedrooms about 6 ft. super. The floors have a height of 8 ft. 6 in. in the clear; a small scullery is entered from the living room, and the larger tenements have a water-closet provided, with a lobby; the smaller ones are approached from the staircase. No provision is made for dust, which is to be carried away in iron pails by the parochial authorities. The blocks have been planned to ensure in every case through ventilation, that is, every tenement has either two outer walls or one outer wall and one wall on passage opening directly to the outer air. The blocks are five stories in height, and are separated from the next block by a distance equal to the height. The construction is as far as possible of fire-resisting materials, the floors being composed of breeze concrete and iron joists, and the partitions of breeze concrete, and all stairs and landings are of concrete. It is proposed to construct the roofs of future blocks also with breeze concrete, on which will be nailed the battens and slates—an interesting experiment. The whole of

the walls to ground floors are faced with salt-glazed bricks, the greater original expense being compensated by the durability, and the upper parts chiefly in red bricks with stone dressings. Workshops for cabinetmakers and other trades have been erected at the back of the main blocks, and a public laundry has been provided, this having been found more economical than supplying a separate copper to each tenement.

The total estimated cost of the scheme is 300,000*l.*, and it is calculated that this will be extinguished by means of a sinking fund at the end of fifty-four years. The average rent per room per week is 2s. 6d.

The party was conducted over the building by Mr. Owen Fleming and other members of the Architect's Department of the L.C.C., who kindly gave many interesting particulars as to the various details of the scheme.

ARCHITECTURAL SOCIETIES.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—"An Architectural Student's Rambles between Wakefield, Doncaster, and Selby," was the subject of a paper read by Mr. R. A. Easdale, at a meeting of the Leeds Architectural Society, held on the 15th inst. at the Institute of Science, Art, and Literature. Mr. Easdale said he thought that architectural students did not sufficiently study the places they visited; they preferred rather to obtain a hurried view of many places. Yorkshire was second to no county in England in its wealth of ancient buildings. Its village churches were full of interest. Students, he believed, would find it more profitable to study the designs of parish churches, pulpits, and small villa-residences, than to devote their time sketching cathedrals and town halls, which were structures rarely required. Proceeding to the subject of his paper, Mr. Easdale touched on various specimens of bygone architecture to be found in the neighbourhood of Wakefield, Pontefract, Methley, Kirkthorpe, Oulton, Kippax, and Selby. The lecture was illustrated by a collection of sketches and photographs.

DEVON AND EXETER ARCHITECTURAL SOCIETY.—"Screens: their Symbolism and Treatment," was the subject of a lecture by Mr. G. H. Fellows Pryne to the members of the local branch of the Devon and Exeter Architectural Society, at the Plymouth School of Art, Princess-square, on the 18th inst. After giving a historical sketch of the origin and development of screens, the lecturer explained their symbolical meaning, and commented upon the fact that in English churches the screens were found in nine divisions, each symbolical; while on the Continent they were usually in three divisions. In no country in the world were there so many churches with rood screens as in England, and for beauty of detail and workmanship the English screens were hardly to be surpassed. He dealt at some length with the different methods of treatment adopted in the construction and decoration of screens, and remarked that while in many English churches were found beautiful examples in both wood and stone, the modern metal screens were for the most part a lamentable failure. The lecture was profusely illustrated by views of English and Continental church screens, shown by means of the oxy-hydrogen light. At the close a cordial vote of thanks was, on the invitation of Mr. Shires, seconded by Mr. Bazely, passed to Mr. Pryne for his address.

GLASGOW SCHOOL OF ART.—A lecture on "The Architecture of Asiatic Hellas," one of a series on Greek architecture, was delivered last week by Mr. W. J. Anderson, director of the Architectural Department, to a large audience of students of the Glasgow School of Art. After a brief survey of the geography of the coasts peopled by the expatriated Ionians and Æolians, and the history of Asia Minor in its relation to the arts, the lecturer proceeded to trace the growth of the "Archaic" Greek style in that region, by whose traditions the settlers and their artistic expression were largely moulded. The influence of Phrygia, *i.e.*, in its cult of a great Mother, Cybele, through whom all descent was traced, appeared to have determined that most of the great Ionian temples were dedicated to goddesses, and the Ionic style as a whole represents what may be called the feminine side of Greek art. In the severe Doric and the lighter Ionic styles, they had the happiest symbol of the two great elements of the Greek race, whose rivalry made the history of Greece, and who seemed to have been complementary one to the other. The plan of the *templem in antis* was foreshadowed in the

megaron of the palaces of Troy and Tiryns, and before 550 B.C. its peripheral form was settled and its structural evolution complete, the talents of succeeding architects being directed only to its modification by refinements in detail and sculpture. Examples of the Archaic style were supplied in early votive columns, and among others by the earlier temple of Diana at Ephesus, of which there are fragments in the British Museum; while the great temple of Paul's time, built in the fourth century B.C., was shown as now restored by Dr. A. S. Murray, and the famous sculptured columns and pedestals as they have been arranged under his directions. In conclusion, a series of restorations of another wonder of the ancient world, the Mausoleum of Halicarnassus, was shown by lantern, including that of Professor Cockerell (published in the *Builder* of August 29, 1896), and the more recent one of Mr. J. J. Stevenson, as set forth in our issues for September, 1896, which appeared better to satisfy the requirements of Phiny's description with the actual remains now arranged in the Mausoleum room of the British Museum.

ARCHÆOLOGICAL SOCIETIES.

THE NATIONAL TRUST FOR PLACES OF HISTORIC INTEREST OR NATURAL BEAUTY.—A meeting of the executive Committee of the National Trust was held at No. 1, Great College-street, Westminster, on the 17th inst., Sir Robert Hunter in the chair. It was determined to take steps to initiate a regional survey of the country, and, by means of local correspondents, initiate the compilation of a catalogue of buildings, objects, and places of historic and archaeological interest, with a view to their proper protection and preservation. A report by the Treasurer showed that the work of repairing and making sound the old clergy-house at Alliston (which has recently been acquired by the Trust) had had to be suspended on account of lack of funds; a sum of 200*l.* is still needed to put this interesting edifice into a proper state of repair. It was announced that the purchase of Barras Head, situated opposite Tintagel Castle in Cornwall (which has been recently acquired by the Trust), was now complete. This fine headland, comprising four acres of down, is now, therefore, in the hands of the Trust, the property of the nation for ever. The Secretary was able to report that the circular issued by the Trust, in conjunction with three other societies, suggesting the acquisition by Local Authorities throughout the country of a piece of land or place of historic interest or natural beauty as a "Victoria open space," in commemoration of the Queen's long reign, had aroused wide-spread and sympathetic interest. Finally, the Committee were unanimous in agreeing to resist as strongly as possible the Hastings Harbour District Railway Bill, on the ground of the serious interference, to which it will give rise, with the most charming features of natural beauty in the district.

SOCIETY OF ANTIQUARIES.—At the ordinary meeting of this Society on the 18th inst., Sir Henry Howarth, M.P., V.P., in the chair, Sir A. Wollaston Franks, President, exhibited a beautifully wrought silver-gilt *nef* of Swiss workmanship, of a date *circa* 1520. Sir H. Howarth exhibited a curious contemporary portrait on vellum of George Clifford, Earl of Cumberland, in his capacity as Champion of Queen Elizabeth, an office conferred upon him in 1590. Rev. E. B. Savage communicated a note on some ancient burial customs, in which he suggested an explanation of the existence side by side in barrows of cremated and inhumed remains. The former, he thought, might represent those who had died in troublous times, and whose bodies had been burnt to preserve them from mutilation or indignity. The latter were probably the remains of those who had died in more settled or peaceful times. Mr. G. Grazebrook read a paper on "Medieval Surnames and their Various Spellings."

BRITISH ARCHÆOLOGICAL ASSOCIATION.—The sixth meeting of the session was held at the rooms in Sackville-street, Piccadilly, on Wednesday, February 17th, Mr. C. H. Compton, Vice-President, in the chair. A paper, entitled "London under the Monastic Orders," was read by Miss Edith Bradley, illustrated by maps of the City, indicating in different colours the sites of the many religious houses which existed, both within and without the walls, between the thirteenth and sixteenth centuries. Miss Bradley noticed in detail many of the houses, arranging them in groups under the orders to which they belonged, thus, the Benedictines, the Cistercians,

the Carthusians, the Augustine Canons; and the orders of friars were each in turn described, and the circumstances of the foundations of the several houses were related. The Cistercians apparently possessed but one abbey in London, that of St. Mary Grace's on Tower-hill, founded by Edward III. in 1339. He called it "Eastminster," in contradistinction to Westminster. It was surrendered in 1539, and was valued at 60*l.* 11s. 6d., according to Speed. The site it occupied is now covered with victualling and biscuit bakeries for the Royal Navy. Not a trace or fragment of its walls remains. The paper conveyed a good impression of the power and influence wielded by the religious orders in London, and showed what a large share they must have had in the making of the history of the City in the medieval centuries. In the discussion which ensued, Mr. Blashill, hon. treasurer, spoke of the value of the ordnance maps in identifying the sites of religious houses and in other ways enabling us to illustrate the life of the old city. Mr. Patrick, hon. secretary, pointed out that, although the great fire destroyed the majority of the churches of old London, yet much of the walls must have remained standing, and their foundations, of course, were untouched, and in that connexion it is interesting to know, on the authority of Mr. Geo. H. Birch, that the present church of Christ Church, Newgate-street, is built upon the actual foundation-walls of the eastern portion of the Old Church of the Grey Friars Monastery, the nave of which extended considerably further to the west, covering the site of the present burial-ground.

COMPETITIONS.

BOROUGH OF SUNDERLAND WORKMEN'S DWELLINGS.—We are asked to mention that the designs under mottoes "Esperanza" and "Invicta" have not been returned for want of addresses. Will the authors kindly communicate with the Borough Engineer, Town Hall, Sunderland.

SUTHERLAND INSTITUTE, LONGTON.—A public competition of designs for this Institute has just been decided by Mr. W. Gilbee Scott, as assessor, in favour of Messrs. Wood & Hutchings, of Tunstall and Burslem, whose design, "Knowledge," was placed first, and their design, "Compact," was placed second, thus carrying off the two premiums of 75*l.* and 25*l.* The building will provide a public library, and technical schools of science and art, manual training and cookery. On the 7th of last month, the foundation stone was laid by the Prince of Wales, although the plans at that time had not been adopted. The estimated cost is 8,000*l.*

NORTH BRIDGE-STREET IMPROVEMENT, EDINBURGH.—At a meeting on the 17th inst. of the Lord Provost's Committee of Edinburgh Town Council, the report of a sub-committee on the North Bridge-street reconstruction was considered. The sub-committee recommended that the plans for the reconstruction of the buildings on both sides of the street, submitted by Messrs. Scott & Williamson, architects, whose designs were adjudged first in the competition, should be adopted with such modifications as the Council might think necessary. Failing satisfactory offers from outside parties to undertake the work in whole or in part at their own risk, the sub-committee were of opinion that the reconstruction should be executed by the Corporation itself. The Lord Provost's committee approved of this report, and agreed to ask a remit to instruct the preparation of working plans for the corner blocks meantime, and to obtain estimates. —*Edinburgh Evening Dispatch.*

TECHNICAL COLLEGE, SUNDERLAND.—At a recent meeting of the Sunderland Town Council, the Technical Education Committee reported that as to the competitive designs for the Technical College, the President of the Royal Institute of British Architects had nominated Mr. J. McLean Brydon, of London, as assessor, and the committee recommended his appointment accordingly. On the motion of Mr. W. M. Roche the report was adopted.

POLICE STATION, HALIFAX.—On the 10th inst. the Watch Committee of the Halifax Corporation held a special meeting with regard to plans for the new police station, court-house, &c. After a long discussion it was decided that competitive plans for a new building should be invited, that two premiums of 50*l.* and 25*l.* respectively should be offered, and that the successful plans should be compared as to cost, &c., with the adaptation plans submitted by the Borough Engineer (Mr. E. R. S. Escott), and if favourable that the premiated competitive plans should be

adopted. There was a divergence of opinion on the Committee as to whether the competition should be limited to the Borough architects, but ultimately it was resolved, by 8 votes to 4, that the competition should be an open one.

ENLARGEMENT OF CORN EXCHANGE, SPALDING.—The Spalding Urban District Council, at a recent special meeting, accepted plans for the enlargement of the Spalding Corn Exchange and Poultry Market, at an estimated cost of £2,000. Eight architects sent in competitive plans, and those of Mr. Corby, architect, of Stamford, were accepted.

THE AUCTIONEERS' INSTITUTE.

A PAPER, affecting the interests of mortgagors and mortgages of real property, buildings, and the appurtenances technically known as "fixtures," was read on Tuesday last at a meeting of the Auctioneers' Institute, 57, Chancery-lane, over which Mr. J. F. Field, President of the Institute, presided. The lecturer, Mr. J. Hepper (Leeds), dealt mainly with claims arising out of mortgages, and the illustrations given chiefly related to woollen and worsted mills, iron and engineering works, warehouses, public-houses, and dwelling-houses in cases in which the lecturer had been engaged as arbitrator or umpire in the North Midlands. The disputes with regard to "fixtures" were few between landlord and tenant or vendor and vendee, but numerous between mortgage and mortgagor, or the trade trustee of the latter, and as the simplest forms of conveyingance gave rise to the widest claims, the lecturer mainly confined his remarks and illustrations to mortgages of that kind. In laying down certain preliminary definitions the term "land" was extended to mean buildings attached thereto, and "fixture" as something which, when unattached, might be a mere "chattel," but when either actually attached by bolt, screw, nail, or other visible method of annexation, or only attached to the realty by a construction of law, must pass "with the land." Of the latter class were locks and keys, windows and doors serving to a house, as well as engines and boilers, shafting and transmitting machinery, and steam, gas, and water pipes, for workshop or factory. Even bellows must pass with the freehold, as well as, under most circumstances, the machine to which it was attached, unless the belt was cut, which the mortgagor had not always the right to do. Some interesting illustrations were given of looms of a light description, such as run in worsted mills, having to be given up to the mortgagee, while heavier looms, such as run in woollen mills, which could be worked without being permanently fixed to the walls or floor, could be removed by the mortgagor or his trustee. One of the most interesting illustrations given was of a travelling overhead railway, such as are common in engineering works, timber and stone yards, and known as a "Goliath." The lecturer was of opinion that all "travellers" driven from pulleys, or revolving square iron rods connected with the motive power, should pass with the freehold, and his practice was to claim them for the mortgagee, but in several cases which he had carried before a legal umpire, the decisions were adverse. Although the beams were fixed to piers of brick, forming part of the walls, firmly into the ground and stayed by props, the "traveller" was held to be a chattel standing in the same relation to the fixed frame, works, and rails, that a railway engine does to the railway. Disputes with regard to fixtures in dwelling houses had been less numerous than in factories, but the practice of an important firm of solicitors was referred to, which claimed for the mortgagee chimney glasses, screws to walls, window cornices of every kind, sideboards screwed to walls, brackets, valances—everything, in fact (except carpets) that was in any way attached to the freehold. The sounder principle appeared to him to be to regard as belonging to the fee whatever was measured or fitted to the walls or made so as to fit into one harmonious design, but to regard as chattels, glasses, grandoles, or other furnishings, put up to harmonise with the furniture of a room, but forming no part of the original structure or decorative design of a house. In hotels and also in shops and warehouses fixed articles might lose their chattel character more readily than in private houses, because there was a closer relation between certain classes of fixed articles and the freehold in the former than in the latter, the use of the article in relation to the purpose to which the owner was applying the premises being the leading principle in deciding whether in one case a fixture was "part of the land," and in another a chattel. In the valuation of fixtures the lecturer

found too much laxity. Valuers should become more accurately acquainted with the law than they often were, in order to guard their clients from the serious difficulties in which he had sometimes known them placed.

A discussion followed the reading of the paper, Dr. Hart proposing a vote of thanks, which was supported by Mr. W. R. Peck (Messrs. Hampton & Sons), Mr. Johnson, Mr. Harper, and the President. All the speakers concurred in setting the highest value on the paper, but Dr. Hart questioned the invariable application of a principle laid down in the paper, that a fixture under a mortgage was constituted by the qualifications, limitations, or definitions in the mortgage deed. He cited a case in which a gas-engine hired from the engineers was adjudged to pass with the freehold in spite of these limitations, because it was held to be sufficiently fixed "to pass with the land." Mr. Peck said the practice in the north was not the practice in London, so far as regarded cornices, gasaliers, and fixtures of that kind. Mr. Hepper replied to the criticisms offered. The vote of thanks was cordially given, and a vote of thanks was accorded, in conclusion, to the President.

Illustrations.

DRAWINGS OF ROUEN AND COUTANCES CATHEDRAL.

THESE two views, which formed a portion of the illustrations to Professor Aitchison's Royal Academy Lectures on Architecture, are from drawings by the late W. W. Deane.

That of Rouen shows the south porch with its sculptured arch springing between two buttresses, of late thirteenth century date, with a clumsy looking doorway of comparatively modern date inserted beneath the medieval arch.

The other drawing illustrates a portion of the nave and the central tower of Coutances, an earlier building than Rouen, and belonging entirely to the first half of the thirteenth century.

The octagon lantern in the centre of the composition was doubtless intended to have a spire, though it may be questioned whether the tower itself would have been improved by that addition, for which it seems too tall and slight in design; though the general effect of the whole cathedral, with its two western spires, might have been better balanced thereby.

CHURCH AT PALLERA, ITALY.

We give this elevation of a recently-erected Italian church as an example of the style of modern Gothic which obtains in Italy at the present time.

Pallera is a small country village two hours' walk from Turin, near Moncalieri. The church, of recent construction, is built in the Piedmontese Gothic style, with red bricks and artificial stone, and ornamented with coloured pottery. The interior is decorated in polychromy, and on its walls Professor Gaidano is painting illustrations of the Stations of the Cross. The altar is made of marble, and the tabernacle will be enriched with precious stones.

Signor C. Gallo is the architect; the illustration is from an elevation specially prepared for us by Signor Frizzoni.

THE ALMHOUSE CHAPEL AT HADLEIGH, SUFFOLK.

DR. WILLIAM PYKENHAM, Archdeacon of Suffolk and Rector of Hadleigh, made his will on the 6th day of April, 1497, and after enumerating certain charges for life, &c., made on his property, he proceeds to enumerate more particularly the items of which it consists and where the lands and tenements were situated, and then names who shall be "seized & possessed in the same Lands and Tenements," amongst whom, "the Parson & Wardens of the Parish of Hadley (Hadleigh) yearly for evermore, shall be ex-officio members, and shall well and completely repair, sustain, and maintain, as well all the said Land & Tenements, as also the xii. Tenements and the Appurtenances lately by me the aforesaid William Pykenham of new edified and builded for xii. Alms Houses, sit and being in the Town of Hadley abovesaid, and lay out the remainder yearly for ever to and among the xxiv. poor persons Almsmen and Women now being & which for the time shall in the xii. Tenements or Alms-houses abovesaid towards the Exhibition. Finding and Sustentation of the same xxiv. poor persons, Men & Women, that is to wit to every of the same poor persons men and

women like much in eschewing of warrants and stryfes."

These almshouses were taken down and rebuilt some few years ago, as they had fallen into a bad state of repair. The chapel was, however, left standing, although it was in a very dilapidated condition, and in 1891 it was repaired as shown in the illustration. A date (1498) was found cut upon one of the roof timbers. It appears also that there was a screen, for there are grooves and mortises in the eastern tie-beam, and the remains of the sill were found under the paving. A brick wall had been built at the west end to support the chapel, the timber framing shows that this was necessary. This was left standing. The roof had to be stripped and the brickwork taken out from between the timbers. Decayed portions were cut away and pieced with new wood, a new oak sill was inserted on the north side, the whole framing strengthened with iron ties, bolts, straps, &c. Some new rafters were inserted to replace decayed old ones, the roof boarded and felted, and the old tiles replaced. The old bricks were carefully replaced and the plaster repaired. The window-frames were quite rotten, so it was necessary to put new ones, and these have been put in regardless of the slope of the old timbers, quite upright. Such new work as was necessary was of the simplest description, and no attempt was made to copy the old work. The pulpit and two old benches, it is believed by the people of Hadleigh, were brought from the church, and it is said that the pulpit is the one used by Dr. Rowland Taylor, the martyr for conscience' sake in the reign of Queen Mary.

Dr. Pykenham also willed that the alms men and women said certain offices every day in the chapel, and that the bell be tolled every forenoon at eight of the clock and in the afternoon at four of the clock by one of the said poor men to call them to the chapel.

Dr. Pykenham also built the Rectory tower and gate, and probably the Archdeacon's house, and the Pykenham Gateway in Northgate-street, Ipswich, where he resided for some years. He was appointed in 1472 to the Rectory of Hadleigh and he died in 1497.

DRAWINGS FOR THE ROYAL ACADEMY.

As before, we shall be glad to take charge of and deliver at the Royal Academy any drawings sent to us in time to be photographed before the day of delivery, with a view to subsequent publication in this journal and in the "Builder Album of Royal Academy architecture."

We cannot accept any drawings sent to this office later than Saturday morning March 27, before 12 noon.

Architects sending drawings are asked to give special attention to the following requirements of the Royal Academy:—

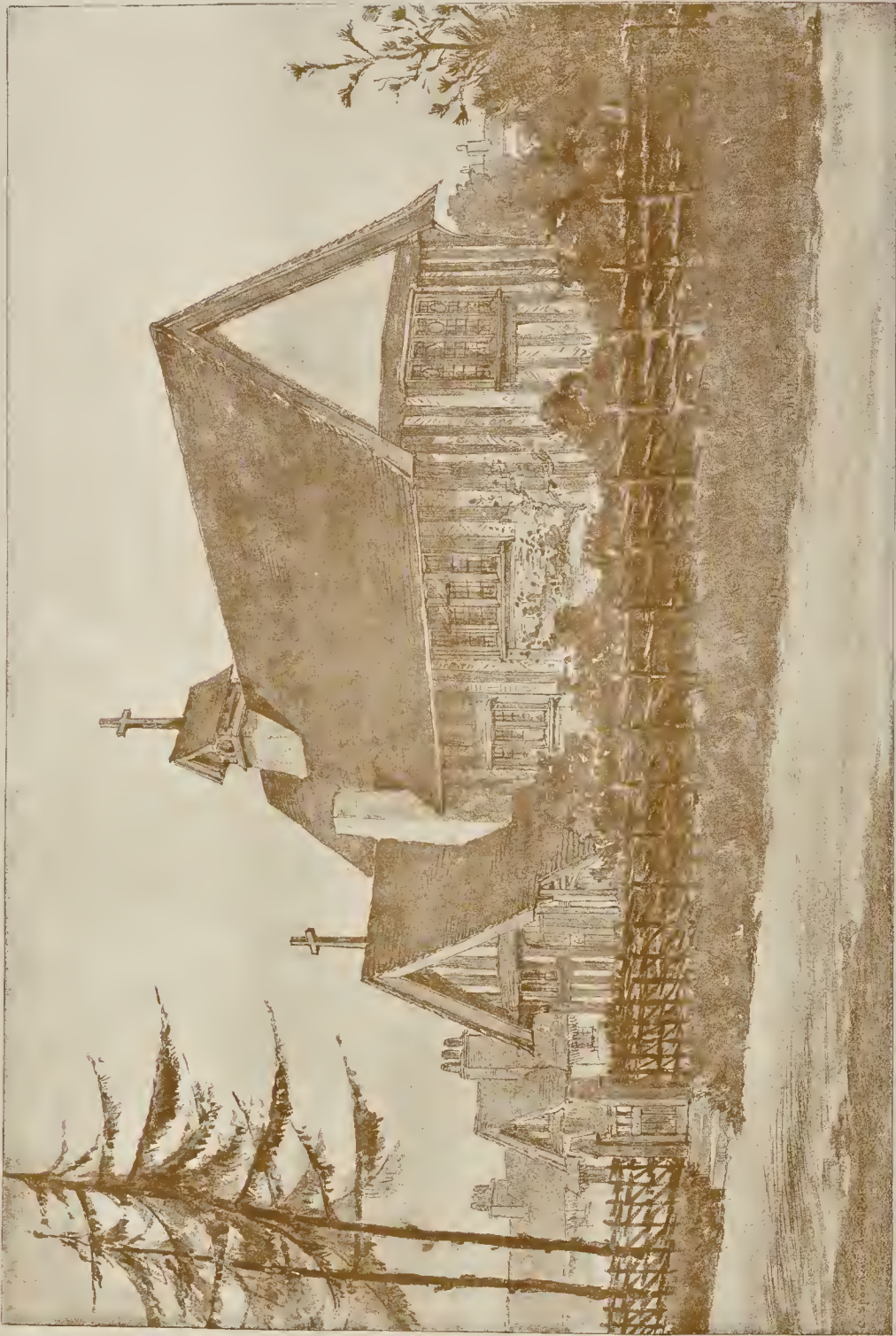
1. All frames must be gilt.
2. Every drawing must have a label on the back, giving legibly the title and the artist's name and address.
3. Every drawing must have a similar label attached to the frame by a card so as to bang over in front.
4. Every drawing must be accompanied by a letter addressed to the Secretary of the Royal Academy, and signed by the artist, containing the artist's name and address, and the title or titles of the drawings sent. If more than one drawing is sent they must be distinguished by numbers, and the corresponding number must be repeated in the labels fixed to each drawing.

N.B.—We cannot undertake to supply or affix labels when omitted by the carelessness of the sender.

ARTISANS', LABOURERS', AND GENERAL DWELLINGS COMPANY.—According to the thirtieth annual report, the work of the year has been the pressing forward of operations at Leigham Court Estate. At Shaftesbury Park, Batterssea, two houses have been repurchased during the year. The estate at Noel-park, Wood Green, is now fully let. At Leigham-court, Streatham, 157 houses and 152 maisonnettes are let and occupied; besides these fifty houses and 154 maisonnettes are structurally complete, and will be ready for occupation during the year. It is intended during 1897 to build additional houses and maisonnettes, so as to finish Ameshury-avenue and the roads on the right of it from Streatham Hill to Mount Nod-road. Nineteen shops are structurally complete, five of which are let and occupied. The Local Authorities have arranged with the railway company for the widening of the bridge over the railway at the southern end of the shops. When this improvement of the road and footway is carried out it is expected that additional shop tenancies will be arranged.

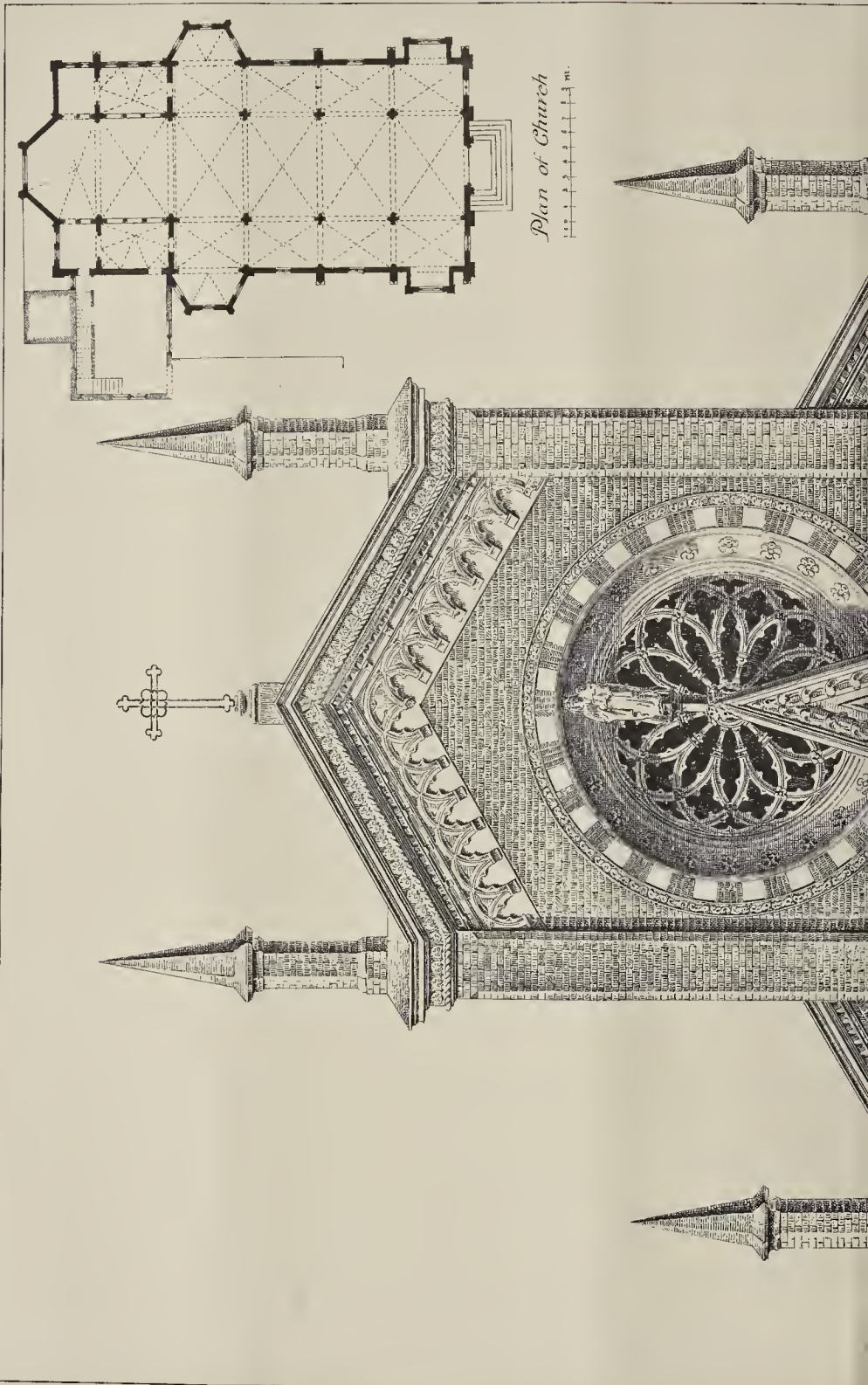


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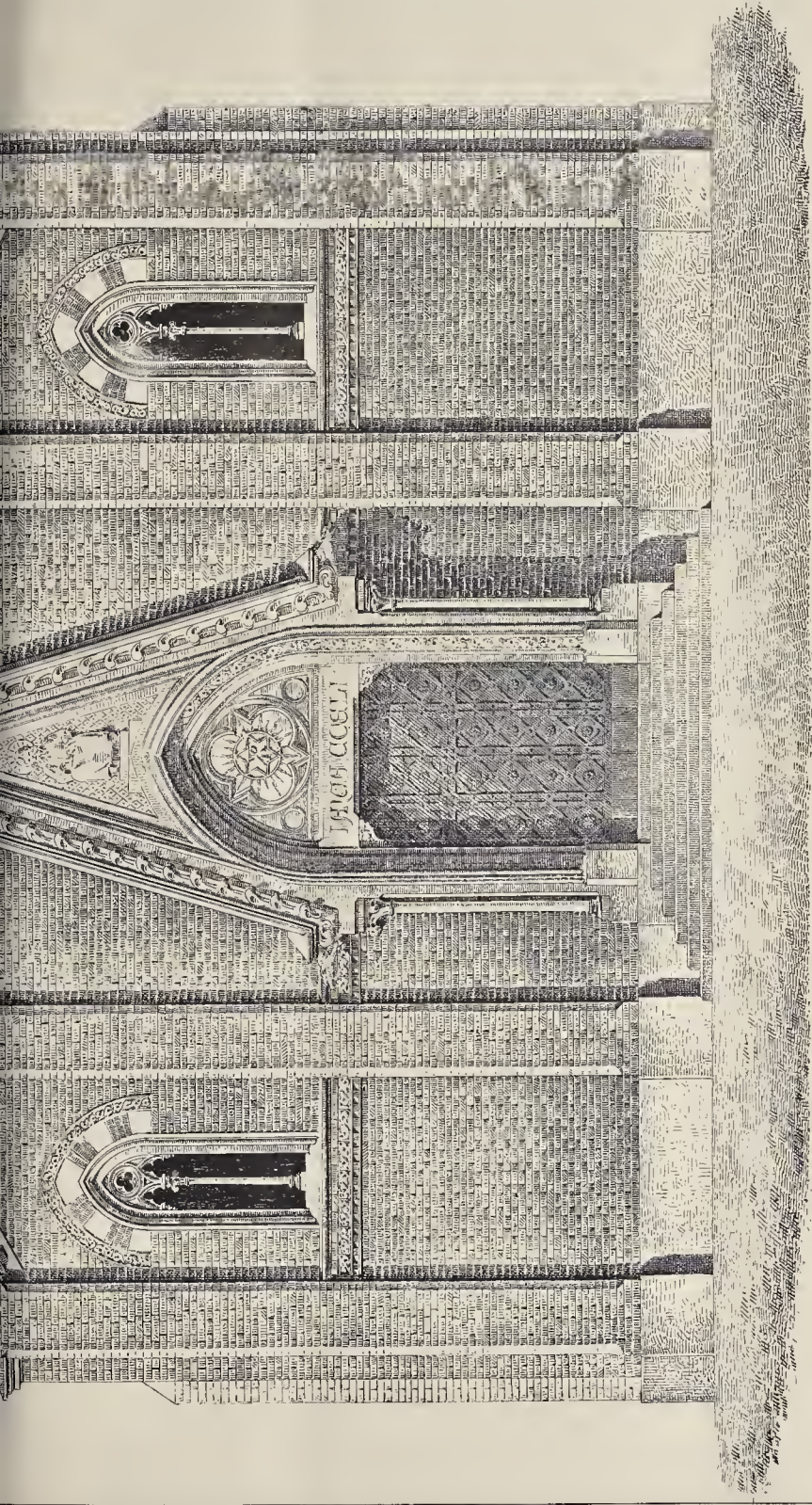


THE BUILDER. FEBRUARY 27, 1897.



Plan of Church

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CHURCH AT PALLERA, ITALY.—SIGNOR G. GALLO, ARCHITECT

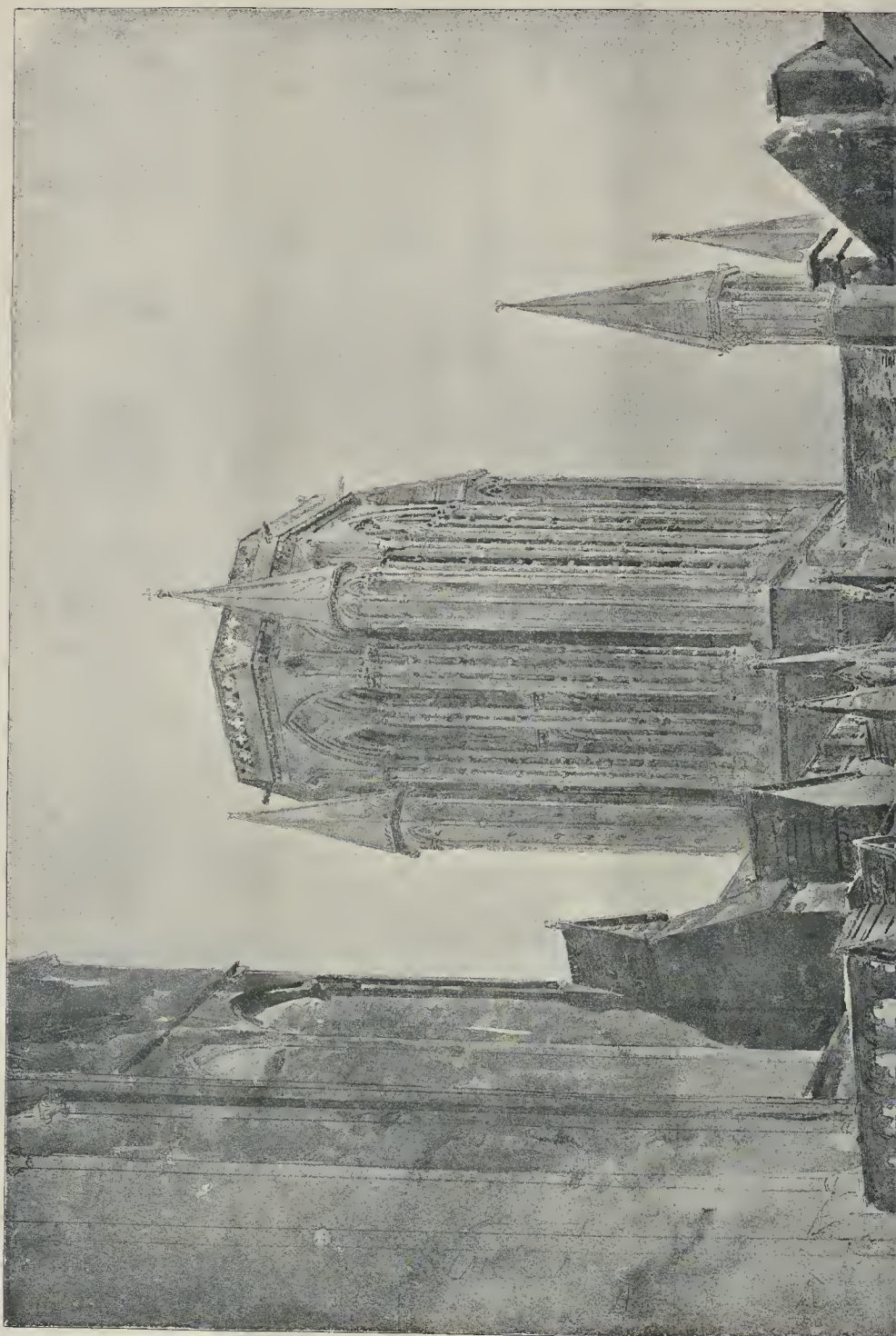
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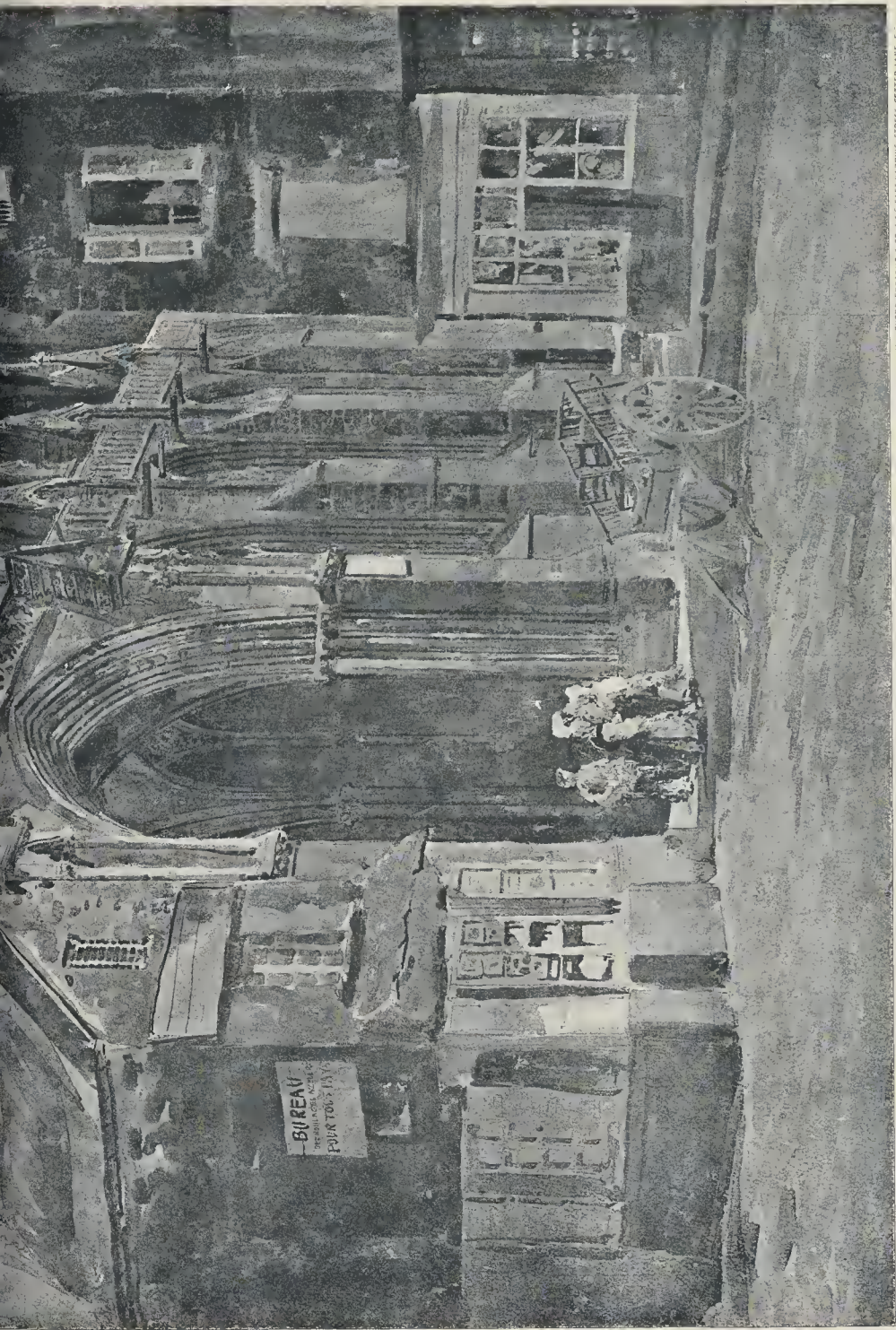
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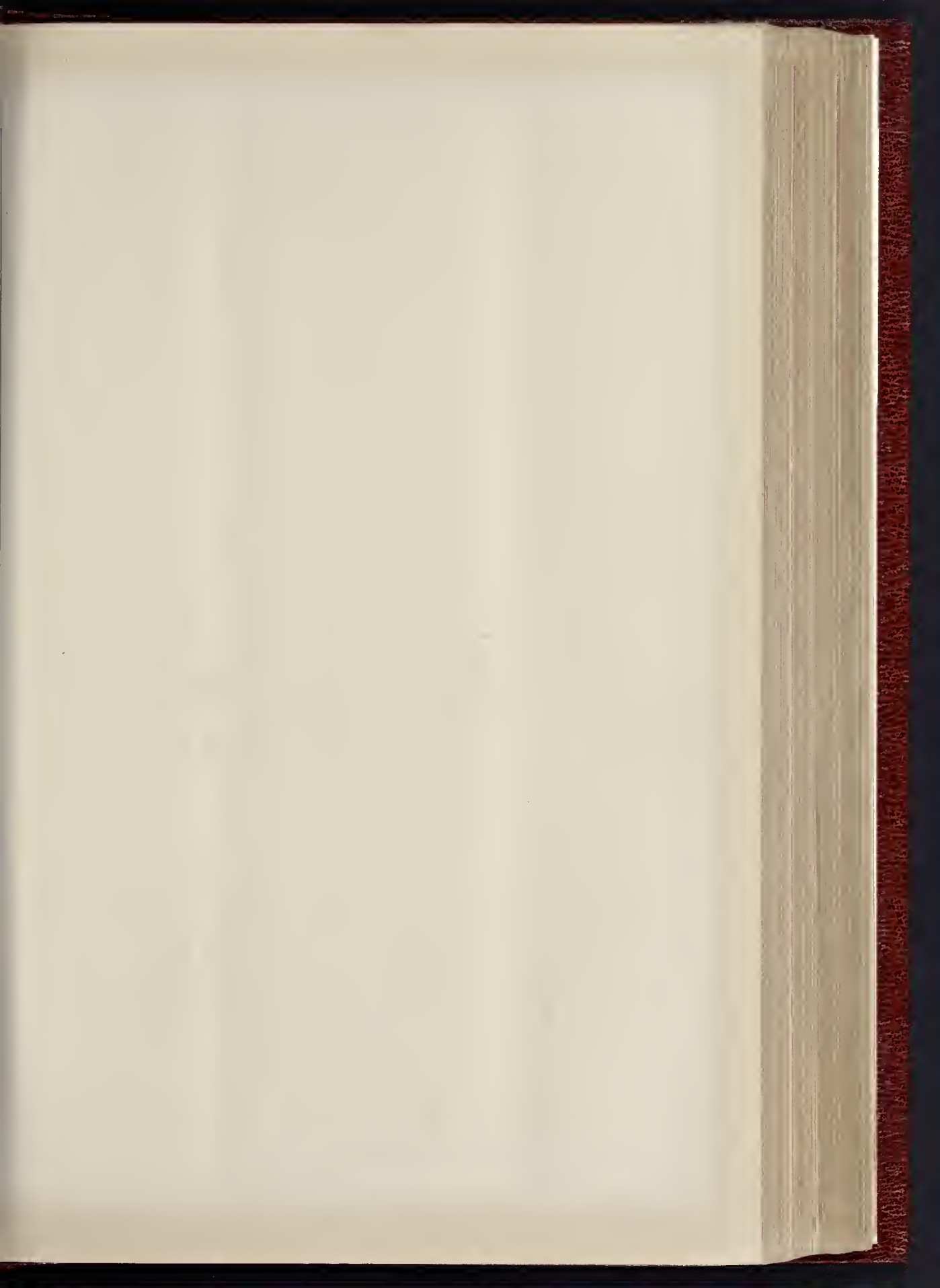




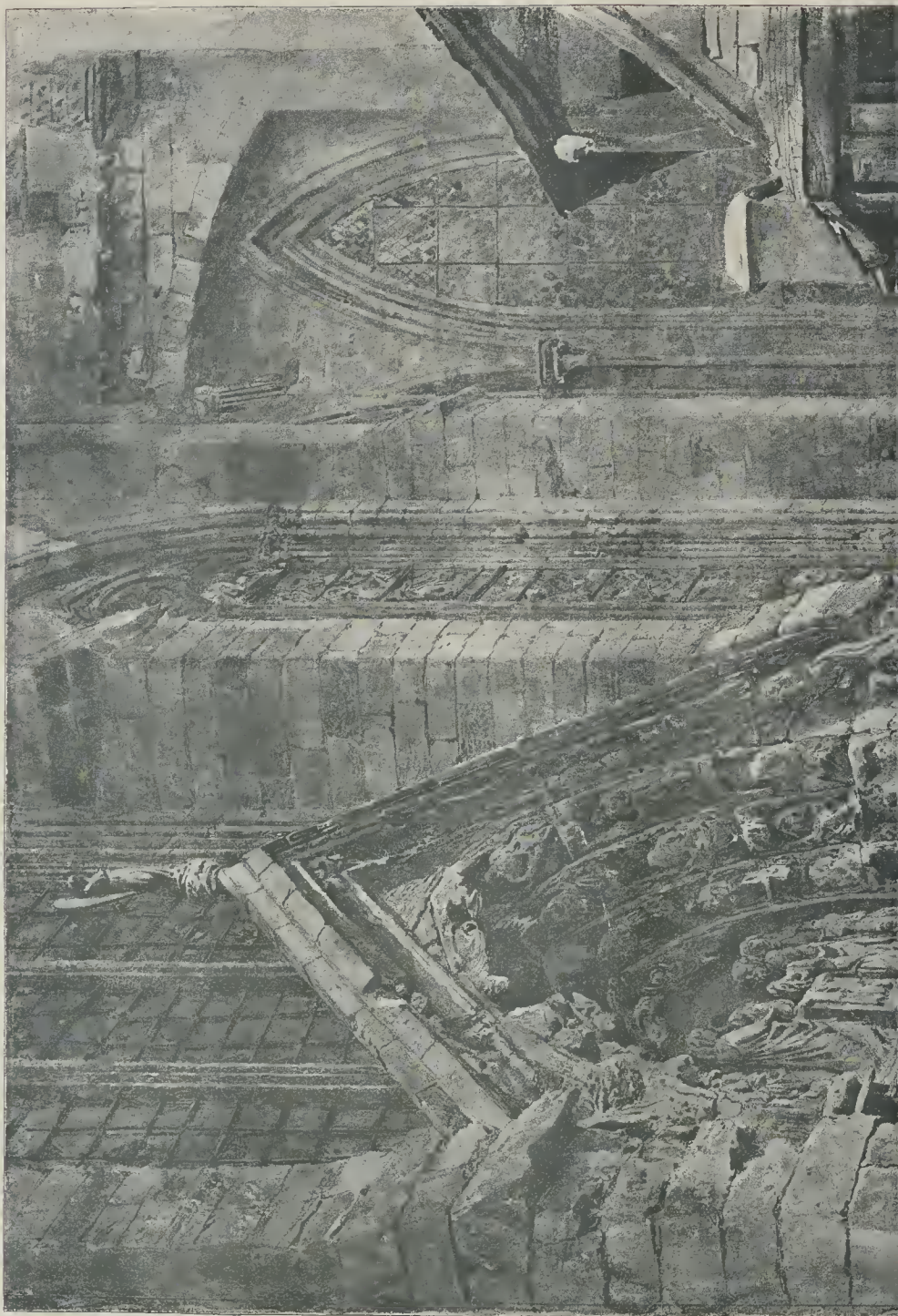
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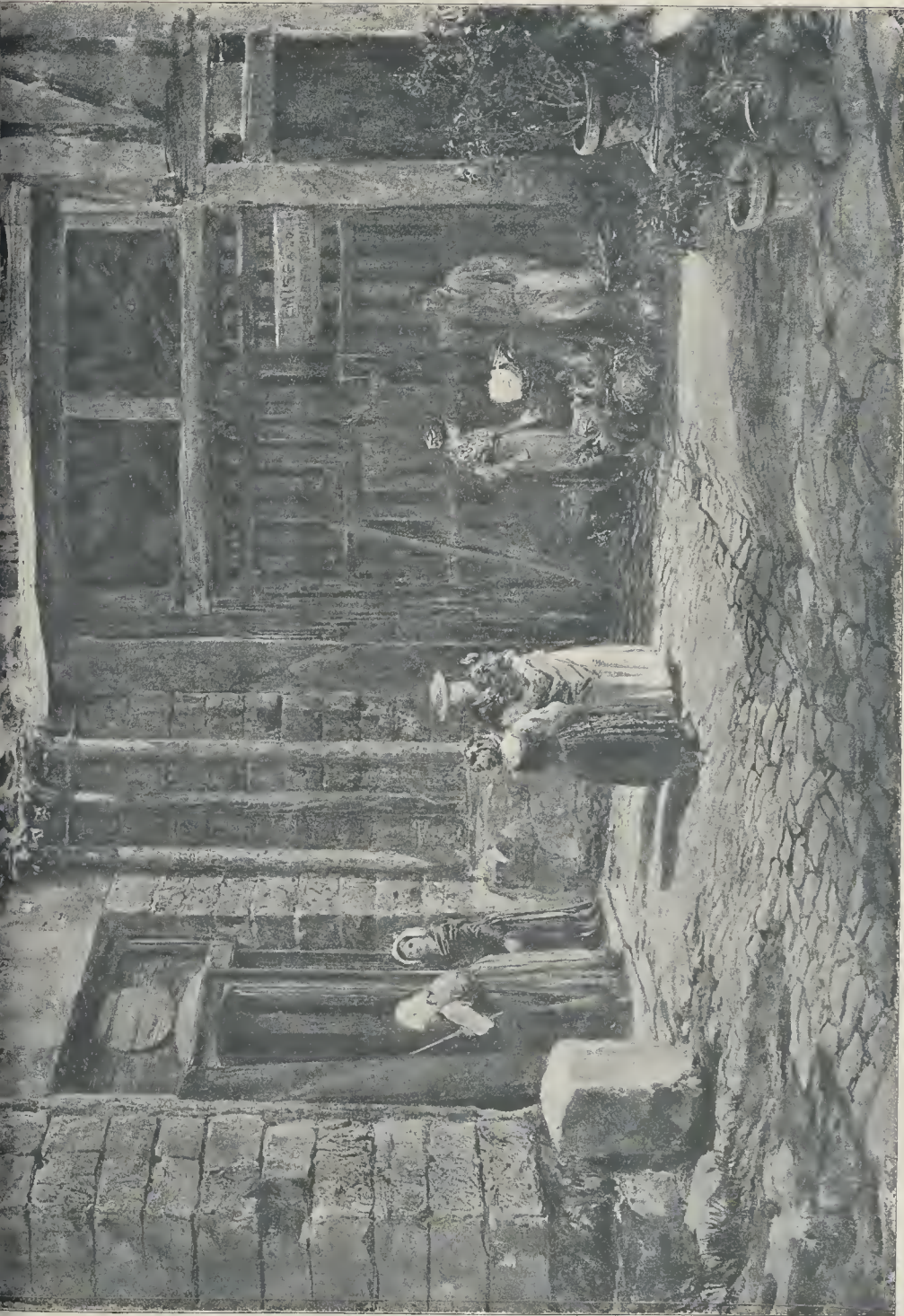
COUTANCES CATHEDRAL: SOUTH SIDE.—FROM A DRAWING BY THE LATE W. W. DEANE

(One of the illustrations to *Professor Aitchison's Royal Academy Lectures.*)



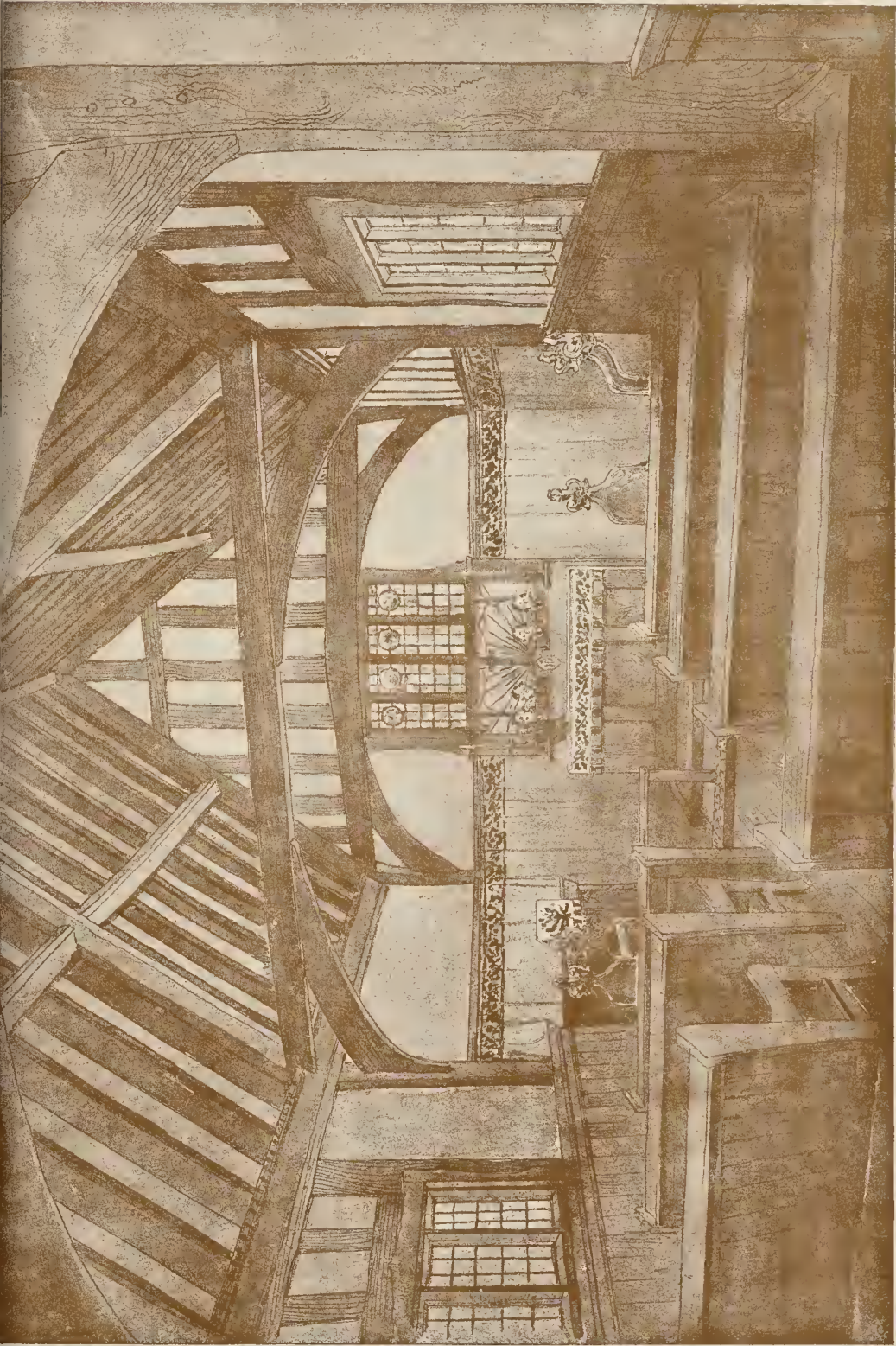
THE BUILDER, FEBRUARY 27, 1897.





THE PHOTOGRAPH BY THE PHOTOGRAPHIC SOCIETY, 185, EAST HARBOUR STREET, NEW YORK, N. Y.

SOUTH DOORWAY, ROUEN CATHEDRAL.—FROM A DRAWING BY THE LATE W. W. DEANE.
(One of the illustrations to Professor Atchison's *Royal Academy Lectures*.)



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INTERIOR.
A ROADSIDE MASS CHAPEL, AT HADLEIGH, SUFFOLK.—MR. C. SPOONER, ARCHITECT

THE ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

A METROPOLITAN District Meeting of the Members of the Association of Municipal and County Engineers was held at the Institution of Civil Engineers, Westminster, on Friday evening, the 19th inst. Mr. F. J. C. May, C.E., Brighton, President, occupied the chair, and there were present, Messrs. W. Weaver, Kensington; J. P. Barber, Islington; W. N. Blair, St. Pancras; P. Dodd, Wandsworth; G. Livingstone, St. George's, Hanover-square; W. Low, Hampstead; C. Mason, St. Martin's-in-the-Fields; J. P. Norrington, Lambeth; N. Scorgie, Rotherhithe; J. A. P. Waddington, Whitechapel; G. R. W. Wheeler, Westminster; T. Cole, Westminster, Secretary, and others.

Mr. G. R. W. Wheeler, of Westminster, was unanimously re-elected honorary Secretary for the Metropolitan District.

Mr. W. Weaver, C.E., Surveyor to the Kensington Vestry, presented a paper on London House Drainage as affected by the draft by-laws framed by the London County Council, December, 1896. Mr. Weaver said that in June, 1893, certain by-laws regulating the construction of water-closets, soil-pipes, &c., were framed by the London County Council under the Public Health (London) Act, 1891, and the Council had recently formulated draft by-laws under Section 202 of the 18th and 19th Vic., cap. 120, dealing with other portions of the drain and adjuncts not dealt with by the by-laws, and partially repealing them. From 1855, for a period of thirty-eight years, the central authority, although possessing the power—which they were repeatedly urged to exercise—neglected to formulate any by-laws for regulating the construction of house-drains, &c., and it was left with the various Local Sanitary Authorities to frame their own regulations under similar powers conferred upon them by Sections 75 and 76 of the Act of 1855. The regulations made by the forty different Local Sanitary Authorities of the metropolis varied more or less in different districts and it had long been felt that comprehensive by-laws should be framed for adjusting the work throughout the metropolis on lines of uniformity. Whether he was correct or not in his interpretation of the law there could be no doubt that the tenor of the statutes indicated the wish of the Legislature that the Local Authority should have full voice in formulating the rules governing the work which it (and not the Central Authority) had to supervise in execution; and in adopting the imperious course which they had followed, virtually ignoring the Local Authorities, the London County Council had treated with contempt the evident intention of the statutes and the feelings of the Local Authorities, the majority of whom he believed were desirous that the by-laws should not be approved until the Local Sanitary Authorities throughout London had had full opportunity of considering the same and formulating amendments thereon. It was essential that the drains and sanitary fittings of a house should be executed in a sound and substantial manner, but in striving for that end the question of cost should be borne in mind. To some persons expense was no object, but to many others increased rent arising out of increased cost of building was a matter of moment, and nothing, therefore, should be made compulsory but what was necessary. Unless the by-laws were made somewhat elastic and a certain amount of latitude as to their enforcement was left to the Local Authority cases of hardship would arise.

In dealing with different classes of buildings and with different soils, variation in the work was desirable and should be permissible; it was not necessary to enforce the same standard of work in a 20l. a year house as in a 1,000l. a year mansion; huge blocks of flats and business premises could hardly be dealt with on the same sanitary lines as small detached or semi-detached cottages. Variation in soil also varied the requirements of the work. Mr. Weaver then proceeded to deal with the various by-laws as drafted by the London County Council. With reference to By-law 2 as to rain-water pipes, he expressed the opinion that it should be amended so as to allow at the discretion of the Local Authority the connexion with rain-water pipes of wastes from baths, lavatories, and sinks other than slop-sinks. Dealing with By-law 3, Mr. Weaver said that if the drain was constructed for the purpose of conveying sewage, it must not be less than 4 in. internal diameter. Four-inch drains might in many cases be laid with advantage, but in every instance the size of the drain should be governed by the area of the building to be drained, and

the quantity of drainage which would have to be conveyed. As regarded fall, the present rules varied considerably in different districts, but he was of opinion that in all new buildings the level of the basement-floor should be such as to permit of a minimum fall of 1 in 48. By-law 4 did not describe what was a suitable trap; must an interceptor be fixed, or would a flap-trap meet the by-law? These points required careful consideration and settlement, especially as By-law 7 insisted on "efficient siphon traps in other positions." Intercepting traps were a modern introduction, and had many drawbacks; they hindered the flow, were a frequent cause of stoppage, and in many cases gave off from themselves more offensive smell than they intercept from the sewer. The complaints as to smells from sewer ventilators in road surfaces increased year by year in proportion to the number of intercepting traps fixed on house drains. He was of opinion that the question of intercepted or non-intercepted drains was the most important point requiring settlement, and the London County Council should face the difficulty, and determine, with the assent of the Local Government Board, whether or not every new or reconstructed drain was to be intercepted in its way to the sewer. If the determination was in the affirmative, then a very large outlay in the future would have to be incurred by the ratepayers for exceptional methods of dealing with the confined sewer air, unless ventilating pipes on the sewer sides of interceptors or other effective methods were adopted. The whole of By-law 6, referring to the ventilation of drains, appeared to be confused and unsatisfactory, and he was of opinion that it should be made clear on the following points:—(a) Size and material for ventilating pipes; (b) whether mica flap inlets may be used; (c) distance from windows and position of ventilating pipe so as to make same "a safe outlet for foul air;" (d) position of air inlet where there is no forecourt or open area. By-law 7, which provided for "no inlets to drains within buildings," could not be observed in many cases, more especially in existing buildings. There were houses without open areas either central or at the rear, and in new buildings used for trade purposes gulleys were frequently required for the basement for washing-down purposes. The Local Authority must be allowed to exercise discretion in enforcing this by-law. In the present By-laws of the London County Council it was imperative as regards new buildings to place the soil-pipe outside such building. The new by-law proposed that a soil-pipe fixed in connexion with a new building or an existing building should, wherever practicable, be placed outside such building. This was an important alteration as regarded new buildings. As to By-law 9, which deals with the ventilation of trap of water-closet, he was of opinion that the requirements as to anti-siphonage pipes were excessive and beyond what was necessary. By-law 13 was very important, as it made the by-laws applicable, so far as practicable, to existing buildings. It might in many cases be practicable to apply the by-laws to existing buildings, but only at considerable extra expense, owing to the construction of the existing premises. A person reconstructing a drain would be forced, irrespective of cost, to carry the drain, if practicable, outside the building, and other instances would occur where this by-law, if rigidly enforced, would press with great severity on property-owners. He pointed out that the following subjects were not dealt with by the draft by-laws, viz.:—(a) diminishing or taper pipes; (b) drainage from urinals; (c) removal of old drains, or the filling in of same, and the removal of contaminated adjacent earth; (d) drainage plan to accompany notice of commencement of work. In conclusion, he desired to accentuate the opinion previously expressed that, subject to a general code of by-laws on the subject of drain construction, the matter should be left with the Local Sanitary Authority, who must be allowed discretion in enforcing and interpreting the by-laws. It was a scandal and reproach to local self-government that at the present time any person carrying out drainage work in any part of the metropolis could appeal to the London County Council as to the method of making a joint between pipes, or as to the form of a closet pan; and he had been occasionally amused whilst attending on business at the County Hall, Spring-gardens, by observing persons with closet-pans, patiently waiting their turn to explain the merits of the same to a committee of the Council, who, it must not be forgotten, were not vested with any power of supervising the construction of drains, but had themselves, when executing drain

work in any district of London, to carry out such work under the direction and to the satisfaction of the Local Sanitary Authority of such district.

Mr. W. Nisbet Blair (St. Pancras) said these by-laws were eminently needed in London, and he thought they were all in agreement that there should be a complete code for the whole of London. In addition to the by-laws which they had before them, there were statutory regulations which he had suggested to, and which had been adopted by, his Vestry, to be placed as prefatory clauses to the by-laws. The first addition would be to give the notice required under Section 76 of the Metropolis Management Act. Every builder should be compelled to give seven days' notice, and such notice should be accompanied by a plan of the alterations proposed.

Mr. Low (Hampstead) agreed with Mr. Blair as to the necessity for plans, but he said there was a Bill before the House now—the Sewers and Drainage Bill—by which powers were sought to obtain the deposit of plans with the Sanitary Authority. They ought to avoid the suggestion in the letter of the County Council, that any suggested alterations will be further considered on the occasion of a future revision of the by-laws. That was what they wanted to avoid. They did not want any future revision; otherwise they would never get any finality. They wanted to urge upon the County Council to get the by-laws complete.

Mr. Mason (St. Martin's-in-the-Fields) thought there ought to be some provision made for revising these by-laws every few years.

Mr. T. W. E. Higgins (Chelsea) agreed with Mr. Mason that by-laws required revision every few years. He was of opinion that nothing should be made compulsory unless necessary. The proposal for a 4 in. pipe was with the idea of killing the 6 in. They tried to do it by specifying for the shaft to be the same as the drain, because no man would think of putting a 6 in. or 9 in. pipe up the side of his house.

Mr. J. P. Norrington, Lambeth, said he did not think the letter from the County Council was such as should be sent to the vestries of London. As to the by-laws themselves, notwithstanding the "careful consideration," he was not very much impressed with them. They seemed to be based on the model by-laws of the Local Government Board, and whoever drafted them did not seem to have the practical experience of the construction of drainage which many gentlemen in that room possessed. He thought the result would have been more happy if the County Council had given longer notice of their intention to make the by-laws, and had consulted surveyors of experience on the subject. The regulations of the Fulham Vestry provided for notice being given and plans deposited of drainage work. Reference had been made to clause twelve of the London County Council's Sewerage and Drainage Bill. He had considered that clause, and was advising his vestry that it did not go quite far enough. The clause was intended to provide for the deposit of plans, but he did not know whether it would cover the deposit of plans for the reconstruction of drains. He had always been pressing his vestry for that power, and he was advising his vestry to ask the County Council for it.

On the proposition of Mr. Cooper, Wimbledon, a Committee, consisting of Messrs. W. Weaver, Kensington, J. P. Barber, Islington, C. Mason, St. Martin's-in-the-Fields, G. R. Norrish, St. Saviour's, Southwark, and G. R. W. Wheeler, Westminster, was appointed to consider the by-laws, together with the paper of Mr. Weaver, and reports from other metropolitan surveyors, with power to act for the Association.

Mr. Weaver, in replying to the discussion, expressed the opinion that the surveyors who had to supervise the work, ought to draw up the rules for supervising that work.

On the proposition of Mr. Norrington, seconded by Mr. Low, a hearty vote of thanks was accorded to Mr. Weaver for his paper.

Hard Wood Pavements.

Mr. R. W. Richards, C.E., City Surveyor of Sydney, New South Wales, then read a paper on hard wood pavement in Sydney. He said that as the result of seventeen years' experience, he had come to the conclusion that a carriage-way pavement laid upon a good foundation of concrete with New South Wales' hard woods, with slope or butt joints, with convexity of 1 in 60 or 80, properly cleaned and maintained, was the best and most suitable form of pavement for heavy and continuous traffic; and that the best timbers for such work were tallow wood, blackbutt, blue gum, red gum, and mahogany. These timbers, after having been laid in Sydney

streets, had, upon examination, shown wear at the rate of from $\frac{1}{16}$ to $\frac{1}{8}$ in. per annum, and had not required repairs of any kind whatever. The cost of the first wide-jointed pavement, including all labour, materials, &c., was about 27s. per yard super, while recently pavements with the close joints in Sydney cost 15s. 6d. per yard.

The President, in inviting discussion upon the paper, remarked that it was of very great importance, particularly to metropolitan authorities.

Mr. McBriar, Lincoln, said he would like to have some information as to the comparative slipperiness and noiselessness of these New South Wales hard woods, and also some explanation as to why they had not taken in the English market like karri and jarrah. The convexity of the roads in Sydney was less than the London practice.

Mr. C. Mason, St. Martin-in-the-Fields, said that the greatest difficulty he and other metropolitan surveyors had with Australian hard woods was that their expansion and contraction was an unknown quantity. He had found one sample would expand enormously, another would contract. He could not get from the importers information as to whether the wood was seasoned in the same way as Norwegian and other timbers, and whether it was cut in any particular season of the year. He was very favourable to hard wood, more so than he was twelve months ago.

Mr. Norrington, Lambeth, asked as to the comparative methods of tallow wood, black butt, and ironbar, and said he wished to know whether, if large orders were given for these woods, they were in such abundance that the orders could be satisfied with reasonable rapidity.

Mr. Stainton, New South Wales, expressed the opinion that of all the woods which come from Australia, those of New South Wales were infinitely preferable. Given close-jointed pavements with the woods he had seen they had the most economical and satisfactory wood pavement.

Mr. W. Weaver, Kensington, said his experience of hard wood pavement was not of sufficient duration to lay down any firm conviction upon the matter. He should like to get hold of a good hard wood pavement which would not present the objectionable features apparent in the hard wood pavements in London, and if all Mr. Richards had said as to black butt could be borne out in London, the sooner they laid down trial lengths the better it would be for the metropolis.

Mr. Nisbet Blair, St. Pancras, said he believed that black butt and tallow wood would give them as good a pavement as karri and jarrah. Of course, a comparison of the results in Sydney and in London depended entirely upon the traffic standard in the streets. He doubted very much that the streets in Sydney, where these blocks were laid, had their streets. In Euston-road, for instance, which received the traffic of three London termini—the London and North-Western, the Midland, and the Great Northern—a very large number of omnibuses, approximately 300—buses an hour, brought very severe wearing effect upon these woods. Blocks laid under traffic for three years showed an average annual wear of about $\frac{1}{16}$ of an inch.

Mr. Waddington, Whitechapel, said he visited Sydney nine years ago, and he was very much impressed with the paving of the roads.

The President, in submitting the vote of thanks to the meeting, expressed his personal thanks to Mr. Richards for the paper.

Mr. Richards, in reply, satisfactorily answered the questions put by the members. He remarked that the pavement was as noiseless as asphalt, and that slipperiness was dealt with by free sanding. The traffic in some of the streets of Sydney was very heavy. The woods named had not been pushed on the English market, but could be obtained in large quantities. He affirmed that the hard woods of New South Wales would be found the most economical and satisfactory that could be used for pavements.

The meeting then terminated.

PROPOSED CIRCULAR RAILWAY, ABERDEEN.—The Great North of Scotland Railway Company have given statutory notice to include in their Running Powers to Inverness Bill the proposed circular railway through the suburbs of Aberdeen. The branch—3 miles 1 furlong 156 yards in length will extend from near Kittybrewster Station on the main line to Oldmill Refractory, where it will join the proposed railway to Stone and Echt. The steepest gradient is 1 in 15. There will be a tunnel at Clifton-road, where the excavation will be 52 ft. deep.

THE LONDON COUNTY COUNCIL.

The usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, Sir Arthur Arnold, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend the Battersea Vestry 2,745*l.* for carrying out improvement works at Vicarage-road and York-road, and for making a footpath at Clapham Common; the Shorelitch Vestry 24,800*l.* and 17,000*l.* for electric lighting works; and 18,830*l.* for paving and sewer works; the St. George's (Southwark) Vestry 550*l.* for paving works; and the St. Marylebone Guardians 40,440*l.* for the erection of a new administrative block at the workhouse.

The Works Department Inquiry.—Mr. T. W. Williams asked whether it was true, as reported in the Press, that Mr. Holloway, the late manager of the Works Department, had written offering to give evidence before the Committee of Inquiry on the conditions that his solicitor should be allowed to be present, and that an indemnity was given him against any further proceedings. The public, he thought, would not be satisfied if Mr. Holloway were not called, and he should like to know whether it was possible for the Committee to reconsider their decision not to call him, if it was true they had arrived at such a decision.

The Chairman replied that Mr. Williams had been misinformed as to the reasons why Mr. Holloway had not been called. There had been a good deal of correspondence from which it would be seen that the terms upon which Mr. Holloway was willing to give evidence were that he should be allowed through counsel to cross-examine witnesses on his behalf. The Committee were unable to accede to that request, but they had never objected to Mr. Holloway's solicitor appearing. The Chairman added that the report of the Special Committee would be out within a month.

Buildings of Historic and Architectural Interest.—The General Purposes Committee brought up the following report:—

"The Council on January 21, 1896, passed the following resolution:—'That the following addition be made to the order of reference of the General Purposes Committee:—'To consider and report in the case of the contemplated destruction of any building of historic or architectural interest what course of action the Council should adopt.'"
We now report for the information of the Council the steps we have taken with a view to giving effect to the above-mentioned resolution. In the first place it seemed to us essential that a list, as complete as possible, should be obtained of all buildings of historic or architectural interest in London, and we appointed a Sub-Committee to deal with the matter. With a view to obtaining the necessary particulars for such a list, a communication was addressed to certain institutes and societies, several of which expressed their willingness to assist the Council. Subsequently it was decided that the best means of arriving at a satisfactory and expeditious mode of procedure would be to hold a conference with the various institutes and societies who had been asked to kindly assist the Council in the matter, and, with our concurrence, the Sub-Committee convened a conference, which took place at the County Hall on December 4 last. Representatives from the following societies attended, viz., Architectural Association; British Archaeological Association; City Church Preservation Society; Committee for the Survey and Registration of the Old Memorials of Greater London; Kent Archaeological Society; Kyle Society; London and Middlesex Archaeological Society; London Typographical Society; National Trust for Places of Historic or Natural Beauty; Royal Archaeological Institute; Royal Institute of British Architects; Society of Antiquaries; Society of Arts; Society for the Protection of Ancient Buildings; and Surveyors' Institution. After an interesting discussion, in the course of which the representatives of the various societies expressed their gratification at the Council taking action in the matter, and the hope that the interest shown by the Council would stimulate greater public interest in ancient buildings, Sir Robert Hunter, representing the National Trust for Places of Historic or Natural Beauty, stated that the members of different societies had had a preliminary conference, and were all of opinion that some register or list of buildings, interesting by virtue of their antiquity or architectural beauty and associations, should be compiled. In support of this it was contended that at the present time there was considerable ignorance as to what London possessed in the way of buildings of interest, and that frequently it was only realised that a building was of historic interest when that building was in danger of being removed. The Trinity almshouses were cited as an instance. A list or register would, it was thought, remove in a great measure the risk of losing such buildings. The

Committee for the Survey and Registration of the Old and Interesting Memorials of Greater London having already commenced to prepare such a register, it was thought that good purpose would be served if that Committee were to continue it in connection with the preparation of the register. The resolutions passed at the conference were as follows:—(1) That it is desirable that a register or list be made of buildings of historic or architectural interest in London; and that the register be in such a form as to admit of amplification, both as to buildings and detail of building, according as future information comes to hand. (2) That it is desirable to form a general committee to include representatives of the different societies interested in the matter, and that the Council be requested to appoint representatives on such committee. (3) That the existing Committee for the Survey and Registration of the Old Memorials of Greater London, having already made a register of buildings in the east end of London, be requested to continue its work; and that it is desirable that similar registers be compiled for the rest of London, it being understood that such registers are formed for the use of the London County Council. (4) That the General Purposes Committee be requested to consider the desirability of the register being printed from time to time by the Council with suitable drawings and illustrations. We have since the conference considered the resolutions, and are of opinion that they should be adopted. The preparation and printing from time to time of the register will necessarily involve some expenditure, and when we have further considered the matter in this respect we propose to bring up definite recommendations based on the results of the inquiries which have been suggested. It is the opinion of the Council generally that it is willing and desirous to assist in the collection of particulars for a register of the nature suggested, and we have accordingly given directions for a circular letter to be addressed to members asking them, if they have information or suggestions to offer with regard to any buildings of historic or architectural interest in the districts they respectively represent, to be good enough to forward such information or suggestions to the Clerk of the Council."

Workmen's Trains.—On the recommendation of the Housing of the Working Classes Committee, the Council resolved—

"That the special maintenance estimate of 60*l.* submitted by the Finance Committee for the cost of making inquiries as to the adequacy of the facilities provided by the railway companies for working men residing in South London be approved, and that the statistical officer be authorised to engage for the period till March 31, the services of four temporary assistants, at 2*s.* 2*d.* a week each, for that purpose."

Highgate Archway.—The Bridges Committee reported that they had had before them several designs for the reconstruction of Highgate Archway and had selected one (design "D") for a single arch bridge, 120 ft. span, with steel ribs. The work was estimated to cost 28,100*l.* Tenders for the work are to be invited from contractors.

Technical Education.—The Technical Education Board recommended the Council to vote the sum of 150,000*l.* from the beer and spirit dues for the purposes of technical education for the ensuing year. This is 30,000*l.* more than was voted last year.

Dr. Cooper moved an amendment to reduce the grant by 29,175*l.*, being the amount to be expended on the county scholarships. He complained that the polytechnics were kept idle during the day, and were crammed with artisans in the evening who were too tired to receive the education provided. If the scholarships were to be of benefit they should be given for study during the whole day.

The amendment was seconded by Alderman N. W. Hubbard, but was rejected, and the recommendation of the Board was subsequently agreed to.

Contractor's Work in Rosebery-avenue.—The Improvements Committee reported that they had received a letter from the Clerkenwell Vestry in regard to the repairing of the carriageway of Rosebery-avenue between St. John-street-road and Farringdon-road. Twice last year the Council informed the Vestry that they had no power either to call upon the contractor to repair the roadway or to reimburse the Vestry the cost of this work, which is nearly 3,000*l.* The Committee therefore recommended that they should inform the Vestry that the Council, having taken counsel's opinion on the matter, is advised that it has no power to assist the Vestry in connexion with the repairing of the carriageway.

Mr. Burns said that he had never seen such bad work as had been put into the road. The roadway ought to have lasted four years longer. The contractor who had done the work had become bankrupt because he had underbid everybody else.

Mr. Spokes moved that the recommendation should be referred back to Committee.

Mr. Banning seconded the amendment.

On a show of hands the voting was equal and a division was taken, with the result that 51 votes were given for the amendment and 55 against. The recommendation of the Committee was subsequently agreed to.

Construction of New Fire Brigade Appliances.—The report of the Fire Brigade Committee contained the following paragraph, the recommendation being agreed to:—

"The Chief Officer has suggested that the form of some of the appliances used by the brigade can be considerably improved, and he has submitted to us designs of the kind of apparatus which he proposes should be adopted. The Chief Officer wishes the Council to have the benefit of the improvements, and, in order that the Council may not be prejudiced by the Chief Officer's ideas becoming known, we have instructed him to obtain provisional protection for the apparatus, which for obvious reasons we do not describe. Judging from the designs, it appears to us that the suggested machines possess several advantages over those now in use, but it will, of course, not be practicable to come to a definite conclusion until the apparatus has actually been constructed and tested. With that view we suggest that the Chief Officer should be authorised to expend a sum not exceeding 200*l.* in making specimens of the appliances, and that he should be authorised to select the persons to be employed to do parts of the work. We think it desirable that some of the apparatus should be made in the brigade workshops, and that tradesmen should be employed to do what cannot be executed there. Such of the expenditure as will be incurred before March 31 next is covered by this year's estimate, and the balance will be provided for in next year's estimate. We accordingly recommend—that the Council do authorise an expenditure not exceeding 200*l.* in respect of the construction under the Chief Officer's direction of fire appliances of new design, and that it be referred to the General Purposes Committee to consider and report as to the course to be followed in this and similar cases."

Proposed Widening, Watling-street.—The Improvements Committee recommended that the City Commissioners of Sewers be informed that the Council does not feel justified in contributing any part of the cost of the suggested widening of the road at Nos. 16, 17, and 17½, Watling-street. After some discussion this was agreed to.

The Works Department.—The Parks Committee recommended the erection of sanitary conveniences at Hilly Fields, at an estimated cost of 650*l.*, by the Works Department.

Mr. Corbett moved an amendment that the work should be done by a contractor.

Upon a division the amendment was defeated by fifty-two to thirty-eight votes, and the Committee's recommendation was then agreed to.

After transacting other business, the Council adjourned soon after seven o'clock.

THE COUNTY COUNCIL INQUIRY.

THE inquiry into the organisation of the Works Department of the London County Council was resumed on the 17th inst. at Spring Gardens, Sir Arthur Arnold again presiding.

The first witness examined was Mr. W. B. Fulwood, formerly an employe of the Works Department, who had written a letter to Mr. E. White containing allegations with regard to irregularities in the accounts, and with regard to the borrowing of money from an employe by a County Councillor. All endeavours to make the witness divulge the names of either of the parties to the latter transaction failed, but it was elicited that both the lender and the borrower were still connected with the County Council, and that the amount borrowed was 200*l.* With regard to the irregularities in the books, some of which were handed up for inspection, the witness indicated entries where amounts had been charged as foremen's wages where no foreman was employed, and where the witness himself had charge of the job. He did not suggest that anybody had put money into his pocket, but such items as one of 1*l.* 4*s.* 5*d.*, charged as wages of a foreman who was not employed on the job, ought not to have been entered. Because he had insisted upon drawing attention to these irregularities, he had been compelled to relinquish his post.

The next witness called, Mr. Steadman, Secretary of the Bargebuilders' Union, said, in reply to Sir Arthur Arnold, that, in his judgment, no honest employer of labour had any reason to fear the wages clause. He was in favour of a selected list for tenders, because it was less likely to lead to jobbery than open tendering. He was opposed to either reducing or abolishing the Works Committee.

In reply to Sir Godfrey Lushington, the witness said he did not claim to have more knowledge than other people, but he flattered himself that, as a mechanic, he knew a good piece of work when he saw it. He was satisfied generally with the character of the work done by the Council, and some of it, he thought, was a credit both to the manager and the workmen. Questioned with regard to the shop-stewards, he said there were none in his trade. He was not a builder, and he could not say what were the customs of the building trade.

In reply to Dr. Longstaff, Mr. Beachcroft, and Mr. Fletcher, the witness said that he had been Vice-Chairman of the Works Committee since March, but, except during a temporary absence of the Chairman, Mr. Ward, his duties had been only the same as those of any other member of the Committee; he had accepted the office of Vice-Chairman when there was a difficulty in getting any other member of the Committee to accept it. He thought the position was something of a figure-head; he had practically nothing to do, and he should not again take the office. He was not in favour of the Department tendering with contractors, but he would like to see it one of the largest employers of labour in London. With regard to possible improvements in the system of the Department, he said he thought the Committee should be composed only of men who wished to make it a success, that the manager should stay more in his office, and should have three or four responsible men under him to superintend the work done outside. The late manager had tried to do too much. He thought no manager should be entrusted with the purchase of materials.

In reply to Mr. Gruning, the witness said he did not think it would be a good thing for men on the promise of constant employment to accept less than the regulation wages.

Mr. Gruning: You would rather be out of work?—A good mechanic can always get employment.

Mr. Binnie, the Engineer to the Council, was recalled for the purpose of giving information with regard to the Hackney and Holloway storm-sewer, and other jobs as to which allegations had been made. Speaking generally, the witness said the work done by the Department had been of high quality, and it had been very successful. To build up a large contracting business was not usually a matter of a few years. Great firms, like several he named, had required three generations to mature. He considered that the Council had done wonders during its comparatively short existence. The witness subsequently added, in replying to Sir Godfrey Lushington, that he referred to the work of the Department as a whole, but that the success had been greater in engineering than in architectural work.

The inquiry was then adjourned till Friday, the 19th inst., when the first witness called was Mr. W. J. Livingstone, who, as it now appeared, was the official referred to by a previous witness (Mr. Fulwood) as the lender of £200 to a Councillor (Mr. J. W. Benn). The witness having replied to a number of questions, Sir Arthur Arnold declared that the explanation given by the witness was clear and satisfactory, that the transaction was a legitimate one, and one that the witness was entitled to make, and that no discredit attached either to the witness, Mr. Benn, or the Council.

The Architect of the County Council, Mr. Blashill, was now recalled to be examined upon a supplementary statement which he had obtained permission to put in, in contradiction of statements made by Mr. Alderman Taylor and Mr. Ward.

Among the leading points referred to in the supplementary statement was the allegation that at least 5 per cent. might have been saved upon the actual cost of work done by the Department but for the existence of friction between the Works Committee and the Architect's department. There was no foundation for that suggestion. The best feeling had always existed between the executive officers of the departments, and disagreement about items made no important difference. When at one time the late manager suspected some little friction, witness had sent a memorandum to his staff laying down the principles on which, as brother officers, they should conduct business with the officers of other departments. As regards the settlement of accounts, added the supplementary statement, the four independent quantity surveyors employed by the Council have all complained that they could not satisfy the demands of the Works Department.

In every case where the manager had appealed, he had been allowed for anything that had been overlooked by inadvertence, and the quantity

surveyors had demanded and received extra payment for trouble given by the Department in settling up the accounts. Nothing of this kind had happened with any contractor. In the supplementary statement Mr. Blashill repudiates entirely the explanation given by Mr. Ward of the drainage work done at Scotland Yard, and gives a flat contradiction to the numerous statements of Mr. Ward and Alderman Taylor that no allowances were made at the end of a job for work said to be done under additional orders.

"These gentlemen," says Mr. Blashill, "have been misled, and there is no foundation for such statements. In every case the work actually done is ascertained, and everything that is in excess of the original order is allowed for. I have even reviewed my original estimate and raised it where I thought it was insufficient. The result of these processes was the corrected estimate."

Mr. Blashill reiterates the assertion that inspection of the prime cost invoices was persistently refused for weeks, and adds that although on many of the accounts the Department had received allowances of 10 or 15 per cent. from the manufacturer, yet the full price of the invoice was charged as prime cost, while an additional claim of 12½ per cent. was made, and therefore the department intended to make a profit of 25 or 30 per cent. upon those items. That was not what the Council intended. The statement dealt with the "exposure" of bad plumbing and drainage, and referred to the "exhibition" of defective appliances. "Most of these defects," says Mr. Blashill, "were actually discovered and exposed by my officers. Nearly all the specimens were taken out of old buildings before any of my clerks of works came to Spring Gardens; some are dated twenty-five years back, and some were taken out of old buildings bought by the Metropolitan Board of Works."

Examined by Mr. Beachcroft upon this supplementary statement, the witness said that he had no means of knowing whether there would be a loss or not upon works not yet completed, but he believed they were now going on better. With regard to the purchase of materials, he had formed an opinion, gathered from the testimony of others, that the Council's system of purchase of timber by auction was not a success. If he (the witness) were asked to make the purchases he should require some supervision, so that his transactions should be examined so as to prevent their being questioned. He had always understood that there was the greatest possible danger of commissions being given in respect of the purchase of materials, and there was more than a possibility of heavy commissions getting into the hands of the buyers. The Royal Institute of British Architects had long been considering the means of checking the practice.

Mr. Beachcroft: How long will it be necessary to wait to ascertain the success of the Department?—When the present buildings are completed a good means will be afforded of judging.—We shall not have to wait a generation?—No. Do you think it would be safe for the Council to leave the Works Department to make its own estimates?—It would be safe, but not satisfactory from a financial point of view.

In subsequent examination by Mr. Davies, Mr. Fletcher, and other members of the Committee, the witness emphatically contradicted the evidence of Mr. Taylor with regard to several jobs. His evidence, with regard to work done at the Embankment-gardens, Chelsea, and Fimlico shrubberies, appeared to the witness inexplicable. Mr. Taylor said thirty-five new kerbstones that were specified had not been put in, that not a single ounce of sulphur had been used where sulphur had been prescribed, that the ornamental fence was not taken up, and that the painting was badly done. But the kerbstones had not been specified, and everything required to be done had been done, and very well done. The jobs had been carried out under Mr. Sexby, the Superintendent of the Parks Department, and he (Mr. Blashill) had seen them all for himself.

In reply to Mr. Gruning, the witness rebutted a charge made by Mr. Burns as to the use of soft Worlaby stone, instead of hard Mansfield, at Brompton; Mr. Burns's informants were simply mistaken. The soft stone was for another job altogether, and none of it was used at all on the job indicated. He endorsed the statement of Alderman Taylor as to the good quality of the work at the New Cross Fire Station, but it was rubbed work, which was not necessary, and it was more costly.

Mr. Sexby, the superintendent of the Parks Department, who was next called, gave Dr. Collins a list of jobs done under his superinten-

dence, amounting in the aggregate to 168,305, as estimated, and 161,402 in actual cost. The quality of the Council's work was better than contractors' work. The estimates were all prepared in his department. His work differed entirely from building work, which involved a much greater amount of detail. In his department the principle of the direct employment of labour had given rise to no dissatisfaction and no labour disputes. He had 700 men employed, of whom 300 were labourers.

It was expected that this would be the last evidence taken, but at the last moment Mr. Ward, Chairman of the Works Committee, asked permission to put in a statement replying to the charge of withholding all knowledge of the regulation mentioned by Mr. E. White from the members of his Committee. The statement was allowed to be put in, but as it will involve cross-examination, the inquiry was again adjourned, Wednesday, the 24th inst., being fixed for the purpose.

ENGINEERING SOCIETIES.

THE INSTITUTION OF CIVIL ENGINEERS.—At the ordinary meeting of this Institution, on the 23rd inst., Mr. John Wolfe Barry, C.B., F.R.S., the President, in the chair, two communications on "The Main Drainage of London," by Messrs. W. Santo Crimp and J. E. Worth, M.M. Inst. C.E., and on "The Purification of the Thames," by Mr. W. J. Dibdin, were read. In the first paper were described in detail the works carried out in London for the purpose of intercepting the sewage, which formerly passed directly into the river, and conveying it to outfall works at Barking and Crossness, about fourteen miles below London Bridge. The works, designed by the late Sir J. W. Bazalgette, and carried out by him for the late Metropolitan Board of Works, comprised the construction of about 110 miles of intercepting and storm-relief sewers, the former having a final discharging capacity of about 500,000,000 gallons per day, about 2.7 times the present dry weather flow. There were two main pumping-stations on each side of the river, with machinery of an aggregate of 3,000 horsepower, capable of pumping 500,000,000 gallons per day, and a like number of storm-water pumping-stations, capable of pumping directly into the river 150,000,000 gallons per day. The latter were used for preventing flooding in the lower parts of the Metropolis, when a heavy fall of rain occurred at or about the time of the tidal water, when the storm outlets were closed by the tidal water. The works undertaken by the London County Council to improve the pumping machinery, by compounding the steam engines at the principal pumping stations were also described. The outfall works for the purification of the sewage, the dry weather flow of which now exceeded 200,000,000 gallons per day, were next dealt with. They consisted of settling tanks and their accessories for the chemical treatment of the sewage, and the means for removing the sludge produced to the German Ocean. The tanks at Barking contained 20,000,000 gallons, whilst those at Crossness contained 31,000,000. The sludge, amounting to 2,169,000 tons in 1895, was discharged into the open sea at a distance of about fifty miles from the works by a fleet of six steamers, each having a carrying capacity of 1,020 tons. The experimental filters for dealing with the effluent, and capable of effecting a purification of 78 per cent., were mentioned. The question of flood discharges from an area fully built over was referred to, and the details relating to an area of 160 acres were given; it appeared that the flow had reached a rate equal to two-fifths of an inch per hour. The bearing of this question upon the "Separate" system was next referred to, and it was stated that, so far as London was concerned, the system was impracticable. Nine hundred and twenty men were employed in the continuous disposal of the sewage, which amounted to 75,000,000 gallons per annum, the working expenses in 1895 being 104,000, or about 5d. per head per annum. The works now disposed of the sewage from a population of 4½ millions. The results had been the interception from the Thames of vast quantities of filth, which formerly rendered it offensive, and the conversion of the river into a relatively pure estuary. In the second paper the author described first the steps that had been taken in accordance with the scheme adopted by the late Metropolitan Board of Works for the treatment of the London sewage at the outfalls at Barking Creek and Crossness; secondly, the effect of that work in freeing the river from the raw sewage; and

thirdly, the best method of effecting still further improvement. On arrival at the Northern Outfall Works the sewage was screened to remove all large particles, such as rags, &c. After receiving the proper quantity of lime the sewage passed the iron-water station, where the solution of iron sulphate was added. The iron salt was dissolved in a tank of water heated by a steam coil, and the concentrated solution was sufficiently diluted and passed into the already limed sewage. The precipitation was completed in the channels, thirteen in number, about 30 ft. wide, 15 ft. in height, and having an average length of 1,000 ft. The sludge was discharged from these to the sludge settling channels by sweeping the deposit through culverts to the receiving chamber at the engine-house, whence it was pumped into the settling channels. On its way to these the sludge was again passed through gratings to collect rags, &c., which might have escaped the first filth-gratings. The quantity of solid matter extracted by the combined action of these double sets of gratings was between 80 tons and 100 tons per week. A destructor-furnace was built close to the filth hoist for calcination of the refuse. After the sludge had settled and the top-water had been drawn off by means of lowering syphons, the sludge was let into the storage-tanks under the settling channels, whence it was pumped to the ships. The water drawn from the settled sludge was separately treated with lime and iron, and after such treatment it was allowed to settle in the sewage-precipitation channels. At the Southern Outfall Works, Crossness, the precipitation works were more compact. Practically the whole of the lime was in solution. The iron water was made at Crossness by the simple agitation of the crystals of iron salt with water in an ordinary mixing-mill from which the rollers were removed, stirring-arms being substituted in their place, the effect being equally efficacious with that of the steam-coil at the Northern Outfall works. The methods of collecting the sludge, settling it, and loading the ships were practically identical with those at the Northern Outfall. The discharge of the sludge took place in the Barrow Deep, commencing at a point ten miles east of the Nore, about half-way between the Swin Channel and the Princes Channel. As the sludge was discharged 10 ft. under water, and was thus agitated with the sea-water by the action of the twin-screws, the diffusion of the sludge in the water is very complete, so much so that its visible effect was soon lost. The heavy matters soon separated by subsidence, and the animal and vegetable debris was rapidly consumed. Although some 10,000,000 of tons of sludge had now been deposited, the most careful examination failed to detect more than the merest trace, either in dredgings or on the sandbanks, which were now as clean as in 1888. The cost amounted to about 4d. per ton of sludge. The average character of the sewage before and after treatment was set out in tables of monthly averages of daily analyses of samples taken every two hours, day and night, at each outfall during the year 1894. At Crossness, in consequence of the better solution of the lime-water, there was a reduction of the matters held in solution of 17 per cent., a result which agreed closely with the experiments by the author in 1887. At the Northern Outfall the results were not yet so good, but this would doubtless be remedied as soon as the new liming station was erected. Tables showing the averages of daily analyses of the river-water since 1885 were given, and showed that the degree of aeration at high-water had increased from 17.4 per cent. in 1887 to 55.5 per cent. in 1894; and this improvement has been accompanied by a large reduction in the quantity of free ammonia.

APPLICATIONS UNDER THE 1894 LONDON BUILDING ACT.

At the meeting of the London County Council on the 23rd inst., the Building Act Committee reported that they had considered the under-mentioned applications under the London Building Act, 1894, and had arrived at the following decisions. Those applications which have been agreed to are granted on certain conditions:—

Lines of Frontages.

Kennington, South.—That consent be given to the erection of a one-story ledge upon part of the open space in front of the Oratory, Brompton-road, on the application of Mr. P. Shaw on behalf of the Very Rev. F. Antrobus and the Fathers of the Oratory.

Narrowoad.—That consent be given to the erection of buildings on the west side of Herne Hill and the east side of Milkwood-road, Lambeth, adjoining the postal-sorting-office, on the application of Messrs. Douglas Young & Co., on behalf of Mr. G. Ballard.

Bethnal Green, North-East.—That consent be given to the erection of a stable and coachhouse, with lean-to, on the south side of Sewardstone-road, next No. 63, on the application of Messrs. Holman & Goodbarham on behalf of Mr. W. T. Payne.

Dulwich.—That consent be given to the erection of a one-story shop on a portion of the forecourt of No. 8, Forest Hill-road, Honor Oak, on the application of Mr. G. F. Grover on behalf of Mr. G. Ferris.

Fulham.—That the application of Dr. Ivor Davis for an extension of the period within which the erection of a porch and two two-story additions to No. 4, Fulmer-road, were required to be completed, be granted, upon condition that the porch and additions referred to be completed within two years from October 15, 1895.

Hampstead.—That consent be given to the erection of a block of residential flats on the east side of Fairhazel-gardens, to flank upon Goldhurst-terrace, on the application of Mr. T. S. Stephens on behalf of Mr. W. H. Pearce.

Holborn.—That consent be given to the erection of an oriel window, at the first floor level, in front of "Hand-in-Hand" public-house, No. 57, High Holborn, on the application of Mr. C. H. Flack, on behalf of Mr. B. F. Lucas.

Kennington, North.—That consent be given to the erection of a covered way upon part of the forecourt of No. 30, Lansdowne-road, Notting Hill, on the application of Mr. L. Karstlake, on behalf of Mr. J. A. Shirreff.

Kennington, South.—That consent be given to the erection of an arch and glass covered way upon part of the forecourt of No. 12, Upper Phillimore Gardens, on the application of Messrs. Shuffrey & Co. on behalf of Mrs. H. Langworthy.

Marylebone, East.—That consent be given to the erection of a balcony at the first floor level in front of No. 66, Wimpole-street, Cavendish-square, on the application of Mr. F. M. Elgood on behalf of Mr. G. J. Elgood.

Marylebone, East.—That consent be given to the erection of a balcony at the first floor level in front of No. 47, Queen Anne-street, Cavendish-square, on the application of Mr. E. Carrivt on behalf of Mr. J. Irwin Palmer.

Rotherhithe.—That consent be given to the erection of a one-story addition to the flank of the "Red Lion" public-house, Deptford Lower-road, also to the erection of two houses with shops adjoining in Rotherhithe New-road, at the corner of Bush-road, on the application of Messrs. Watney & Co., Limited.

Hoxton.—That consent be given to the construction and erection of two enclosed gangways across Jane Shore-court, Shore-ditch, to afford communication between the London Music Hall and the new building on the opposite side of the court, on the application of Mr. F. Matcham on behalf of the proprietor of the hall.

Kennington, South.—That consent be not given to the erection of buildings on the east side of Addison-road, on the site of No. 1, on the application of Mr. E. Bath on behalf of Mr. E. Collins.

Notting Hill.—That consent be not given to the erection of houses on the south side of Poynder's-road, Clapham Park, between Chios House and Cavendish-road, on the application of Messrs. Lee and Pain on behalf of Sir J. Dickson Poynder, Bart.

Dulwich.—That consent be not given to the erection of stables and a one-story van-shed at the rear of No. 1, Croxted-road, West Dulwich, to abut upon Park-road, on the application of Mr. W. H. Duffield on behalf of Mr. G. Dyer.

Hampstead.—That consent be not given to the erection of houses with shops on the north-east side of Edgware-road, between Manstone-road and the site of seven houses with shops northward belonging to Messrs. Bridge & Neal, on the application of Messrs. Tuckett & Son, on behalf of the Trustees of the Cotton Estate.

Islington, North.—That consent be not given to the erection of an addition to a one-story building on part of the forecourt of No. 46, Holloway-road, at the corner of Mercer's-road, on the application of Mr. C. Meaby, on behalf of Mr. G. Lerner.

Islington, West.—That consent be not given to the erection of a two-story addition in front of No. 2, Jackson-road, Holloway-road, on the application of Messrs. New & Son, on behalf of Mr. F. J. Muddiford.

Lewisham.—That consent be not given to the erection of one-story shops on a portion of the forecourts of Nos. 55, 57, 57A, 59, 61, and 61A, Dartmouth-road, Forest Hill, on the further application of Mr. G. Tolley, on behalf of Mr. E. C. Christmas.

Lewisham.—That consent be not given to the erection of five houses on the north side of Catford Hill, and eight houses with projecting bay windows on the west side of Beechfield-road, on the application of Messrs. Phillips & Norfolk.

Lewisham.—That consent be not given to the erection of a pent-roof, with wooden fascia and balustrading, in front of No. 15, Rushey Green, Catford,

on the application of Mr. A. L. Guy, on behalf of Mr. W. Taylor.

St. George, Hanover-square.—That consent be not given to the erection of an iron and glass shelter over part of the public way in front of No. 39, Dover-street, Piccadilly, on the application of Messrs. J. Barker & Co., Limited, on behalf of Paquin, Limited.

St. Pancras, North.—That consent be not given to the erection of fourteen houses on the north-west side of Gordon House-road, with the flank of the easternmost house to abut upon Highgate-road, on the application of Messrs. R. H. and H. Kerr, on behalf of Mr. C. W. Matthews.

Width of Way.

Battersea.—That consent be given to the erection of a two-story addition at the rear of the "Surrey Hounds" public-house, No. 90, St. John's Hill, to abut upon Plough-terrace, on the further application of Mr. J. D'Oyley on behalf of Mr. S. H. Warner.

Deviation from Certified Plans.

Southwark, West.—That sanction be given to certain deviations from the plans certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed erection of the "Eight Bells" public-house, on the site of Nos. 31 and 33, Collingwood-street, and No. 19, Meyrick-street, Blackfriars, on the application of Messrs. Perry & Reed, on behalf of Messrs. Hoare & Co.

Line of Fronts and Width of Way.

Chelsea.—That consent be not given to the erection of a one-story class-room at the Servite Catholic School, Winterton-place, Park-walk, on the application of Mr. J. H. Eastwood on behalf of the Rev. Father Brugnot.

Southwark, West.—That consent be not given to the erection of one-story shops on the forecourts of Nos. 48 and 50, Lambeth-road, St. George-the-Martyr, on the application of Mr. Jesse Phoenix on behalf of Mr. J. Moore.

Walworth.—That consent be not given to the erection of one-story shops on the forecourts of Nos. 282, 284, 286, and 288, East-street, on the application of Messrs. Percy W. Slark & Co.

Width of Way—Space at rear, &c.

† **Finsbury, Central.**—That the Council in the exercise of its powers under the London Building Act, 1894, do not consent to, or allow of, the erection of a dwelling-house, to be inhabited by persons of the working class, on the site of No. 3, Great Bath-street, Farringdon-road, Clerkenwell, with a shop on the ground floor and a three-story oriel window at the first floor level, such building to be at less than the prescribed distance from the centre, and to exceed in height the width of the street, also to have an insufficient open space to the basement and to extend above the diagonal line directed to be drawn by the Act, on the application of Mr. T. W. Donovan on behalf of Mr. A. W. C. Shean.

Width of Way and Height of Buildings.

Deptford.—That consent be not given to the erection of buildings on the east side of Hosier-street and the north side of Creek-street, Greenwich, on the application of Mr. L. Jacob on behalf of Messrs. J. & A. Dandridge.

Width of Way and Construction of Buildings.

† **Bow and Bromley.**—That consent be not given to the construction and erection of a large temporary iron store on the east side of Fawe-street, with the boundary fence at less than the prescribed distance from the centre of that street, and the construction of a temporary iron mess-room on the east side of Morris-road, Poplar, on the application of Messrs. Thompson & Hodge on behalf of Spratt's Patent, Limited.

Conversion of Building, Space at Rear, &c.

Westminster.—That the Council, in the exercise of its powers under the London Building Act, 1894, do not allow the conversion into a dwelling-house, with an irregular open space at the rear, of a portion of a workshop in the yard of No. 81, Page-street, on the application of Mr. W. Brass, on behalf of Mr. J. S. Brown.

Formation of Streets.

Woolwich.—That an order be sealed and issued to the Vestry of Plumstead sanctioning a deviation from the plan approved on June 30, 1895, for the formation or laying out of Waterdale-road, Bostall Wood, Plumstead, by an alteration in the course of a portion of that road.

Fulham.—That the Council do approve of a further variation from the plan sanctioned by it on May 28, 1895, for the formation of certain streets upon Morrison's Farm Estate, Brixdown, Bridge-road, by the abandonment of the formation of Erivane-street and the portion of Settrington-road, north of Woolneigh-street, and the widening of Woolneigh-street to 45 ft., on the application of Mr. W. C. Poole, on behalf of Messrs. Allen & Norris.

Artisans' Dwellings.

Whitechapel.—That the Council do, in the exercise of its powers under Sections 41 and 42 of the

London Building Act, 1894, sanction the amended plans and drawings, dated February 8, 1897, submitted by Mr. I. K. Smith on behalf of Mr. F. Moss, for the construction on the site of Nos. 123 to 147 (odd numbers only), Eack Church-lane, and also partly on the site of the houses and footways in Providence-place, Williams-rents, and Brunswick-place, of two blocks of five-story dwelling-houses, such new buildings to be inhabited by persons of the working class; and further, that the Council, acting under the powers conferred by Section 41 of that Act, do permit the erection of the said new buildings with the proposed open spaces about the same.

Height of buildings, cubical extent and means of escape in case of fire.

Limchouse.—That the Council in the exercise of its powers under sections 49 and 76 of the London Building Act, 1894, do not consent to the erection on the north side of Dod-street of two blocks of cabinet makers' shops of a greater height than the width of that street, to exceed in extent 250,000 cubic feet, and to be used only for the purposes of the trade of a cabinet maker; and that the Council, as empowered by section 63 of that Act, do decline to issue a certificate in respect of the means of escape in case of fire proposed to be provided for the persons dwelling or employed in the top floors of the said buildings, on the application of Mr. J. M. Knight, on behalf of H. Herrmann, Limited.

Means of Escape at Top of High Buildings.

St. George, Hanover-square.—That the Council in the exercise of its powers under section 63 of the London Building Act, 1894, do decline to grant a certificate in respect of the means of escape, in case of fire, proposed to be provided for the persons dwelling or employed in the fifth floor of an addition on the west side of the Berkeley Hotel, No. 77, Piccadilly, at the corner of Berkeley-street, on the application of Mr. R. Griggs on behalf of the Berkeley Hotel Company.

Recommendations marked † are contrary to the views of the Local Authorities.

Correspondence.

To the Editor of THE BUILDER.

THE DRAWING OF "A THIRTEENTH CENTURY ARCHITECT."

SIR,—I am obliged to Mr. Bilson for his information, and must plead guilty to having "forgotten my Viollet-le-Duc." It is not surprising to find that the drawing has been noticed before, and I confined myself to saying that I thought it had not been "exhibited," as it was at the A.A. meeting by a slide exactly reproducing the original. But on comparing this with the illustrations mentioned in your last issue, it would appear that no accurate copy of it has been hitherto available. Viollet-le-Duc gives a sketch of two of the figures, drawn as if they had been sculptured, incorrect in several points, "franchised" almost out of resemblance, and about as like the original as the drawings professing to represent events abroad "from a telegraphic description." Green's illustration is also a free sketch; it gives the whole scene, but the force and character of the original are lost. Gardiner has a more correct but less complete representation; and in not one of these can the real expression and action of the personages be seen.

The mediæval architect is receiving such unkind treatment just now that it is only fair to put him forward exactly as his contemporaries knew him, and not only in "reproductions," which are, unintentionally, rather caricatures than true portraits.

ARTHUR S. FLOWER.

RE PETERBOROUGH CATHEDRAL.

SIR,—It is, I fear, rash for one of the signatories, on whom you have poured so much fine scorn, and by representing them as ignorant, incompetent, and careless (at heart) of the real welfare of the cathedral, have emphasised the better fate of the building in its present hands—to ask whether the facts that you have recently been giving us really bear out this view.

The work of demolition was begun in mid-winter, although there was no urgency in the matter, and it might well have taken place during a more genial season.

Whilst the frost and snow was on the ground, and in face of predictions warning us of a winter of unusual severity, we learn that the clerk of the works is pouring water into the piers, in order to make experiments which should have been postponed till all danger from frost was past.

In your issue of the 13th inst. I gather that the Dean and Chapter—by the purchase of "an old farm house, in order to use the material for piecing the front where new stones are absolutely necessary," are now acting independently and in defiance of their architect.

Seeing how much stress has been laid on their acting in conformity with, and under the direction of, their architect, this is a disconcerting piece of revelation. Mr. Pearson knows, and Mr. Thomson

knows, that old stones should not be taken out of one old building to be used in another. It is impossible to set them without reworking their faces, and the weathered face of an old stone, once removed, can never be reformed. These stones, if by mischance they should be used as proposed, will perish rapidly.

The grounds given for taking down the masonry and rebuilding were to make a permanent restoration; but instead of accepting the inevitable necessities of so doing, the Dean and Chapter hope (it appears) to evade the outcome of their action by putting up a short-lived blind to parry the natural and disappointed comments that will be made on their work.

HALSEY RICARDO.

MODELS OF DESIGNS AND BUILDINGS.

SIR,—Some time ago you sought and published the views of some members of the architectural profession on the desirability of obtaining a better exhibition of current architecture, &c., than is afforded by the space in the architectural room at the Royal Academy. Amongst the opinions given were some in support of exhibiting models of architects' designs and buildings—a feature which has never received consideration at the Royal Academy comparable, for instance, with that given to it in the Salon exhibitions.

It occurs to me that a good opportunity for bringing models of internal and external architectural design and decoration before the profession and the public arises in connexion with the forthcoming International Building Trades' Exhibition at the Agricultural Hall, Islington. If the promoters of that movement made a special effort to collect the models of buildings of interest or importance which British architects could lend them, the rather neglected art of architectural modelling might be somewhat advanced, especially if some of the beautiful and well-finished models of Parisian and other Continental buildings, which have been shown abroad during recent years, could also be obtained.

EDWIN SEWARD.

BERKHAMSTED SCHOOLS CHAPEL.

SIR,—I observe in your issue of the 13th inst. a design for our chapel. As the chapel is very widely known and is very beautiful, I think it right to say that the design which I finally accepted, and by which the chapel was built, is not the one that has been forwarded to you for publication. The accepted design was by Mr. Charles Rew of Berkhamsted.

Berkhamsted, Herts. T. C. FRY.

* * * It will be seen that in the short description (furnished to us by the authors of the design) it was not stated that the chapel had been built, only that the design had been made for it by them; but we think that the authors ought to have made it more clear that the design was a competition one only, and not the selected one. We regret to say that architects are occasionally not so explicit on this point, in such cases, as they should be. On the other hand we may suggest to our correspondent that the selection of a local architect, in what was apparently an open competition, looks rather as if the selection had been influenced by other than merely architectural reasons.—ED.

The Student's Column.

SPECIFICATIONS.—IX.

JOINER—(continued.)

THE doors numbered on plans to be 24 in. folding doors, each leaf in three panels, ovolo moulded both sides with slamming stiles rebated and beaded.

The upper panel in each leaf to be open and prepared for plate glass with mitred shifting beads secured with brass cups and screws. These doors to have 4½ in. by 4 in. chamfered and rebated frame, chamfered and twice rebated transome, and 2 in. ovolo moulded fixed fanlight. The doors to be hung with a pair of 4 in. wrought iron butts to each leaf. Put brass handles, lettered "Pull," p.c. 10s. each, and short helical door-springs on one side, and brass finger plates, p.c. 7s. 6d. each, on the other. No lock to these doors.

The doors numbered on plans to be 24 in. swing doors, each leaf in five panels, moulded both sides, with properly rounded heels to stiles. The middle panel in each leaf to be open and prepared for plate glass, with mitred shifting beads secured with brass cups and screws. These doors to have 6 in. by 4 in. moulded frame, hollow grooved for heel of door. The doors to be hung with spring hinges, p.c. 30s. each, let into boxing framed to finger joints. Put bronzed pull handles, p.c. 15s. each, one pair on each side of doors.

The doors numbered on plans to be

2 ft. 8 in. by 6 ft. 9 in., 2-in. five-panel doors, moulded both sides, hung with a pair of 4-in. wrought-iron butts, and to have 6-in. two-bolt mortice locks and brass furniture, p.c. 7s. 6d. each. The linings to be 1½ in. double rebated linings on wrought, splayed, and beaded grounds, and architrave mouldings out of 4½ in. by 2 in., with blocks the full height of skirting out of 5 in. by 2½ in., shaped to suit architraves.

Stairs.—The stairs to have 1½ in. treads, with rounded nosings and inch risers glued, blocked, and bracketed on 3½ in. by 2 in. fir carriages, 1½ in. moulded outer string, 1½ in. moulded wall string, inch beaded apron linings, curtain step and veneered riser, newels turned and moulded out of 3½ in. by 2 in. selected Riga wainscot, moulded bandrail out of 3 in. by 4 in. selected Riga wainscot, 1½ in. deal turned balusters banded to string and handrail. The newels to be brought below landings, and turned as pendants 6 in. long. The wainscot to be twice oiled with olive oil at completion.

Fireproof Stair.—The stair to be constructed as shown on detail drawing, with rolled steel joists, which will be supplied by Messrs.

at the p.c. sum of £ cut to sizes and delivered on the works. The contractor to put work together, and form stair in concrete of Portland cement and coke breeze in proportion of 1 to 6. This stair to have inch teak treads, with 2 in. teak rounded nosings tongued to same, and secured with stout brass screws to plugs let into concrete, glazed brown tile risers, soffits and ends of steps rendered and set in Keene's cement. The newels to be turned and moulded out of 4½ in. by 4½ in. teak, balusters turned and moulded 2 in. deal, handrail moulded out of 3½ in. by 2½ in. teak. The teak to be left clean from the plane, and not oiled or varnished.

Skylights.—The skylights over to be 2 in. chamfered bar skylights, weathered and throated for condensation, 4 ft. 6 in. by 2 ft. 6 in., fixed to 1½ in. wrought, rebated, and staff headed curbs. Put lead gutter behind skylight, with 1 in. gutter boards and framed bearers.

Trap Doors.—The trap doors over to be 2 ft. 6 in. by 2 ft. in. clear with traps of ¾ in., matched and V-jointed boarding, with two 3½ in. by 1½ in. ledges fitted and hung with a pair of 3 in. wrought-iron butts to inch rebated and staff beaded curb linings tongued at angles.

Step-ladders.—The step-ladder shown on plan of to be formed of 4½ in. by 2 in. treads, with rounded nosings, housed and tenoned to a pair of 9 in. by 3 in. sides. Under top, middle and bottom treads put ½ in. wrought-iron tension bolt with head, nut, and washer. Put 2½ in. deal mop-stick handrail, with 3 in. by 3 in. posts at each end halved and bolted to sides.

Casings.—The steel girders over to be cased with 1½ in. cross-tongued casing, grooved and tongued and staff-headed at angles, and fixed to girders with 3 in. by 2 in. blockings, 18 in. apart, bolted through webs of girders with 7 in. by 3 in., screwed up to casing and joists.

Put inch beaded pipe casings on rebated and beaded grounds to all exposed pipes, and fix same with brass cups and screws to remove easily.

Shelving.—Provide, to be fixed where directed, 100 ft. super. of inch wrought cross-tongued shelving with 1½ in. by 1 in. bearers, and wrought-steel brackets.

Fix where directed in store room 100 ft. super of open lattice shelving, 2 ft. 6 in. wide, of 1½ in. by 1½ in. battens, 3 in. apart, halved and panned, and 1½ in. by 2½ in. bearers 2 ft. apart, carried by 2½ in. by 2½ in. framed posts.

Dresser.—Supply and fix, where shown on plan, in kitchen a deal dresser, 6 ft. wide by 7 ft. 6 in. high, with 1½ in. sides and centre division, 3 in. top on 3½ in. by 1 in. rails framed to sides and centre, with moulded cornice out of 3½ in. by 2 in., three tiers of inch shelves, 5½ in. wide, grooved for plates, and with three dozen brass cup hooks, slab of 2 in. white deal cross-tongued, and in two thicknesses, pegged together, three drawers 7 in. deep inside with 1½ in. fronts, ¾ in. sides, lap dovetailed to front and dovetailed to ¾ in. backs, and grooved and tongued to ¾ in. bottoms, bearers for drawers 3½ in. by 1 in., turned oak drawer handles out of 3 in. by 3 in., 1½ in. cupboard front below drawers in two cupboards, each with a pair of doors hung folding with rebated and beaded stiles, 1½ in. pot board on 3½ in. by 2 in. bearers, shelf in cupboards 18 in. wide, of inch deal cross-tongued. The cupboard doors to be hung on 3 in. wrought-iron butts, and to be fitted with 4 in. cut cupboard locks, and 4 in. neck bolts.

Water-closet Fittings.—Fit up the water-closet

on first-floor in Honduras mahogany, stained and French polished, with 1 in. cross-tongued seat and riser, 1 in. mitre clamped and cross-tongued flap, with rounded nosing and thumb-moulding tongued on, hung with 3 in. brass butts to frame, and with ¾ in. by 5 in. beaded skirting around. The whole to be put together with brass cups and screws to remove easily and fixed on strong deal bracketing. Seat hole to be cut and disbed. Handle hole to be cut and beaded. Supply and fix quadrant shaped Honduras mahogany paper box, 9 in. radius of ¼ in. stuff, with door hung on 1½ in. brass butts and fitted with solid brass turn buckle fastening. (N.B.—Pedestal closets are often supplied with seats. If these are adopted it should be mentioned in Joiner. If something different from the usual type is desired specify it.) The servants' water-closet to have similar fittings but in yellow deal picked for staining, except the seat, which is to be in clean willow.

Bath-Room Fittings.—Fit up bath with stained and French polished 1½ in. Honduras mahogany top, cross-tongued, and with dish perforation and rounded nosing. The enclosure to be 1½ in. deal, panelled and moulded framing, made to remove easily in sections, and fixed with brass cups and screws. Supply and fix cradling for bath of 3½ in. by 2 in. stuff, and assist plumber in fixing.

Fit up towel-rack on wall with cut and shaped ends out of 4½ in. by 1½ in. stained and French polished Honduras mahogany, and two teak rods, 1½ in. diameter, 3 ft. long.

Lavatory.—Fit up the enclosure of lavatory basin with 1½ in. panelled and moulded front, with door hung on a pair of 3 in. brass butts, and fitted with brass turnbuckle fastening. Provide and fix bearers for lavatory basin, and assist plumber in fixing. The top and skirting of lavatory will be in one piece with basin.

Cupboards.—The cupboard in to have 1½ in. framed fronts with a pair of 1½ in. doors hung folding with rebated and beaded stiles, each leaf in three moulded and square panels, and hung with a pair of 4 in. wrought-iron butts. Fit with 4 in. cut cupboard lock, a pair of brass knobs, and a pair of 4 in. neckbolts. Top of cupboard to be ¾ in. and cross-tongued, with rounded nosing and moulding under out of 2½ in. by 1½ in. This cupboard to have one cross-tongued inch shelf, beaded hat-rail 4½ in. by 1 in., with No. 6 wrought-iron hat and cloak hooks.

Picture Moulding.—Put round walls of 3 ft. below bottom of plaster cornice picture-moulding out of 3½ in. by 2 in. plugged and screwed to wall every 18 in. apart.

Wall Panelling.—The panelling in dining-room to be 1½ in. framed and panelled, as shown on detail drawing; the panels in yellow pine in one width, backed with canvas put on with marine glue, the back of panelling to be served over with the glue, the canvas tacked on and stretched tightly, and a hot iron passed over to melt the glue. The cornice to be framed up with 7 in. by 3 in. with dentil course and carved egg and tongue moulding planted on the chair rail moulded out of 4½ in. by 2½ in. tongued on, the skirting moulded out of 9 in. by 2 in., and tongued to floor. The carved frieze to be of sycamore, supplied and carved by Mr. , and to be framed in and fitted to panelling by the contractor. Provide the p.c. sum of for this carved frieze, to be paid to Mr. by the contractor within one month after presentation of the architect's certificate. This panelled work to be fixed to 2½ in. by 1½ in. grounds plugged to wall.

Church Seats.—The seats to be executed in accordance with detail drawing of selected Sequoia of quality equal to that of sample in architect's office. One seat to be worked and approved by the architect before the remainder are commenced. The seats to be fixed to floor (describe method, whether tenoned and screwed, or by means of iron brackets or otherwise).

Hard Woods.—Few architects have the very highly specialised knowledge to be able to distinguish between varieties of the same hard wood from different countries, and although the student might specify a certain wood as, say, white oak, he can hardly be expected to be what he specifies by inspection alone whether therefore, two courses open to him, either to specify that the wood is to be of a quality equal to that of a sample in architect's office, as example given in last clause, or to quote a reliable timber merchant's name and price—thus: The mahogany is to be from Tobacco, of quality equal to sample approved by the architect, and is to be obtained from Messrs. , whose price at inch thick is 7d. per foot super.

Completion.—The contractor is to leave all woodwork clean and perfect, and any work which may show a shrinkage of ¼ in. between any two pieces of wood, or which may crack in the substance of any panel or framing, shall be taken out and reinstated, at the contractor's expense, with sound well-seasoned material. (Clauses of this or similar drastic nature are becoming general in specifications. The use of unseasoned wood is now so common, and the difficulty of detecting it (tilt shrinkage occurs is so difficult, that it is no unusual thing for such defects to make their appearance even before the painting is finished.)

OBITUARY.

MR. ALFRED WILLIAMS.—Information has been received from Johannesburg of the death of Mr. Alfred Williams, brother of Mr. W. Clement Williams, architect and surveyor, Halifax. Deceased, who was 33 years of age, was apprenticed to Messrs. Horsfall & Williams, of Halifax, and was at the time of his death, as stated, a partner in a leading firm of architects in South Africa.

MR. WILLIAM DAVES.—The death of Mr. William Daves, architect, of Manchester, took place on the 16th inst. The deceased was better known to the general public by the nom de plume "Eljier Goff," under which he wrote and published various humorous works some years ago. Mr. Daves was born in Gloucester, in 1840. He was articled in the architectural profession in London in 1858, and subsequently practised in London, Donagh, Birmingham, and Manchester offices until he became partner with Mr. W. H. Hayley, architect, of Manchester, in 1863, only five years from the commencement of his professional career. His first building, won in competition, was a small church school in Olam. He distinguished himself in the competition for the Manchester Town Hall. The following list will show that in many minor competitions he achieved considerably to his laurels—first in cottages for Durham County Permanent Building Society; first in schools, Every-street, Manchester; first in Primitive Methodist chapel and school and house, in Ardwick; second in schools, Vine-street, Manchester; first in schools, Chester-street, Manchester; first in schools, at Beccles, Suffolk; first in Board schools, Abbott-street, Manchester; first in Conservative club buildings, Prestwick; second in church, &c., Collyhurst; and fourth in Gloucester Asylum. Mr. Daves greatest work, undoubtedly, was the design for the Victoria Buildings in this city. His first book, "Eljier Goff's Troubles, Travels, and Other Adventures," appeared in the spring of 1872, and "Eljier Goff's Second Book," "Eljier Goff's Winter of that Year," "Eljier Goff's Christmas Book," "Eljier Goff's Kronicle of a King," which ran through two editions of 5,000 each, was not published until 1878.—*Manchester Courier.*

GENERAL BUILDING NEWS.

NEW THEATRE, GLOUCESTER.—At a recent meeting of the Improvement Committee of the Gloucester City Council plans of a new theatre and opera house which a London syndicate are about to erect on the site occupied by the Municipal Schools in Brunswick-road, were submitted and passed. The plans have been prepared by Mr. John P. Biggs, of London. The exterior materials will be brick and terra cotta. Seating accommodation will be provided for 1,500, and from each seat there will be a clear and uninterrupted view of the stage. The latest lines have been followed in regard to comfort, exits, electric lighting, and ventilation.

S. MARK'S CHURCH, SWINDON.—This church, which was built about fifty years ago, from designs by the late Sir Gilbert Scott, has recently been enlarged by an extra bay to the chancel, a south chapel and a vestry on the north side, with additional space for the organ over. An arcade of three bays divides the chancel from the chapel, and the ceilings of both are painted; the former is of a pointed barrel type, and the latter flat, divided into panels by ribs, having gilt bosses at their intersections. The east window of the chapel is about to be filled with painted glass, and the altar is to be enclosed with riddels, carried by decorated posts. The floor of the chancel is of a temporary character; it is intended that marble should be laid eventually. The contractor for the work was the late Mr. Wiltshire, of Swindon, and the architect, Mr. Temple Moore (of Hampstead), who also designed the screen, stalls, and organ case, which were placed in the church some years ago.

NEW THEATRE FOR WORTHING.—A company has been formed in Worthing for the conversion of the existing assembly rooms into a theatre more in keeping with the requirements of the town. A alterations will be erected to Bath-place. The new front will be of an extensive character, will include the building of a new stage, proscenium, and dress circle, and it is proposed to erect a large hall in connexion with the theatre available for dances, banquets, &c. The work will be carried out from plans prepared by Mr. Alfred T. Cooke, architect, of Worthing.

VICARAGE HOUSE, ST. THOMAS-BY-LAUNCESTON.—The site has just been purchased for the proposed vicarage house for St. Thomas-by-Launceston, and the plans and specifications of the architect, Mr. Otho Peter, of Launceston, have been accepted.

CO-OPERATIVE PREMISES, SCOTTSWOOD, NORTH-UMBERLAND.—The Blaydon Co-operative Society has secured, on what is to be known as Station-road, Scotswood, a site for a branch store, having a frontage of 110 ft., and a depth, the stables being included, of 93 ft. Residences for managers are to be attached, and the second story of the main block is to be devoted to the purposes of education and recreation under the auspices of the society. There is to be a lecture hall measuring 40 ft. by 29 ft., while a space of like dimensions is to be partitioned off to serve as a library and reading and smoke-room. The architect for the new undertaking is Mr. William Glover, Newcastle.

PROMISED NEW CHURCH, ASHBY, NEAR BRIGG.—A movement is on foot for the erection of a new church for Ashby, in the parish of Botesford, near Brigg, Lincolnshire. A site has been secured, and plans for the church have been prepared by Mr. C. Hodgson Fowler, of Durham. The estimated cost is 4,000l., the church to seat 600.

BRIGHTON INSTITUTE, HUNTINGDONSHIRE.—The formal opening of the institute and reading-room at Brampton took place recently. The architect of the building was Mr. John Bird, and Mr. Allen was the builder.

THEATRE, STOKE, STAFFORDSHIRE.—A new theatre, situated in Wolfe-street, Stoke, has just been opened. It consists of a stage with ground and first floor dressing-rooms, orchestra, auditorium, consisting of 2,000 seats on the ground floor; on the first floor, four boxes, circle, back circle, and gallery. Between the ground floor and the floor of the back circle are a refreshment bar and office. The seating accommodation on the ground floor will be for 700, and on the first floor 400; altogether 1,100. The building is from the designs of Messrs. Lyman & Beckett.

FIRMARY, PRESCOT.—On the 18th inst. Mr. William Middleburgh, as Chairman of the Building Committee, laid the foundation stone of the new Prescot infirmary which the Guardians are erecting at a cost of 25,000l., including a new laundry building. There will be four blocks of buildings, all of local brick, with stone dressings and quoins. Two of the blocks will be three stories high, one two stories, and one special block will be built as a maternity ward. The whole will afford accommodation for 300 beds. The architects are Messrs. J. & W. Gandy, St. Helen's; Mr. Fred Brown, St. Helen's; is the builder; while Mr. W. Molyneux, St. Helen's, is erecting the laundry.

CHURCH, BUXTON, DERBYSHIRE.—A new mission church, to accommodate 400 persons, and dedicated to St. Mary the Virgin, was recently opened in Higher Buxton. The building has been erected from designs by Mr. C. Heathcote, architect, Manchester and Buxton, and contains a chancel and two vestries, a porch entrance at the west end, and the seating is by chairs. A panelled altar in oak has been provided, designed by the architect, and made by Mr. F. W. Booth, of Oakdene. The building has been erected by the Patent Wire Wove Roofing Company.

INFIRMARY NURSES' HOME, WORCESTER.—On the 15th inst. the Countess of Coventry laid the foundation stone of the Nurses' Home at the Worcester infirmary. The works are being executed by Messrs. Wood & Sons, Worcester, from the designs of Messrs. Lewis Sheppard & Son. The building, which will cost about 4,000l., is being erected in Wheeley's Gardens, adjacent to the infirmary. It will be in three stories, and thirty-two bedrooms will be provided for sisters and probationers. A covered way will afford direct communication between the home and the infirmary.

NEW WARDS, MONKWEAR MOUTH HOSPITAL, DURHAM.—The new wards of the Monkwearmouth and Southwick Hospital were opened by Lady Elizabeth Williamson on the 16th inst. The extension comprises four wards, viz., the Williamson Ward and the Addison Ward on the ground floor, and the Thompson Ward and the Branfoot Ward on the first floor. The first two are to be reserved for female patients. Altogether twenty-six new beds are to be provided, making a total in the institution of forty-two. The contractor for the work was Mr. J. B. Stott, of Monkwearmouth, and the architects were Messrs. W. & T. R. Milburn, Sunderland.

PUPIL TEACHERS' SCHOOL, CARDIFF.—The new pupil teachers' school at Howard Gardens, Cardiff, was opened recently by Mr. T. E. Ellis, M.P. The school is erected at the rear of the Cardiff School Board offices, Howard Gardens, contiguous to the lecture theatre of the higher grade school, and is a block of buildings 117 ft. long by 42 ft. in width, and two stories in height. The ground floor comprises two class-rooms, each accommodating fifty scholars, with cloak-room and lavatory accommodation. Upon the same floor is situated the gymnasium, and also a student's workshop; these rooms also have lavatory accommodation. The first floor affords accommodation for two class-rooms, each accommodating fifty scholars, the rooms being divided by revolving wood shutters. The art class-room is also situated upon this floor, as well as the teachers' private rooms, store-rooms, cloak-rooms

and lavatories. The buildings are constructed of white pressed brick, relieved with red brick bands and arches. The roofs are covered with green slates and red terra-cotta cresting. The floors throughout are constructed of concrete, with iron joists, and covered with wood blocks. The lavatories throughout have been fitted with Adams' patent lavatories. The buildings have been erected by Messrs. William Thomas & Co., Cardiff, and under the superintendence of the architects, Messrs. J. P. Jones, Richards, & Budgen, Cardiff.

COTTAGE HOSPITAL, GORLESTON, SUFFOLK.—On the 2nd inst. the two new wings which have been added to the Cottage Hospital at Gorleston were opened by the Mayor of Yarmouth (Mr. H. E. Buxton). The architect of the additions is Mr. H. Dudley Arnott, of Gorleston. They consist of two wards for male and female patients respectively, in each of which five beds will be placed. Bath and operating rooms are attached, and improved systems of heating and ventilation have been introduced. The new wings are built of red brick. The builders are Messrs. Read & Curtis, of Yarmouth and Gorleston.

BOARD SCHOOLS, WESTON-SUPER-MARE.—The new Board Schools in the Walliscote-road, Weston-Super-Mare, are being built by Mr. Chas. Addicott, according to plans prepared by Messrs. Price & Wooler, architects. That portion of the building allotted to the infants has just been completed. The hall is 40 ft. by 30 ft. and 23 ft. in height. The floor is laid with wood blocks. The hall is also heated by hot-water radiators. Surrounding the central hall are four class-rooms, 25 ft. by 22 ft., each providing accommodation for sixty-eight scholars. A babies' room has been provided. There are also rooms set apart for the teachers. A gymnasium has been erected. The heating system has been carried out by Messrs. Bryant & Sons. The whole of the structural work has been superintended by Mr. W. A. Hayward, clerk of the works.

ADDITIONS TO HOSPITAL, JOHNSTONE, N.B.—The west part of the Combination Hospital at Johnstone, in the Linwood-road, Johnstone, was recently opened. The extensions have been executed to the plans of Mr. J. L. Cowan, of Glasgow, and have cost over 4,000l. The contractors were:—For building, Keane, Kilwinnoch; joiners, Purdon & Cuthbertson, Kilsbarchan; plastering, M'Queen, Glasgow; heating, M'Cormack & Son, Glasgow; painting, J. M'Connell, Johnstone; engineering and laundry work, Tullis & Co., Clydebank; slating, Marshall, Kilsbarchan.

ISOLATION HOSPITAL, AUGHTON, LANCASHIRE.—On the 9th inst. the Countess of Lathom opened Holly House, Aughton, which has been acquired by the Ormskirk Rural District Council as an Isolation Hospital. The house is situated in four acres of land, and has been laid out for typhoid and scarlet fever cases. Mr. C. S. Beeston has been the architect of the work, and Mr. James Pilkington (Ormskirk and Rainford) the contractor.

NEW INFECTIOUS DISEASES HOSPITAL FOR KIRKCALDY.—At a meeting of the Kirkcaldy Town Council recently the minute of the Committee of the 6th inst. was read, recommending the Authority to adopt the plans for the proposed infectious diseases hospital prepared by Messrs. Campbell, Douglas, & Morrison, Glasgow, which were approved by the Local Government Board, with the exception that the new hospital should accommodate ten more beds—namely, the total cost to be 10,000l., or 277l. 8s. 1d. per bed, the architects coming under an obligation to forego one-half of their commission if the sum estimated is exceeded, excluding, of course, any extras or other work recommended by the Authority during the erection of the hospital. Provost Hutchison moved the approval of the minutes, the motion being seconded by Councillor Orr, and unanimously agreed to.

CHURCH SCHOOL, EWOOD, BLACKBURN.—St. Bartholomew's new school at Ewood was opened recently by Mr. W. H. Hornby, M.P. The building has been erected from plans prepared by Messrs. Cheers & Smith, architects, Blackburn. The school is built of brick. The present building is only a third part of the entire school as it will appear when completed. When the school is completed this part of the building will be the girls' department, the boys' department will be the other wing, and the infants' school will be in the centre. The present accommodation is for 250 scholars, the large room, which has a floor area of 60 ft. by 22 ft., holding 130; and the two class-rooms, each 24 ft. 8 in. square, 60 children each. There are also two cloak-rooms and caretaker's closet, and two entrances to the school.

NEW BAPTIST CHURCH, LANCASTER.—A Baptist church has just been opened in Nelson-street and Victoria-avenue, Lancaster. The building has been built from the plans of Mr. N. G. Lewis, of Lancaster. The church and schools together have cost 5,000l. The structure is in the Gothic style. At the rear of the chancel is an open baptistry. The contractors have been: masonry, Mr. W. Warbrick; joiners' work, Mr. J. Thompson; slating and plastering, Messrs. Hall & Son; plumbing and glazing, Mr. Abbott; painting, Messrs. Meadowcroft & Sons.

HOSPITAL, BLAWARTHILL, N.B.—The Renfrew and Clydebank Joint Hospital at Blawarthill was recently opened. The building has cost about 10,000l. to erect. To the north there is the ad-

ministrative block, which contains the matron's and nurses' rooms, the kitchen, and other necessary offices. To the east and west of this block there are three pavilions. The one for the scarlet fever patients contains sixteen beds, as well as an ante-room with six beds; while the enteric fever pavilion has eight beds, and the isolation pavilion six beds. The heating of the various buildings is on the hot water pressure system. The architect was Mr. Bryden, of Messrs. Clark & Bell, Glasgow; while Mr. Henderson, of Messrs. Duff & Henderson, was the measurer; and Mr. Lees the clerk of works.

RESTORATION OF TOWER, ST. JOHN'S CHURCH, CARDIFF.—The restoration of the tower of the Church of St. John, Cardiff, has just been commenced. Mr. C. B. Fowler is the architect engaged in the work, the contract being in the hands of Mr. G. Shepton. The foundation of the tower of St. John's was laid in 1473, and the architect was one Hart, who designed the towers of Wrexham and St. Stephen's, Bristol. The style is Perpendicular. The tower is 130 ft. high.

BOARD-ROOM, BROUGHTY.—On the 18th inst. the new Board-room in connexion with the additions to the Municipal buildings of Broughty Ferry, Forfar, was formally opened. Mr. A. Johnstone was architect, and the contractors were Messrs. James Scott, mason; J. C. Ellis, joiner; William Webster, painter; J. William Murray, plumber; A. M'Ritchie, plasterer.

OPERATING THEATRE, SWANSEA HOSPITAL.—The building operations in connexion with the new operating theatre at the Swansea Hospital have now been commenced. The new structure will be connected with the hospital from the west corridor, and will overlook Phillips-parade. The theatre itself will be elliptical in shape, its length will be 26 ft. 6 in., breadth 22 ft., and height 16 ft. The contract is in the hands of Mr. Henry Billings. The architects for the work are Messrs. Wilson & Moxham, Swansea.

ADDITIONS TO SCHOOL, WELLINGTON.—A new schoolroom, to accommodate fifty-four infants, has been added to the existing school premises at Wellington, for the School Board, and was opened recently. The new room adjoins the existing class-room, and is divided by folding glass doors; in addition new cloak-room, lavatory, and office accommodation has been added. The new wing is of red brick, with Bath and local stone dressing with string courses. The work has been carried out by Mr. Wm. James, builder, of Bromyard, from the plans and under the superintendence of Mr. Ernest G. Davies, architect, of Hereford.

STOCKPORT INFIRMARY.—At a committee meeting held on the 22nd inst., the subscribers to the Stockport Infirmary decided to suitably commemorate the Queen's record reign by enlarging and improving the present building. Messrs. Woodhouse & Willoughby, of Manchester, were selected as the architects to carry out the work.

SANITARY AND ENGINEERING NEWS.

BRIDGE, NEAR HEDGELEY, NORTHUMBERLAND.—The new bridge erected over the Dubbs Burn, near Hedgeley, has now been taken over by the County Council. Mr. George Reavell, jun., architect, Alnwick, prepared the plans for the structure and its necessary approaches, the waterway being 22 ft. clear, and the roadway 18 ft. between the parapet walls. The contract for the work was let to Messrs. J. & G. Green, of Warkworth. Mr. R. Adamson was clerk of the works. The stone is from the Shepherds Law Quarry.

DRAINAGE SCHEME, SALISBURY.—The Salisbury Rural District Council have adopted a scheme, prepared by Messrs. Fairbank & Son, for the drainage of the parish of Milford-Without-the-Borough, at a cost of 2,200l. The septic tank system is to be used. The details have been referred to the Parish Council and County Council for consideration.

THE TRENT VALLEY SEWERAGE SCHEME, LICHFIELD.—A communication has been received from the Local Government Board, sanctioning the loan of 3,000l. for sewerage works on the Trent Valley-road, Lichfield. The plans were prepared by the City Surveyor, Mr. C. J. Corrie.

GRAVING DOCK ACCOMMODATION, GREENOCK.—Mr. Robert Crawford, Engineer to the Greenock Harbour Trust, who was asked to report on the proposed extension of graving dock accommodation, estimates that it will take about 35,000l. to widen, alter, and lower the bottom of the dock, and that it will take at least fifteen months to carry out the alterations. He further reports that even with this expenditure the requirements of all classes of vessels would not be met. On the question of constructing an entirely new graving dock at an estimated cost of 90,000l., the Harbour Trust is not satisfied that there is any possible traffic sufficient to warrant such a large expenditure.—*Scotsman.*

ABERDEEN GRAVING DOCK.—The Works Committee recommend the Aberdeen Harbour Commissioners to lengthen the dock to 600 ft., and to increase the width to 57 ft., and the depth at spring tides to 23 ft., at a cost of 115,000l., according to plans by Mr. R. G. Nicol, Harbour Engineer. The dock at present is 500 ft. long, 48 ft. wide, and 20 ft. deep.

LOCAL SEWERS IN LONDON.—The Main Drainage Committee of the London County Council have sanctioned the construction of local sewers as follows:—Hackney: 285 ft., 200 ft., and 845 ft. of 12 in. pipe and concrete sewers in Chevet-street, Mabley-street, and proposed new road respectively on the Sidney-road estate, Homerton. Lambeth: 870 ft. of 15 in. pipe and concrete sewer in Auhin-street, Launcelet-street, and Lower-marsh, Waterloo-road. Lee: 875 ft. of 15 in. and 875 ft. of 12 in. pipe and concrete sewers in Green-land, Eitham.

FOREIGN.

FRANCE.—Last week the famous collection of water-colours and pastels of the eighteenth century the work of the brothers Edmond and Jules de Goncourt, was sold at the Hôtel Drouot. The pictures realised the sum of 695,720 francs. —In one of its recent sittings the Chamber of Deputies, in spite of the opposition of the "Commission du Budget," voted by an enormous majority for the freeing of the national museums. —The jury on the Committee of Lady Artists and painters has awarded 10 medals, Dehillemont-Charlon, the first prize of the 1897 Salon. —The "Association Co-opérative d'Alimentation" has just organised a competition for an artistic ticket. The president of the jury is M. Puvis de Chavannes. —M. Charles Garnier, member of the Institute, has been elected president of the jury for French architecture at the International Exhibition at Brussels. Vice-President, M. Vuillemier. —On Friday last, in presence of the "Commissaire General" of the 1900 Exhibition, the taking down of the first truss of the Palais de l'Industrie was effected. The work of demolition is being superintended by M. Daval. Great haste will have to be made if the building is to be entirely demolished before the closing of the Salon and the month of September. —The annual exhibition of young country architects, who call themselves "Amants de la Nature," will open on Sunday (to-morrow) in the Rue de Furstemberg, and will remain open till March 14. —The jury on the open competition for the erection of a Mairie in the town of Brunoy Eave awarded the first prize to an unknown person, whose motto is "Kif Kif"; the second to MM. Charpentier, Bosio, and Ruet; and the third to M. Charles Letrosne. —The municipality of Versailles has just opened a competition for the rebuilding and enlarging of the Hôtel de Ville. The limit of expense is fixed at 1,200,000 fr. The competition closes on June 12. —The jury on the competition for the building of a "Salle des Fêtes" at Argentueil has awarded the first prize to MM. Dufresne, architect, of Argentueil, and M. Cavé, architect, of Cambrai. —A monument has just been inaugurated at Hyères (Var) to the memory of the celebrated preacher Massillon, and presented to the town by M. Alexis Mignon. The monument consists of a bronze statue of Massillon, the work of M. William Pezou, placed on a high pedestal designed by M. Emile Eude, architect. The pedestal is decorated with the arms of the town of Clermont where Massillon died, and of Hyères where he was born. —The municipality of Amiens has decided to build a municipal theatre. —In a hall in the Musée de Feltré at Nantes, a monument has just been inaugurated to the memory of the painter Elie Delaunay. The architectural part of this monument has been executed under the direction of M. Montford, architect, of Nantes. The sculpture is by Chaplain.

GERMANY.—The official reports on the telephone system in Germany show a continual and rapid increase of subscribers and connexions throughout the empire, and though the connexions between the towns are not yet as common as in Sweden, a number of new and important lines have been opened. Berlin has lately been connected by telephone with Copenhagen, a distance of about 500 miles, and with Vienna, a distance of nearly 450 miles. We understand that lines between Berlin and St. Petersburg are contemplated, or already actually in course of construction, also lines between Berlin and Buda Pesth, Brussels, Prague, and Amsterdam respectively. The success of the telephone system in Germany is primarily due to the low rates charged to subscribers. We believe the annual subscription at Berlin is 57, and the most expensive communication with another town, 500 miles distant, does not exceed a thaler, or about 3s. for a conversation of three minutes.

AUSTRIA.—The Austrian Government has decided to purchase a building which has been used for some ten years by its Embassy at St. Petersburg. The Austrian Government, we believe, has its own buildings at Rome, Constantinople, Paris, Berlin, London, and Washington; and an Embassy is being built at the present moment at Peking. The property at St. Petersburg formerly belonged to Mr. Pletovow. —An electric railway is to be built from Vienna to Baden, which is an inland watering-place, about an hour's rail from Vienna. Messrs. Schuckert, of Nuremberg, will be the contractors. The works will be partly on the track of a steam tramway, which runs in the direction of Baden. Another electric railway in Austria will be constructed in the Ruschka district.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. Philip E. Pilditch (Messrs. Pilditch, Chadwick, & Co.), architect, surveyor, and valuer, has removed from Parliament-street to No. 2, Pall Mall East. —Messrs. Fred Braby & Co., makers of constructional ironwork, of Fitzroy Works, London, will, on March 1, open a branch office at Ashton Gate Works, Coronation-road, Bristol. —The partnership between Mr. Edwin O. Sachs and Mr. Woodrow, architects, is terminated, Mr. Woodrow being about to practice separately, and Mr. Sachs continuing his practice at the former address of the firm, 11, Waterloo-place, Pall Mall. —A company has been formed to acquire, and has acquired and taken over as from July 1, 1896, the business lately carried on by Messrs. W. Gradwell & Co. as timber merchants, builders, and contractors, at the Hindpool Saw Mills and the Devonshire Dock Saw Mills and Croosoting Works, both in Barrow-in-Furness, together with the goodwill and buildings, machinery plant, &c., and the benefit of all trade contracts entered into by Messrs. W. Gradwell & Co. The business is now carried on as that of "W. Gradwell & Co., Limited." A few particulars as to the concern may be of interest. The Hindpool Saw Mills consist of about 13,400 square yards of land, with the permanent buildings thereon. These premises have been specially erected and fitted up with all the necessary machinery and plant for carrying on the business of timber merchants and contractors on a large scale. The croosoting business was purchased by Mr. Gradwell in 1892 from the executors of the late Alderman Gradwell, who had carried it on for a great number of years. The Devonshire Dock Saw Mills and Croosote Works consist of about four acres of land. These works are also fitted up with sheds, machinery and plant as saw mills and for croosoting sleepers, telegraph poles, and all descriptions of timber. Adjoining these works there are about four acres of land, with wharf accommodation; this land is used for storing timber. Both the Hindpool Works and the Devonshire Dock Saw Mills and Croosoting Works and adjoining yard are connected with the Furness Railway by sidings, and the latter have ample wharf accommodation on the Devonshire Dock.

CARPENTERS' HALL LECTURES.—The first of a series of lectures at Carpenters' Hall took place on Wednesday night. The lecturer, Professor Roger Smith, took for his subject "Our Ancient Cathedrals." The lecturer began by inviting his audience to make a hasty tour with him among our ancient cathedrals. That we might enjoy the full benefit of the journey he proposed to make a few introductory remarks upon cathedrals in general. The cathedral building period began after the year 1000; in that year the world was expected to come to an end, all building and trading was therefore at a standstill. At the fatal year over, a fresh spirit was given to every direction of life and movement. Cathedral churches sprang up on all sides. This movement was at its height in the thirteenth century, and it is this period that is characterised by more originality of design and poetry of feeling than any other before or since; it had neither the rude strength of the Norman nor the mechanical formalism of the Perpendicular period. Nowadays it is impossible to understand the value our forefathers set upon the possession of these cathedral churches. The cathedral was then the poor man's school, picture gallery, museum—in fact, the centre of his artistic and intellectual, as well as his physical, life. The bishop's power was that of the greatest of princes; the life and well-being of the district depended upon the magnificence of the monastic centre. In our time, however, schools, town halls, gigantic engineering feats, occupied the attention of the European people. Cathedrals are of interest to the enlightened only, and have ceased to be the home and centre of the political and social life of the nation. After examining a typical plan, and comparing individual features in each style with their successive developments, the lecturer concluded his interesting remarks with some beautiful slides showing the interior and exterior of our principal cathedral churches, starting in the northern counties with Durham and finishing with the Norman staircase at Canterbury. Many of the pictures were received with applause, especially that of Peterborough, the lecturer remarking that the only reasonable course of procedure in restoring the front being that decided upon. The lecture next Wednesday was announced to be upon "The Work of the Electric Current," by Prof. Fleming.

RICHMOND HILL.—The dispute between the Thames Conservancy and the Dysart Trustees as to the ownership of the riverside lands between Richmond and Teddington, which form so conspicuous a feature in the beautiful view from Richmond Hill, has now practically been settled by a compromise to which the Thames Conservancy has just given its assent. It accepted by the Dysart Trustees these conditions will preserve the neighbourhood for all time. The lands in dispute embrace an area of 17 a. 1 r. 34 p. The conservators propose that they shall retain a strip 32 ft. wide next the river for topographical purposes, which will absorb 7 a. 2 r. 10 p., and that the remainder, consisting of 9 a. 3 r. 13 p., shall be conveyed to the Dysart Trustees. This proposal has, after negotiation with the Dysart Trustees, been

embodied in an agreement, in which conditions have also been inserted reserving to the public rights of way over the lands, stipulating that no buildings shall ever be erected thereon, and that they shall always be left open and unenclosed. The trustees have also been in negotiation with the Richmond Town Council as to the selling or leasing to the Corporation of Petersham Meadows, another prominent feature in the view from Richmond Hill, and have intimated to the Corporation that whilst under their powers as trustees they could not sell, they were willing to give a lease of the large meadow of twenty-two acres for twenty-one years. —*Morning Post.*

EARTHQUAKES.—On the 12th inst., at the Royal Institution, Professor John Milne, F.R.S., delivered a lecture on "Recent Advances in Seismology." He pointed out that this science had so developed that we were now not only able to study the earthquakes which no one felt, but we had commenced to investigate their relations to geology, which were many, with most promising results so far as geology was concerned. Of the earthquakes we got—and we had a thousand of them a year—half of them came from deep water. The ocean was really the home of our earthquakes. Twenty years ago their study commenced in Japan, with the result that the seismology of the whole country had revolutionised the methods of building in Japan had been entirely altered, so that houses erected on new principles stood, while their neighbours were shattered. The lecturer exhibited a seismic map of Japan, pointing out that it enabled the Japanese to analyse earthquakes, and to give them their proper value. Next he threw on the screen photographs of damage done in the Severn Valley when the recent shocks. Chimneys of ordinary construction were, he pointed out, the first things to go. If any one had been on an elevation and could have looked down on the city of Hereford, he would have seen the chimneys going through kaleidoscopic movements—a wild dance, and to give them their proper value. Next he put a chimney up by itself; it would stand, but if they put it in contact with something which did not vibrate in the same degree it was bound to go. To put a tie-rod to a chimney was as good as taking a pair of scissors and cutting off the chimney at the place where the tie-rod met it.

LYTE'S METALLIC STAIR-TREAD.—A sample of this stair-tread has been forwarded to us. It is formed of steel-cored lead wires about 1/4 in. diameter, laid parallel to each other, and laced together by plain steel cross-wires, after which it is passed through rolls for the purpose of obtaining a smooth surface, while the cross wires prevent the lead being broken away. It seems calculated to give a good foothold (though, of course, this cannot be tested by a small sample), and to be durable, and it is of very neat appearance. Messrs. Easton, Anderson, & Golden are the agents for it.

FORMATION OF A MASTER BUILDERS' ASSOCIATION, LONGRIDGE, LANCASHIRE.—An organisation entitled "The Longridge District Master Builders' Association," has been formed, and become affiliated with the Lancashire Federation of Building Trade Employers. Some twenty-four firms have joined the Association, the objects of which are to promote a good feeling in the trade; to disseminate information regarding trade matters; to obtain more equitable terms in certain cases between architects and builders in reference to contracts, and to enable the employers to deal with trade questions, and generally to safeguard their interests. Mr. J. T. Parker is the President; Mr. W. Almond, the Vice-President; Mr. T. Kay, treasurer; Mr. J. T. Sanderson, secretary. The trade generally is disturbed in consequence of various local rules, and one of these prevents the Longridge masters taking work done into Preston, a restriction which, however, does not apply to Preston builders taking stone to Longridge. Other districts have the same grievance, and the matter has been brought before the Lancashire Federation. —*Preston Herald.*

MANCHESTER SHIP CANAL.—The report for the half-year ending December 31, 1896, states that there has been on the average a steady and continuous increase in the volume of sea-going traffic, although the monthly returns naturally vary considerably as ships make long or quick voyages and the seasons of the various trades are late or early. The greater portion of the increased traffic has consisted of imports. The export trade is from special causes much more difficult to obtain in quantity. The Engineer's report as to works completed that the dredging plant has been continuously engaged in the removal of silt and sewage sludge from the different reaches of the Ship Canal, and the depth of water has been maintained, although (partly as a result of the abnormally wet season) exceptional quantities of material have been deposited in the waterway. The works for the closing of the tidal openings have been proceeded with in accordance with the powers of the Act of Parliament obtained last Session; these works are now so far complete that tidal water will no longer flow into the Canal through the openings. The works required for the construction of the pontoon dock at the new Port, and for the removal of the dam outside the dock, have been completed. The pontoon was successfully moored in the new position in November last. A great improvement in the

waterway has been effected by the removal of the pontoon. At the Latchford Locks the steel gates, which were constructed to enable the upper gates of the 65-ft lock to be removed and repaired, have been fixed in position, and the original greenheart gates are now being reconstructed on the slipway at Thebwall. Considerable additions have been made to the railway lines and sidings and to the paved roadways at the docks. Other works of a similar character, including new sidings at Mode Wheel, are in hand. The slopes of the Canal generally are in good condition.

ROYAL ACADEMY.—The days for receiving works for this year's Royal Academy Exhibition are—for paintings and drawings, Friday, Saturday, and Monday, March 26, 27, and 29; and for sculpture, Tuesday, March 30.

APPOINTMENTS OF SANITARY INSPECTORS.—The Local Government Board has sanctioned the appointments of the following sanitary inspectors:—Mr. E. T. D. Jordan in Shoreditch, Mr. E. Anthony in Paddington, and Mr. W. G. Auger in St. Pancras.

SURVEYORS AND AUCTIONEER'S CLERKS' PROVIDENT ASSOCIATION.—We have received the annual report of this Association up to December 31, 1896. Sixteen proposals were received during last year, of which thirteen were accepted. The whole of the funds show an increase, while the sick allowance payments have been less. The Committee have recently voted a subscription to All Saints Conventual Home, Eastbourne, where a member recovering from illness (if not of an infectious character) may stay for three weeks free of charge.

THE TIMBER TRADE'S BENEVOLENT SOCIETY.—The first meeting of the committee appointed to deal with the affairs of the Timber Trades' Benevolent Society, which was recently founded to commemorate the Diamond Jubilee of the Queen, was held on the 10th inst., at the Cannon-street Hotel, under the presidency of Mr. W. L. P. A special sub-committee was appointed to deal with the rules and regulations. Mr. Atlee, of Messrs. Druce & Atlee, was appointed hon. solicitor; and Mr. W. A. Hill, of 6, Moorgate-street, the secretary.

ELECTRICAL EXHIBITION IN NEWCASTLE.—The Electrical and Engineering and General Trades and Art Exhibition, held in buildings which have been erected in Northumberland-road, Newcastle, was opened on the 18th inst. by the Mayor.

THE FRONTAGE DISPUTE AT STOKES NEWINGTON.—On the 22nd inst. the work undertaken by the London County Council in carrying out the order of Mr. Lane, police magistrate, for the demolition of 7 ft. of a new building at the opening of Prince George-road from Stoke Newington-road, was practically completed. The building was erected 7 ft. beyond the building line as defined by the Superintending Architect of the London County Council, and after the foundations had been put in the Council summoned the builder to the North London Police-court, but the magistrate upheld the builder's case. Notice of appeal was given, and the case was ultimately decided in favour of the Council. In the meantime, however, the building had been completed, and fitted up in a most costly style. The case was remitted from the High Court, and Mr. Lane ordered the demolition of so much of the building as stood out beyond the building line—roughly speaking, 150 ft. by 7 ft. The order was served on the builder, but, though the Council allowed the matter to rest for twelve months, he made no move in the matter, and the Council undertook to do the work themselves. As the structure now stands, it appears to have been taken clean off from end to end. Rafters and iron girders have been cut exactly to the building line. The depth of the structure is now only 13 ft., and it is said to be entirely useless for any purpose. It has been shored up, but as one side of the whole length is open, persons experienced in these matters have expressed the opinion that a gale of wind would complete the work of demolition. It is anticipated that the rest of the building will be removed under the Dangerous Structures Act.—*Morning Advertiser.*

CAPITAL AND LABOUR.

WAGES IN THE LOCAL BUILDING TRADE, MANCHESTER.—On the 15th inst. the master bricksetters in the Swinton, Peodlebury, Moorside, and Clifton districts conceded an advance of a halfpenny per hour to their bricksetters, making the present rate of wage rod, per hour. The labourers have also sought an advance from 6 1/2 to 7 1/2 per hour. From inquiries, however, the employers have ascertained that no such rate obtains anywhere round Manchester, and the notices have been withdrawn.

LEGAL.

LITIGATION OVER ANCIENT LIGHTS IN LINCOLN'S INN.

The case of Debenham v. Forster, Frere, & Co., which occupied the attention of Mr. Justice Siding in the Chancery Division for several days, concluded on the 18th inst. The facts sufficiently appear from the judgment.

His Lordship, in giving judgment, said that the

action was brought to obtain an injunction to restrain an alleged injury to the plaintiffs' ancient lights, the plaintiffs being the owners and lessees of No. 27, Whetstone Park, Lincoln's Inn Fields, and also the lessees of the next house, No. 26, the defendants being owners and occupiers of a house on the opposite side of Whetstone Park, and known as No. 28, Lincoln's Inn Fields. In the autumn of 1895 the defendants proposed to pull down the rear part of their building and to rebuild it, no objection being taken on the part of the plaintiffs down to November 5, 1895, although a hoarding had been erected on the work, and scaffolding had been put up when the rebuilding began some time in the month of September. On November 5, however, complaints were made by the plaintiffs which led to an interview which took place on that day between Mr. Herbert Dyball, the architect for the plaintiffs, and Mr. Eustace Frere, the architect for the defendants. In the course of that interview the height at which the building was to be raised was ascertained, and the future height to which it was to be extended was agreed on. But, unfortunately, the two gentlemen did not agree in their account of the facts as they then stood. According to the evidence of Mr. Dyball—which was borne out by the memorandum which he made at the time—the then height of the defendants' building was 26 ft. 6 in.; but according to the evidence of Mr. Frere it had reached 6 in. higher. Both parties had agreed that it was intended that the height of the building should not go beyond 37 ft. 2 in., and that that height was not ultimately attained. All that had to be done was to complete the building by putting a roof on the flat which stood immediately behind the rear wall, and which, as the evidence stood, would have meant an addition of 4 in. to the height. Speaking roughly, the breadth of Whetstone Park was about 16 ft., the roadway getting a little narrower as it went westward. The plaintiffs complained that six windows had been interfered with—viz. two on the ground floor, and two in the basement of No. 27, and two on the ground floor of No. 26. He considered that the evidence showed undoubtedly that there was, mathematically a certain loss of light to the two windows on the ground floor of No. 27, but the question was, Had the plaintiffs made out an actionable wrong? On that point the evidence of the experts did not help him at all. Not one of the experts, with the exception of Mr. Dyball, senior—who had admitted that he had not been on the locus in quo for many years—was able to give any comparison as to the state of the light as it was enjoyed before, and as it was enjoyed after the alterations complained of. At the present time both Nos. 26 and 27 were occupied by a firm of printers, Messrs. Ford, Chapman, & Co. The only direct evidence as to the diminution of light to those two windows was given by a workman named Elliott, who was employed in sampling, matching, and sorting the paper received. The sorting took place principally in the basement of No. 27, the matching and sampling taking place in the ground floor. Elliott's evidence was to the effect that since the alterations of the defendants he had noticed a difference in the light coming to the ground floor of No. 27. That witness had said that the diminution in light as to those two windows was considerable, and that he had now to go to the door to match his light tints, instead of being able to do that at the cupboard, as he had done before the alterations. The question was, in that serious diminution in the light? The conclusion he (his Lordship) came to with regard to those two windows was that there had been an actionable injury. The evidence given with regard to the windows in the basement of No. 27, and the ground floor of No. 26, seemed to be much weaker. In his opinion it was not a case for a mandatory injunction, and the only remedy to which the plaintiffs were entitled was that of damages. He was asked to assess the damages on the estimate of expert witnesses called by the plaintiffs, who assessed the damages suffered by the plaintiffs at from 200l. to 250l. His Lordship's view was that those witnesses took an exaggerated view of the injury to the plaintiffs. He did not agree with those witnesses that there was any substantial injury done to the basement windows, and he thought that the injury done to the ground floor of No. 27 was very much less than what they considered it to be. The question was what course ought to be taken. It seemed to him that really he had no materials before him on which he could assess the damage to the ground-floor windows of No. 27, and that the proper course was to direct an inquiry as to the damages as to that, the costs of the inquiry to be reserved. He thought that the right order would be, in the circumstances, to give the plaintiffs the costs of the action, except so far as they had been increased by the claim in respect of the windows in the basement of No. 27, and the windows on the ground floor of No. 26.

LITIGATION THROUGH A LANDSLIP.

The case of Sharpe v. Harman came before the Court of Appeal, composed of the Master of the Rolls and Lords Justices Lopes and Chitty on the 19th inst., on the appeal of the defendant from the judgment of Mr. Justice Mathew

in the Queen's Bench Division. The action was brought by the plaintiff, a landowner at Hastings, to recover from the defendant, an adjoining landowner, damages for injury to his property, which was caused by a landslip. It appeared that the plaintiff owned some land on a sloping cliff, the defendant being the owner of the land on the cliff just above. In 1859 the plaintiff's predecessor in title built two houses on his land, called Nos. 18 and 19, St. Mary's Terrace, and excavated the soil at the back so as to provide courts for the houses, and built a high wall against the cliff, to prevent the cliff from falling. In 1879, the defendant's predecessor in title built houses on his land above, and for that purpose excavated the soil at the back of his land and built the houses on the land so excavated. The soil excavated amounted to about 70 tons, which he put upon the land in front of his houses, and built a retaining wall, to prevent the earth from slipping down. The base of the wall was made of concrete, and the foundations were built 2 ft. into the natural ground, being sunk about a foot below the top of the plaintiff's wall, but at one side of it. On Dec. 1st, 1895, a landslip occurred at night, the defendant's wall coming down, and carrying with it part of the cliff, and nearly all the plaintiff's wall being destroyed. Mr. Justice Mathew held, upon the evidence given, that the defendant's wall ought to have been built into the solid rock, and that the defendant was therefore liable, and he gave judgment for the plaintiff for 150l. damages. The defendant now appealed.

At the conclusion of the arguments of counsel the Master of the Rolls in giving judgment said that in his opinion the act of the defendant, without any default on the part of the plaintiff, had caused part of the land of the defendant to fall on the plaintiff's land. In his opinion, therefore, the appeal must be dismissed.

The other Lords Justices concurred, and the appeal was accordingly dismissed with costs.

Mr. Witt, Q.C., Mr. R. M. Bry, and Mr. C. F. Lloyd appeared for the appellant; and Mr. Crump, Q.C., and Mr. Clavel Sater for the respondent.

MEETINGS.

FRIDAY, FEBRUARY 26.

Institution of Civil Engineers (Students' Meeting).—Paper to be read:—"Rockers and Expansion-Bearings as applied to Girders of Short Span," by Messrs. A. F. Baynham and F. B. H. Dolree. 8 p.m.
Royal Institution.—Lieut.-Col. C. R. Conder on "Palestine Exploration." 9 p.m.

SATURDAY, FEBRUARY 27.

Builders' Foremen and Clerks of Works' Institution.—Annual Dinner, King's Hall, Holborn Restaurant. 6.30 p.m.
Edinburgh Architectural Association.—Visit to North British Distillery.

MONDAY, MARCH 1.

Royal Institute of British Architects.—(1) Special General Meeting to elect the Royal Gold Medalist for the current year; (2) the Ninth General Meeting (business) for the election of candidates for membership. 8 p.m.
London Institution.—Dr. H. Lewis Jones on "The History of Röntgen's X Rays and their Practical Applications," illustrated by experiments. 5 p.m.
Society of Engineers.—A paper entitled "Notes on the Proposed By-laws of the London County Council with respect to House Drainage," to be read by Mr. J. P. Barber. 7.30 p.m.
Sanitary Institute (Lectures for Sanitary Officers).—Dr. J. H. Newsholme on "Nature of Nuisances, including Nuisances the Abatement of which is Difficult." 8 p.m.
Society of Arts (Lancet Lectures).—Mr. C. F. Cross, F.R.S., on "The Industrial Uses of Cellulose." 11.11. 8 p.m.
Leeds and Yorkshire Architectural Society.—7.30 p.m.
Liverpool Architectural Society.—Paper by Mr. W. E. Willink, entitled "Medieval Trade Guilds." 6 p.m.

TUESDAY, MARCH 2.

Society of Arts (Applied Art Section).—Mr. Matthew Webb on "Gesso." 8 p.m.
Institution of Civil Engineers.—Papers to be further discussed:—(1) "The Main Drainage of London," by Messrs. J. E. Worth and W. Sano Crimp; (2) "The Purification of the Thames," by Mr. W. J. Dibdin. 8 p.m.

WEDNESDAY, MARCH 3.

Royal Archaeological Institute.—Mr. H. P. Fitz-Gerald Marriott on "The Portraits of Pompeii."
Carpenters' Hall, London Wall.—Professor J. A. Fleming on "The Work of the Electric Current," with lantern illustrations and experiments. 8 p.m.
British Archaeological Association.—Mr. Thos. Blashill on "Some Seventeenth Century Records of Absentees from Church." 8 p.m.
Society of Arts.—8 p.m.
Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at the L.C.C. Common Lodging House, Parker-street, Drury-lane. 3 p.m.
Liverpool Engineering Society.—Mr. W. Brodie on "Dock Gates." 8 p.m.
Edinburgh Architectural Association.—Mr. Alexander Drew, C.E., on "The Practical Designing of Iron and Steel Roofing." VI. 8 p.m.
Edinburgh Architectural Society.—Mr. R. S. Lottimer on "The Artistic Work and Influence of William Morris." 8 p.m.

THURSDAY, MARCH 4.

Society of Antiquaries.—Election of Fellows. 8.30 p.m.
Society of Arts.—8 p.m.
Royal Institution.—Professor Percy Gardner, F.R.S., on "Greek History and Egyptian Monuments." I. 3 p.m.
Sanitary Institute (Lectures for Sanitary Officers).—Dr. J. J. Sykes on "Objects and Methods of Inspection." 8 p.m.

COMPETITION, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITION.

Table with columns: Nature of Work, By whom Advertised, Premiums, Dates to be delivered. Includes entries for Police Station, Court House, and Laundry.

CONTRACTS—Continued.

Table with columns: Nature of Work or Materials, By whom Required, Forms of Tender, as Supplied by, Tenders to be delivered. Includes entries for Church Restoration, Fittings, Brewery, Laboratory, and various building works.

CONTRACTS.

Table with columns: Nature of Work or Materials, By whom Required, Forms of Tender, as Supplied by, Tenders to be delivered. Includes entries for Wood Blocks, Street Improvements, Additions to Schools, Sewers, and various building works.

PUBLIC APPOINTMENTS.

Table with columns: Nature of Appointment, By whom Advertised, Salary, Applications to be received. Includes entries for Clerk, Deputy, and Assessor.

Those marked with an asterisk (*) are advertised in this Number. Competitions, p. iv. Contracts, pp. iv, vi, & viii. Public Appointments, pp. xvi, & xix.

Institution of Civil Engineers.—Students' Visit to the Works of the Incandescent Electric Lamp Company, Brook Green, Hammersmith. 2.30 p.m. Society for the Encouragement of the Fine Arts.—Mr. F. H. Evans on "Cathedrals and Ely Cathedrals," with limelight illustrations. 8 p.m. London Illustrations.—The Rev. Canon Benham on "Chenpside," illustrated. 6 p.m.

FRIDAY, MARCH 5.

The Architectural Association.—Dr. F. S. Granger on "Greek Sculpture and Greek Legend," with lantern illustrations. 7.30 p.m. Saturday, March 6. The Architectural Association.—Spring Visit to Her Majesty's Theatre, Haymarket. 2.30 p.m. Sanitary Institute (Incorporated for Sanitary Officers).—Inspection at the Marylebone Stoneyard, Richmond-street, Edgware-road, W. 3 p.m. Sanitary Inspectors' Association.—Annual Dinner, Holborn Restaurant. 6 p.m. Institution of Junior Engineers.—Conversation at the Westminster Palace Hotel. Reception at 7.30 p.m. by the President, Mr. A. R. Binmie, M.Inst.C.E., and Mrs. Binmie.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS. 1,680.—FIRE-GRATES: W. Johnson.—The inventor proposes to construct cottage and bedroom fire-grates so that they can be either used as open grates or converted into cooking ones. For this purpose he provides grates with a movable "cooking plate" at a suitable height over fire, and also a hinged plate to top front bar of grate, provided with a draught-pipe or door. The flue is so formed as to utilize all the heat of the fire. 2,625.—BRICK-DRYING CHAMBERS: E. Thomas.—This invention has for object the means of drying bricks by means of steam or hot water. Walls of kiln are constructed either hollow or traversed by channels, so that the pipes for heating can pass around interior. These are in connexion with a steam boiler or the exhaust pipe of a steam-engine. Floor (composed of a porous composition) is laid on brickwork, so as to leave hollow spaces to admit steam. 3,604.—PREVENTION OF PIPES BURSTING BY FREEZING: H. H. Le Roy.—The inventor connects pipes from main to house by a bib-cock inserted at the outlet end of the valve controlling the service from the main. Freezing and bursting of pipes is thus prevented by drawing off all water contained in pipes beyond the valve controlling the supply from the main. 3,672.—ARTIFICIAL STONE: S. Neffgen.—The inventor takes slaked lime containing as little water as possible, and mixes it with quartz sand, and, if necessary, with argillaceous colouring matter in suitable proportions. The mixture is moulded and the blocks placed in a heating chamber, heated by steam or hot air. Temperature is then raised to about 20 deg. C. in first five or six hours. Heat is slowly raised to about 80 deg. C., reaching this point after twelve hours, and maintained for two or three hours. Temperature is then rapidly raised to 90 deg. C., and the heat maintained for four or six days, according to size of blocks. This process causes the formation of a smooth and solid layer of calcium silicate.

4,577.—WATER WASTE-PREVENTING FLUSHING APPARATUS: S. S. Helley.—The inventor provides a duplex syphon arrangement, the shorter legs being situated on the flushing cisterns. The other legs descend and join each other, then merge into the descending pipe by which the flushing water passes from the cistern and syphons to the closet pan, &c. One of the inlet legs of the syphons in the cistern is provided with a valve, which can be raised in the leg and operated by hand, foot, &c., with the result that both syphons act simultaneously to discharge the water from the cistern to the place to be flushed. 5,024.—CHIMNEY COWLS: F. Rogers.—The inventor contracts top of chimney or shaft, and supports a hood also thereon by suitable arms, the top of this hood being also contracted. In turn this hood supports a helmet by means of arms, lower portion of helmet is made taper, and joins a cylindrical portion of approximately the same diameter as the upper part of hood. Upper portion of helmet also contracted, and furnished with a perforated ring at its orifice. Cowls may consist of any material. 5,683.—DOMESTIC FIRE-GRATES: J. Parkinson.—The inventor hinges the front bars of the grate to one or both sides, so that they can be swung out on their pivots for the purpose of cleaning, moving live coals or cinders from grate, &c. 18,745.—SEWER GAS DESTROYER: W. Eppington.—The inventor's apparatus comprises (1) a portable engine for driving the fan, (2) a sewage gas extractor and destructor, (3) a disinfecter, (4) air-proof mats, and (5) air-proof drop plates. The gas extractor and destructor is a metal cylinder, which is placed directly over the manhole. In the extractor are placed a fan, and fire-bars for a fire near the top of same. Disinfecter is also a metal cylinder, with a bottom of fire-bars, and a perforated shelf for disinfectants, and is thoroughly air-tight. When apparatus is in use in road where defective drainage has been found, the extractor is placed over first manhole, the drop-plates are fixed at all points in the section of sewer being treated, so as to isolate it; the mats are placed over the covers of all the manholes between first and last; and the disinfecter is then placed over shaft of last manhole, with the result that the whole of the sewer gas is under control and can be thoroughly dealt with. 21,836.—WINDOW-SASH ATTACHMENT.—A. J. Baller and Another.—The inventors claim in connexion with ordinary sash windows, the combination of vertically movable sashes, movable in the spaces formed by the usual beads, and provided with counter-balanced weights, which are secured by plates, which plates are provided with recesses in their upper sides and inwardly directed flanges, behind which are placed blocks, with which are connected cords or chains, which are also connected with said weights, said stile and bars being provided with longitudinal grooves, in which cords are placed. Various modifications of the invention are described. NEW APPLICATIONS FOR LETTERS PATENT. FEBRUARY 3.—3,256. R. Leftwich, Flossing-cats.—3,272. G. Knowles, Valve Ventilating Mechanism for Air House Drains and Sewers.—3,310. S. Malfey, Flushing Cistern.—3,342. C. Lucke, Presses for Forming Artificial Stones, Blocks, Tiles, &c. FEBRUARY 9.—3,436. W. Smith, Chimney-pots.—3,463. T. Kilner, Soil, Rain, and other like Pipes. FEBRUARY 10.—7,531. J. Wright, Waste or Slop-water

Closets.—3,571. A. Van der Vigh and Others, Fireproof Buildings.—3,575. B. Russell, Glass Lens for Pavements or Stall-board Lights.—3,585. J. Whittaker, Builders' Scrolling. FEBRUARY 11.—3,560. A. Fry, Watertight Metal Bar for Glass Roofing.—3,562. H. Darrah, Ceiling Roses, &c.—3,604. M. Spear, Supporting and Guiding Sliding Doors.—3,604. J. Hamblet and J. Stanford, Construction of Walls to enable ferns and other plants to be grown thereon, and in brackets for building the walls. FEBRUARY 12.—J. Farley, Joints of Earthenware Pipes, &c.—3,767. D. Pont, Mortaring Machines.—3,784. W. Turner, Graining Tool. FEBRUARY 13.—853. M. Hall, Floors of Rooms and Buildings.—3,850. H. Gibson and W. Iyer, Windows and Window Frames.—3,883. J. Shanks, Cisterns, Sinks, Baths, &c.—3,886. F. Saniter, Imitation Tiles on Metal. FEBRUARY 14.—3,890. Sliding Window Sashes and Sashes of Glass.—3,922. C. Archer, Rotating Shafts, &c., to each other.—3,960. H. Hauser, Rotating Ventilators or Fans.—3,977. W. Byson, Sash Fastener. PROVISIONAL SPECIFICATIONS ACCEPTED. 26,570. M. Adams, Metal Bends.—312. R. Ewing, Joining of Iron and other Metal Pipes.—345. E. and L. Richards, Pushing Cistern Apparatus and Fittings.—729. H. Phillips and S. Wilckens, Vitreous Enamelled Cast Metal as Door Furniture.—1,171. J. Moore, Regulation and Fastening of Window Sashes and Frames.—1,322. Tonks (Limited), J. Whiting, Spring Hinges and Door Springs.—2,047. W. Heisteman, Flushing Apparatus with Movable Syphon for Water-closets.—2,164. W. Drummond, Chimney-pots.—2,220. G. Jennings and Others, Lavatory, Bath, and other Valves.—2,244. Sir J. Smith, Fire Grates.—2,257. W. Bray, Chimney Tops.—2,309. W. Hewitts, Tiles.—2,504. H. Jenkins and W. Addis, Chimney Cows, Chimney and Ventilating Shafts.—2,689. G. Ward, Chimney and Ventilating Shafts.—2,709. T. Drummond, Chimney Cows and Ventilators. COMPLETE SPECIFICATIONS ACCEPTED. Open to opposition for two months. 3,079. F. Newman, Chisel.—3,237. F. O'Donnell, Syphon Flushing Cisterns.—6,460. J. Mearns, Taper Bell Pipe for House Drains.—27,954. J. Penney, Cylindrical Ventilated Window Lights.—27,955. J. Penney, Cylindrical, Vault Lights.—28,480. W. Bursant, Gully, Gutter, or Like Trap.—302. A. Hayward, Window Shutter Fasteners.

SOME RECENT SALES OF REALTY.

Table with columns: Description of Property, Date, and Price. Includes entries for Marlborough Gate, Penrycel, and Highbury.

PAIGNTON.—For works at Primley House, for Mr. H. C. Beifield, Messrs Norman G. Bridgman and Walter H. Bridgman, architects, Torquay, Paignton, and Teignmouth. Quantities by Mr. Vincent Catermole Brown of Paignton.—

Table listing contractors and amounts for Paignton works, including R. Harris, C. & R. E. Drew, E. Pike, H. Webber & Sons, and others.

PAIGNTON.—For erecting a villa residence, for Mr. William Torrey, Messrs Norman G. Bridgman and Walter H. Bridgman, architects, Torquay, Paignton, and Teignmouth. Quantities by Mr. Vincent Catermole Brown, of Paignton.—

Table listing contractors and amounts for Paignton villa residence, including S. Maridge & Curtis, E. Westlake, and others.

PAIGNTON.—For erecting Constitutional Club rooms and business premises, for Mr. Thomas Adams, Mr. Walter G. Coulredo, architect, of Paignton. Quantities by Mr. Vincent Catermole Brown, of Paignton.—

Table listing contractors and amounts for Constitutional Club premises, including E. Westlake, H. P. Bovey, R. Yeo, H. P. Rabich, and H. Webber & Sons.

SLAPTON (S. Devon).—For additions and alterations to "Higher Stairs," for Mr. H. G. Morgan, Mr. H. Vickery, architect, Torcross, Kingsbridge.—

Table listing contractors and amounts for Slapton alterations, including W. Edgecombe and A. Brooking.

SOUTHDOWN SEA.—For sewerage and road-making on the Avenue Estate, Southdown Sea, Mr. Arthur T. A. Bowyer, surveyor, 99, Leadenhall-street, E.C.—

Table listing contractors and amounts for Southdown Sea works, including W. Buxton.

STONDON MASSEY (Essex).—Accepted for additions to "Chivers," Mr. R. Mawhood, architect.—

Table listing contractors and amounts for Stondon Massey, including H. Barlow, Oggar.

TRURO.—Accepted for the execution of work at St. John's Schools, Mr. Wm. Swift, architect, 25, Lemon-street, Truro.—

Table listing contractors and amounts for Truro schools, including H. Tippett, Lemen-street, Truro.

TYNEMOUTH.—For paving, &c., George-street East, and Eleanor-street, Cultercoats, for the Urban District Council, Mr. J. E. Smilie, Borough Surveyor, Tynemouth.—

Table listing contractors and amounts for Tynemouth paving, including G. E. Simpson, Thornton & Co., and others.

WALSALL.—For sewerage, &c., Chapel-street, Blakenall, and Providence-lane, Leamore, for the Corporation.—

Table listing contractors and amounts for Walsall sewerage, including James Atkins, Ryecroft, Walsall, and others.

WELLINGBOROUGH.—For the erection of a technical institute, Council chamber, &c., for the Urban District Council, Messrs. Sturman & Archer, architects, Wellingborough.—

Table listing contractors and amounts for Wellingborough institute, including G. Brown & Son, T. H. Dorman, W. Goodman, and Hacksley Bros.

WIDNES.—For the erection of cemetery chapels, &c., Moss Brook, for the Corporation, Mr. J. S. Sinclair, C.E., Town Hall, Widnes.—

Table listing contractors and amounts for Widnes chapels, including C. Burt, Wm. Widdard, E. Gabbatt, John Matthews, Joseph Kilham, and C. Woods & Son.

LONDON SCHOOL BOARD TENDERS.—At the meeting of the London School Board on Thursday the following lists of tenders were considered:—

Table listing tenders for London School Board, including Scawell-street, W. & G. Cannon, J. Fraser & Son, and others.

"ASHBURNHAM."—Erecting Upper Standard rooms, water closets, &c.:

Table listing contractors and amounts for Ashburnham works, including Holloway Bros., G. S. Williams & Son, W. Shurmer, and others.

PENROSE STREET.—Re-building offices, &c.:

Table listing contractors and amounts for Penrose Street offices, including J. Grover & Son, G. S. Car, I. Carrett, and others.

SHERBROOKE ROAD.—Erecting Higher Standard rooms, &c.:

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Proposed New Drainage By-laws for London.



the Public Health (London) Act 1894, Section 39 (1), the London County Council was instructed to "make by-laws with respect to water-closets, earth-closets, privies, ashpits, cesspools, and receptacles for dung, and the proper accessories thereof in connexion with buildings, whether constructed before or after the passing of this Act." In 1893 these by-laws came into operation, and no sooner have architects and builders become familiar with them than a new set of by-laws relating to water-closets and other matters is proposed. This time, however, power is sought under the far-away Metropolis Management Act 1855, as Section 39 of the more recent Act is not sufficiently comprehensive to include such matters as subsoil drainage, rain-water pipes, and the waste-pipes from baths, sinks, &c.

Certainly the sanitary regulations of London are in an almost hopeless muddle. What with the London County Council, the Commissioners of Sewers, and the forty Vestries—each with its own regulations—matters have come to a pretty pass. The proposed by-laws of the County Council are apparently intended to supersede the regulations of the Vestries and to impose a uniform system of sanitation throughout the whole of the Metropolis with the exception of the City. Perhaps it has been discovered that the regulations of the Vestries were not legal. Be this as it may, the adoption of one set of by-laws applicable to nearly the whole of London is undoubtedly a step in the right direction, and one for which London architects and builders may well be grateful.

The proposed by-laws have been framed for the purpose of regulating the dimensions, form, and mode of construction of the pipes, drains, and other means of communicating with sewers, and the traps and apparatus connected therewith, and also for the purpose of providing for their proper cleansing and repair.

Many of the proposed by-laws are almost identical with existing regulations, either of the Council or of one or other of the Vestries. The first by-law is quite non-contentious, merely stating that subsoil drains must be disconnected from sewers by means of a suitable trap and ventilating opening. The second requires all rain-water pipes to discharge over or into properly-trapped gullies, and prohibits the connexion of water-closets, urinals, slop or other sinks, baths or lavatories, with rain-water pipes; the only objection that can be reasonably made to this is that the waste-pipes from baths and lavatories might be excepted from the prohibition, and a proviso inserted similar to that in the Clerkenwell Vestry's Regulations, namely, "waste-water pipes in the upper floors of premises. . . if connected with rain-water pipes, shall only be with such pipes as are outside the building, and the junctions shall be made at such points outside the building as shall be easily accessible at all times." By-law 3 deals with drains, and comprises ten clauses. Drains may be of stoneware, cast-iron, or "other equally suitable material." Clause 2 gives the thickness of metal for cast-iron pipes, namely, $\frac{1}{8}$ in. for 3-in. pipes, and $\frac{3}{8}$ in. for 4, 5, and 6-in. pipes. Although 3-in. pipes are mentioned, in this clause they can only be used for the branch drains from rain-water pipes, as the following clause provides that all drains used for conveying "sewage" must be not less than 4 in. in diameter. The latter part of the third clause is the one to which the greatest objection will be raised, as it insists upon all sewage-drains being laid on a bed of concrete not less than 6 in. thick, and being "so constructed as to be watertight and to be capable of resisting a pressure of at least 2 ft. head of water," but the existing requirements of some of the Vestries are quite as stringent. The remaining clauses of By-law 3 do not call for comment; they are less exacting than several of the regulations now in force. By-law 4 provides for the usual disconnecting trap and inspection chamber, and By-law 5 prohibits right-angled junctions in drains. The sixth by-law deals with the ventilation of drains, and is an almost *verbatim* copy of the regulations in force in Islington; in one or two places the new by-law is less stringent than that on which it is based, but the size of the ventilation shaft is increased from "three inches" to "that of the drain with which

such pipe or shaft may communicate," unless a soil-pipe, or slop-sink waste, be used as a ventilation shaft, in which case a diameter of $3\frac{1}{2}$ in. will suffice, provided the drain from it be not larger than 4 in. By-law 7 relates to waste-pipes from baths, lavatories, and sinks, and overflows from cisterns, &c., and is unobjectionable. Soil-pipes and their connexions with closets and drains are dealt with in the nine clauses of By-law 8. These follow in the main the existing by-laws of the Council; they are, however, more exacting in respect of the weights of soil-pipes ($3\frac{1}{2}$, 4, 5, and 6-in., lead pipes being increased from 65, 74, 92, and 110 lbs. per 10 ft. length to 73, 83, 104, and 125 lbs.; and $3\frac{1}{2}$, 4, 5, and 6-in. iron pipes being increased from 48, 54, 69, and 84 lbs. per 6 ft. length to 65, 73, 121, and 142 lbs. respectively), and cast-iron soil-pipes are forbidden *inside* buildings; on the other hand, the requirements respecting the position of the open tops of soil-pipes in relation to windows and roofs are simplified to one word, *safe*—the open end shall afford "a *safe* outlet for foul air"—the wire guard at the top is no longer compulsory, and the usual method of jointing pipes, &c., may be superseded by any other "equally suitable and efficient" method. By-law 9 requires the ventilation of the traps of water-closets where more than one are connected with the same soil-pipe; this by-law would be improved by the addition of the words, or "slop-sink" after the word "water-closet," wherever this occurs; it would then be made clear that water-closets and slop-sinks may be connected with the same soil-pipe, provided their traps are properly ventilated. The tenth by-law relates to slop-sinks, and is not immoderate in its requirements. By-law 11 throws on the owner of property the onus of repairing and maintaining "all pipes, drains, and other means of communicating with sewers, and the traps and apparatus connected therewith." This is a regulation which may induce carelessness in tenants and consequently inflict considerable hardship on owners, and we certainly think that reasonable objection may be taken to it. It is merely an application to "pipes, drains . . . traps, and apparatus," of the principle already applied by the Council to "water-closets, earth-closets, privies, ashpits, cesspools, and receptacles for dung," but it is undoubtedly a principle which can be carried too far. The

carelessness of tenants and servants is usually responsible for the choking of traps and frequently for the stoppage of pipes, and we think that justice would be met by making both owner and occupier responsible, so that the owner need not be mulcted where the damage is due to the carelessness of tenants or their servants. The twelfth is the usual "penalty" by-law, and the thirteenth declares that the by-laws shall apply to all *new* sanitary work executed in existing buildings. The by-laws, therefore, are not retrospective; existing arrangements may remain so long, of course, as they are not nuisances.

Doubtless there are some persons who will condemn the proposed by-laws *in toto*; to these, sanitary regulations mean reduced profits and harassing supervision. With this class of men we have no sympathy. Others there are who fear that the stringency of the by-laws will unduly and unnecessarily enhance the cost of building in the Metropolis, and add to the already heavy burdens of householders. Indeed, we have received letters to this effect from several architects, who seem to regard the new regulations as a new tyranny. With the views of these we sympathise to some extent, but at the same time we must point out that sickness is far more expensive than sanitation, and if the regulations are the means of saving *one* person in every house from one illness of even moderate severity, the expense entailed by them will have been well spent. The proposed by-laws, moreover, are less exacting in several respects than many now in force, and, as they have the merit of unifying the regulations throughout the whole of London (with the exception of the comparatively small area of the City), we welcome them as a boon to architects and householders. They are not, perhaps, perfect—what is?—but, on the other hand, they are not unduly exacting. Indeed, they do not impose a cast-iron law in everything, but allow room for variation with varying circumstances and for the adoption of new and improved methods.

ON SOME AMERICAN THEATRE DESIGNS.

AS to the true architectural treatment of the theatre we are still, in England, in an uncertain or what, let us hope, is a transition stage. As far as concerns the construction of the house, the necessity of fire-proof materials, of a fire-resisting curtain, of the structural barrier to be maintained between the auditorium and the stage portion, and of ample exit staircases, we have arrived for the present at such a degree of general agreement that the description of one new theatre, in regard to these practical points, reads much like that of any other. But the architectural treatment mostly takes care of itself; there is no theory in regard to it, and no fixed aim. Nor is this likely to be otherwise as long as theatre-building is merely a commercial problem in the hands of professional experts, whose only aim seems to be to get the house into a paying condition as fast as possible. When public opinion shall be brought to perceive that a theatre offers one of the finest opportunities possible for architectural effect and expression, and that in this respect it is worth while to put such a building into the hands of one of the best

architects of the day, and to allow a sufficiency of time for the maturing of a really fine design, then we may hope to have theatres which will be great architectural works in the highest sense. But evidently the time is not yet.

In this respect the Americans appear to be ahead of us in good intentions at all events. Several of the most important theatres in New York and elsewhere in the States are connected with the names of some of the first American architects. But when we look to them for some examples of characteristic architectural treatment of a theatre, we are obliged to confess to a disappointment.

Mr. Birkmire's small book on the planning and construction of theatres in America,* though it includes plans and also some constructional details which are of interest to architects, is in the main what is generally called a popular work, written in a light and easy style, with the evident aim of rendering the book agreeable and now and then a little sensational to the general reader. Still, it forms an interesting synopsis of the tendency of recent efforts in American theatre architecture, being illustrated with a number of views of the exteriors and interiors of theatres, reproduced from photographs, and therefore so far trustworthy in regard to the architectural treatment and effect of the buildings. And we cannot say that these designs afford us much help towards the development of theatre architecture. The discrepancy between the architectural clothing and the internal purpose and arrangement of the building seems even greater than with us, though in some cases the architecture *per se* is better than we usually see in English theatres.

The Metropolitan Opera House (New York), by Messrs. Cady, Berg, & See, presents the appearance of two great blocks of warehouses or offices, at the two corners of the front, connected by a rather lower central portion. Except that the buildings are not so high in proportion to their width, there is nothing to distinguish it from the common American type of lofty office buildings which we know so well. As the plan of this particular house is not given, it is impossible to say what relation this exterior design may bear to it, but certainly there is nothing whatever in the exterior aspect which in the least suggests a theatre. The conclusion from the appearance in the illustration is that it is really a group of blocks of offices with a theatre hidden somewhere between and behind them. This building, however, is fourteen years old. Abbey's Theatre, at the corner of Broadway and Thirty-Eight-street, is only about three years old, and was the first to be completed since the enactment of the new law relating to the building of theatres, and the law in the case of this theatre, we are told, has been strictly enforced. The exterior presents a square block of building of six stories, with ranges of small windows, suggesting nothing so much as a hotel with an unusually large entrance flanked by columns, which, running through ground and mezzanine stories, leaves a great hole in the centre of the front with by no means good effect. The name "Abbey's Theatre" appears in large letters on the balustrade above the cornice;

certainly the only announcement, to the English eye, that this is a theatre. It is an ugly building, with not even a festive character about it. In this case also the plan is not given; perhaps it was thought that it would show too much. Turning to the new Act, printed at the end of the book, we seem to find some explanation of the design in the provision that under certain circumstances a portion of a theatre building may be used for business purposes. The wording of this paragraph is as follows:—

"When located on a corner lot, that portion of the premises bordering on the side street, and not required for the uses of the theatre, may, if such portion be not more than twenty-five feet in width, be used for offices, stores, or apartments, provided the walls separating this portion from the theatre proper are carried up solidly to and through the roof, and that a fireproof exit is provided for the theatre on each tier, equal to the combined width of exits opening on opposite sides in each tier, communicating with balconies and staircases leading to the street, in manner provided elsewhere in this section: said exit passages shall be entirely cut off by brick walls from said offices, stores, or apartments, and the floors or ceilings in each tier shall be fireproof."

The words "that portion of the premises bordering on the side street" would seem to imply that only one face of the theatre can be thus masked with offices, but the two faces of the building in this case are treated identically, and the whole becomes a warehouse. In fact it is actually described so in the book: "the exterior of the theatre presents a six-story office-building of light stone." That may be good for business, but it is a wretched way of treating a theatre architecturally; and the enactment which affords opportunity for it is in itself a very unadvisable one, on practical as well as architectural grounds.

The Fifth Avenue Theatre, of which Mr. Kimball is the architect, is an exception. Here the main façade is, unfortunately, on the flank and not on the front of the house, which was unavoidable, as what should be the front is built up with houses, and the main entrance is at the side of the building; but the auditorium portion and the stage portion are here well and characteristically treated. The entrance façade is a rich and refined piece of decorative architecture in French Renaissance taste, rather spoiled by the poor columned portico belonging to the former house, which the architect has retained, with more consideration for his predecessor than for himself. The flank of the stage portion adjoining is treated very plainly in strong rusticated work, only connected with the other portion by carrying the cornice and string-courses through, and relieved by a lighter columned attic above. As an example of characteristic treatment of the two portions of the house this is an unusual and excellent piece of architecture. Possibly if this architect had had the advantage of a free site he would have seen the propriety of making some attempt to indicate the theatre form externally in his building. As the site is circumstanced he had not the chance of doing so. But the American theatre architects who deal with free sites do not appear to make any effort in this direction, so far at least as Mr. Birkmire gives us the opportunity of judging.

The huge establishment called Madison-square Garden, by Messrs. McKim, Mead, & White, with its tower modelled on the lines of the Giralda, is a really fine building, pretty

* "The Planning and Construction of American Theatres." By William H. Birkmire. New York: John Wiley & Sons. London: Chapman & Hall.

well known in this country through illustrations; though it certainly suggests a *Hôtel de Ville* rather than a theatre. We observe it stated in regard to the interior that "no attempt has been made at decoration, other than to leave all the construction open to view, and to paint the columns, roof-girders, &c., a light buff tint, and the beauty of the interior resides in the simplicity and in the light and graceful appearance of the construction." It is to be wished that there were more endeavour after this simplicity in the interior treatment of theatres, instead of the over-decoration, generally of a more or less tawdry kind, which meets us everywhere. There is the same want of reticence in most of the interiors figured in this book, though we admit that on the whole the taste in the decorative treatment seems superior to that of the majority of English theatres; only there is too much of it; no repose. It is rather amusing to notice the enthusiasm of the author over the effect of the endless repetitions of the domes in the Castle-square Theatre by means of huge mirrors set over the doors: a source of effect worthy of a restaurant, and rather a nuisance even there.

The constructional arrangements for carrying the galleries without front supports are such as we are familiar with here, and have no special interest for architects. We gather that a great deal more attention is paid to the comfort of the audience in the cheaper portions of the house than is usual in England, upholstered chairs being provided, in some of the theatres at least, even in the upper gallery. The favoured method of ventilation is by a *plenium* actuated by mechanical means, and propelling fresh air into the house under the seats, in one instance through the hollow legs of the chairs. One very peculiar arrangement is mentioned in the Madison-square Theatre—the orchestra is placed on a platform above the stage and on the stage side of the curtain; an arrangement the supposed advantage of which, from any point of view, it is impossible to understand. The new enactment, however, has taken note of it by a clause to the effect that in future any arrangement for the orchestra aloft in this manner shall be on the auditorium side of the proscenium; a provision which, as the author observes, will probably prevent the system ever being employed again.

In the case of the Empire Theatre, in which the entrance to the "open court" required at the side of the building by the legal enactment is reached by a fireproof brick passage or tunnel, the author draws attention to one danger in connexion with such a mode of exit, besides the obvious one of allowing the chance of a crush, viz.: that if the main building had got fairly well on fire any falling beams or girders would crush in the roof of such a passage. However, we are not likely to have any such mode of exit allowed in any theatre in England in the present day.

Plans of most of the theatres mentioned are given, as far as the house itself is concerned, but in general these plans do not include the approaches and exits to and from the street, an omission which destroys a good deal of their value.

The book will be interesting, however, for architects to look at, though it is not specially an architect's book; and Mr. Kimball's treat-

ment of the exterior of the Fifth Avenue Theatre, before referred to, is certainly worth attention.

NOTES.

THE constant recurrence of serious fires during the present winter calls for comment. Ever since the notorious petroleum fire at Purfleet of some six weeks back we have had in rapid succession important conflagrations at Maple's Repositories, in the Borough, in the City, and elsewhere. Except for the sensational and often incorrect reports given in the daily Press, we hear little of these fires and the great risks involved. Little or no interest is taken in the subject by the public in this country, and we are under the impression that little interest is shown by the authorities directly concerned. But such a constant recurrence of fires of a similar nature, their rapid spread, and the usual result of a general "gutting" of the premises concerned, cannot be attributed to mere accident, and it is high time that London, like other cities of importance, should consider the best means of protection against fire in a more serious spirit. Fire protection comprises "fire prevention" as well as "fire extinction," and both these sections should receive careful attention. At present the Building Act alone assists "fire prevention," and the Fire Brigade is entrusted with the fire extinction. We are afraid that the subject of "fire prevention" has as yet only been treated in a most amateur manner, whilst there is ample room for the improvement and development of our Fire Brigade. The St. Mary Axe fire was in itself sufficient cause to institute an inquiry into the protection of the metropolis, for we have had nothing of this kind since Parliament reported on the Metropolitan Fire Brigade in 1877.

WITH reference to Mr. Ricardo's letter in our last, we are authoritatively informed that Mr. Ricardo's remark that the Dean and Chapter were "acting independently of their architect" in regard to one point is an assumption on his part entirely without foundation; as indeed we supposed at the time. Three or four years ago an old farmhouse and farm buildings belonging to the Chapter were taken down. As they were partly built of Barnack rag, it was arranged that all pieces of Barnack rag found in them of sufficient size to be of any future use should pass into the hands of Mr. Thompson, to be used where they would be available in the repair of the cathedral. The matter is long antecedent to the present controversy. We attached no importance to the fact, and merely mentioned it as reported to us by a member of the Institute party who visited Peterborough the other day, but who apparently did not get the story quite correctly. Any pieces used would require careful selection, no doubt; but why should they, with the weathered face outward, decay any more than the probably much older original stones of the front which are to be re-set? As to the rest of Mr. Ricardo's accusations, the portion taken down has suffered nothing from the weather, a temporary roof has been placed where the gable is removed, and all the stone taken down is under cover. Some people, however, are determined that the Dean and

Chapter shall be in the wrong, whatever they do.

THE *Athenaeum* of February 20 reported the discovery at Athens of an ostrakon, or potsherd, bearing the name of Themistokles. Of this curious find we are able—thanks to the *Berliner Philologische Wochenschrift*, February 27—to give our readers some further particulars. The ostrakon in question is a fragment of the brim of a large vessel, of black terra-cotta ware. On its surface has been scratched with a sharp tool the words "Themistokles Phrearrhos" in archaic letters. There can be no question that Themistokles is the famous statesman, and that one of the actual ostraka that condemned him to banishment in B.C. 470 has come to light. Up to the present time only three similar voting ostraka had been discovered, one on the Acropolis, with the name of Megakles, son of Hippokrates, the uncle of Perikles, another, also on the Acropolis, with the name of Xanthippos the father of Perikles, and a third, bearing the same name but found in the Kerameikos. All three are published, and we hope the Themistokles ostrakon will shortly appear. It was found in the excavations being carried on by the German Institute near the Areopagos.

A SMALL publication which was issued by the German "Cremation Society" on the occasion of the National Exhibition at Berlin, has reached us, and from it we see what rapid strides are being made in the cremation movement throughout Germany, or we may even say throughout the whole of Northern Europe. The Society—which, by the bye, has its own building at the Exhibition—works most energetically for its cause, and appears to be actively engaged in furthering the erection of furnaces and mausolea in the different provincial cities of Germany. At Berlin there is a complete equipment at the Central Cemetery, which cost about 1,000*l*. The number of members in the Berlin branch of the Society is 1,600, and there is room for 500 urns in their present mausoleum. The publication includes numerous illustrations of buildings erected in different parts of the country for the Society, more particularly among others that of the crematorium at Hamburg. There are also illustrations of the crematoria at Zürich, at Stockholm, &c., some of which prove that it is quite possible to obtain an agreeable architectural treatment of a crematorium.

THE strike of North Eastern Railway employées, although lasting but a few days, has resulted in unnecessary loss to the extent of some thousands of pounds to the Company, their customers, and to the men themselves. It has demonstrated clearly the futility of such rash and ill-advised proceedings, and forcibly illustrated the great power for good or evil exercised by the leaders of trades unionists. Had Mr. Harford's influence been directed to keeping up hostilities, or had he even adopted a neutral attitude in submitting the terms of armistice to the men, they would undoubtedly be out now, and the trade of Newcastle and other north-eastern ports seriously jeopardised. The North-Eastern officials have also acted very com-

Recent London Fires.

Peterborough Cathedral.

Cremation at Berlin.

The North Eastern Railway Strike.

mendably, and have proved that compromise is not necessarily incompatible with the preservation of dignity. Of course, much still remains to be settled, but it is a relief to find the parties to the dispute refraining from the unyielding attitude which has prolonged and embittered so many strikes. We are glad to note that Mr. Ritchie stated in the House of Commons on Monday that there are hopeful signs of a settlement without the mediation of the Board of Trade.

The Committee appointed by the Government to consider the question of arranging for places of exhibition for the two Salons until after the close of the Exhibition of 1900 has been holding sittings under the Presidency of M. Poincaré, a former Minister of Fine Arts. The following are the different localities already suggested: 1. a portion of the Tuileries buildings; 2. part of the garden of the Tuileries adjoining the Rue de Rivoli; 3. the Palais Royal; 4. the Place Vauban, behind the Ecole Militaire; 5. the alleys of the Observatoire; 6. the space along the fortifications between the Porte Dauphin and the Porte d'Auteuil; 7. the Ranelagh; 8. the Pelouse de la Muette. Almost all these sites are inadmissible for one reason or another. The neighbourhoods of the Ecole Militaire and the Observatoire are not sufficiently central, and the same objection applies to the fortification line between Auteuil and Passy; and if temporary buildings were established either at the Ranelagh or on the Pelouse de la Muette, there would be a general grumbling from the Paris population. The only two possible sites seem to be at the Tuileries and the Palais Royal; and even in regard to the latter the temporary giving up of the gardens can only be on condition of the consent of the inhabitants of all the houses which surround them; so that the question seems a difficult one.

This exhibition will be opened on the 20th inst. by the Lord Mayor and Sheriffs of London, in its usual quarters at the Agricultural Hall. The formal opening will take place at noon, and at 3 p.m. on the same day the Architectural Association will make a visit to the exhibition. On Monday the 22nd the Association of Municipal and County Engineers are to make a special visit; on the 23rd the annual meeting of the Institution of Clay-workers will be held there; on the 24th there is to be a visit of the Builders' Merchants' Association, and on the 25th a Conference of House Painters and Decorators. There will thus be a good many interests of different kinds centred round the exhibition during its first week of existence. It is announced that the exhibition will contain, besides the usual trade exhibits, objects on loan from South Kensington Museum, the Corporation of London, and the City Companies; and also architects' drawings. The latter element in the last exhibition did not amount to very much; perhaps the management may have been fortunate enough to have obtained more support in that kind from architects for the present exhibition.

The twenty-fifth volume of the "Transactions of the Institution of Civil Engineers of Ireland" contains five papers read at meet-

ings of the Institution, of which that by Mr. Alfred Price on "The Location, Construction, and Equipment of Light or Secondary Railways in Ireland," is perhaps at the moment of the greatest interest. He proves once more that a light railway is not necessarily a narrow gauge one, nor is a normal gauge line of necessity a heavy, costly line; though, of course, the local circumstances of each case must decide the best policy to adopt. Mr. A. Gore Ryder contributes a paper on "Rough Testing of Portland Cement for Practical Men," which is well worth reading by those who have to deal with small quantities of Portland cement, and who therefore cannot incur the expense of the usual laboratory tests. "Recent Advances in Bacterio-Chemical Study of Sewage and other Polluted Waters," by the Curator in the Royal University, Dublin—Mr. W. E. Adeney—is the longest, and to some, no doubt, the most instructive paper. Results of elaborate experiments are given, showing the two successive stages which micro-organisms bring about in the sewage, and also the extent to which atmospheric oxygen is necessary for the natural process of sewage purification. A series of notes by Mr. John Purser Griffith on "Manganese Steel and some of its Uses" details some of the situations in which Mr. Hadfield's most valuable material may be used with great advantage. Were it not for the drawback that it is next to impossible to do anything in the nature of machining on it, manganese steel would, doubtless, come into more general use. The remaining paper by Mr. Karge Parry, on "The Administration of the Irish Sanitary Acts by Local Authorities," points out several weak spots in the Act of 1878, and is of interest to those connected with such work.

The Annual Report of the twenty-second session of the Birmingham Architectural Association records an increase in the number of members, and makes special mention of the work that is being done for architecture by the Birmingham School of Art. Attendance at the classes there is strongly urged on the student members of the Association. In the sketching class, which is reported to have been well maintained this year, the practice of time sketching from photographs has been encouraged as a means of promoting the faculty of rapid sketching out of doors. The Report admits that this method is not all that could be wished; it may be useful to a certain extent, but we should suggest that time sketching from any objects in the round which present a perspective problem—such as a chair, a table, &c., would afford better practice in this sense than sketching from photographs where the perspective is already made to hand. We notice that of the prizes offered by the President for the best set of sketches and measured drawings only the second prize was awarded, as the condition was not fulfilled of accompanying the drawings by a short account of the buildings sketched, a decision which we quite approve of. The requirement that an account should be given of the building sketched is a very useful one. The Report is embellished by several pleasing though slight sketches by members—memorials of the visit of the Association to Oxford.

A GREAT deal has been heard during the last few years of the necessity for widening narrow parts of the Strand, though little has yet been done to effect this. It may seem therefore useless task to point out another place where the congested state of the traffic requires that some measures should be taken to widen the thoroughfare. This is on the Knightsbridge-road, immediately to the east of Albert Gate. The traffic in this place becomes daily in a more congested state. Nor is this surprising, as practically three streams of traffic going west, namely, the main Piccadilly stream, that from Grosvenor place, and that from Park-lane and Hyde Park, all converge at this gully. In the opposite direction come three opposing streams—from Kensington, from South Kensington, and from Sloane-street. The result is that extreme delays and inconveniences arise. This state of things admits of an easy remedy by the widening of this piece of roadway. It is a question of pounds, shillings, and pence. But the growth of London requires that this kind of work should be done if the traffic of the Metropolitan is to be properly conducted.

UNDER the superintendence of Mr. Isaac, Architect and Surveyor to the Society, the cement coating is being picked off the south side of Gray's Inn Hall, so as to expose the red Dutch brick work of the wall and the quoins of the buttresses. The north side was similarly treated five or six years ago. Our passing comment upon the work occasioned some correspondence in our columns for October, 1891. The hall was rebuilt in 1556-9, at a cost of 863*l.* 10*s.* 8*d.*, as is stated in the "Origines Juridicales" of Dugdale, who cites an account (no longer extant) rendered by Sir Gilbert Gerard, Treasurer, in 1559. Until the alterations—we believe by William Wigg—began in 1826, it formed an almost perfect example of its kind and period. The gables were marked by ascending battlements, in step form, of brick; the lateral walls were finished with plain parapets. On the tiled roof stood a wooden lantern in three stages capped by a boldly projecting cornice and a leaden cupola, with ball and vane—a characteristic composition in striking contrast with its sorry successor. The repairs comprised a substitution of slate for tile on the roof, the placing of angle-ledges on the crow's-rests, the covering of these, together with the walls, with compositum or plaster, and the alteration of the arches over the roadway at the west end. On the hall's south side a lavatory has been built between the two buttresses of the eastern bay. The hall windows are unusually rich in armorial bearings; the bay window in the north wall contains some coat-arms set up therein *temp.* Elizabeth, with many others that were engraved for Dugdale's "Origines." These suffered much damage from a subsequent storm; they were reinstated as completely as was then possible, and in 1871 were re-arranged, and protected with antique glass. There is a tradition that the oaken screen, of rich design—the open gallery-front, above, is of later date—and some of the dinner-tables were given to the Inn by Elizabeth. The Society possess a coloured drawing, ascribed to Wigg, showing the hall and chapel from the north, as they appeared before the changes were made to which we refer.

Cheyne-walk, Chelsea.
 The lease of "Queen's House" is offered for sale. It is No. 16, Cheyne-walk, and is believed to have been occupied by Katharine of Braganza—her initials are on the wrought-iron gates—who returned to Portugal *circa* 1692. The handsome, albeit simple, elevation, quite after the style of Wren, has been impaired by the addition of an oriel on the first and second floors beneath the central pediment. In October, 1862, the house was taken by the two Rossettis, Mr. George Meredith and Mr. Algernon Swinburne. The joint occupancy did not endure for long, but Dante Gabriel Rossetti continued to live there until his death in 1882. In the garden he kept his menagerie, and there is the sycamore tree he painted in some of his pictures. In July, 1887, Mr. Holman Hunt unveiled a memorial which Rossetti's intimate friends had set up in the public garden opposite "Queen's House." It consists of a grey granite drinking-fountain, designed by Mr. John P. Seddon, with a quarter-length figure of the poet, an alto-relievo in bronze, modelled by Ford Madox Brown, and is illustrated in the *Builder* of April 17, 1886. A view in Mr. Beaver's "Memorials of Old Chelsea" shows the house with a figure of Mercury rising from the roof.

Suburban Theatres.
 "THE Suburban Theatre" was the subject of an interesting paper read this week before the Playgoers' Club by Mr. Mulholland. The movement in connexion with the suburban theatres is of recent date, and Mr. Mulholland was practically the pioneer with the Camberwell Theatre, opened in 1894. Apart from the greater convenience of the suburban theatres to the inhabitants of the outlying districts, it should be remembered that the modern playhouse, erected on cheaper ground, is more spacious, more comfortable, better ventilated, and better lighted than many of the older central theatres of the Strand district. There is not the slightest doubt that the greater comfort enjoyed in a suburban theatre has much to do with the popularity of these institutions in their respective localities, for it is anything but a pleasure for people travelling from Hammer-smith, Camberwell, or other suburbs, who are already tired by their long journey, to be penned up in some of the structures in which drama is presented to Central London.

Results of Sanitary Inspection.
 THE Report of the Medical Officer for the Leyton Urban District Council gives a proof of the salutary results of house-to-house inspection in such a district. A number of cases are given in a tabulated form in double column, the one column stating the discoveries made as to the insanitary state of property, the other column the remedies applied as a consequence of the action of the authorities. The statement gives a very satisfactory proof of the good effects of careful inspection and official action.

The Paris Exhibition.
 AMONG the various schemes of private projects submitted to the Managing Committee for the Paris Exhibition of 1900, the following are those relating to architecture and construction which have received the sanction of the Committee: the "Palais de la Presse et de la Publicité;" an iron turning pavilion;

a theatrical museum, of which M. Nenot will be the architect; moving platforms for the transportation of visitors (the projectors are MM. Blot, Eugène Hénard, and Thévenet - Le-Blou; restorations of ancient French monuments; a modern house, the "Palais des Femmes"; the "Palais des Joujoux"; the "Rue des Sicles," a street of buildings of various ages; the palace for glass and ceramic work; and lastly the "Encyclopédie Artistique et Géographique," in which each country will be represented by a street or an architectural monument, a proposal of MM. Dezermeaux and Leblanc. Altogether the Exhibition of 1900 promises to be a rather curious collection.

THE ADVANCEMENT OF ARCHITECTURE:
 WITH SOME REMARKS ON THE STUDY OF GOTHIC.

THERE must be an interest in all past architecture, partly on account of its obtrusiveness, and partly because it embalms the knowledge, skill, and taste of a bygone age; but we take a still deeper interest in those particular examples of it, that have excited in us strong emotions we often hardly know why. Some call forth our admiration by their perfection, some by their size, and some by their skill, and when the skill shown is almost superhuman, we are naturally curious to know how it came about. History, however, mostly seizes on those military achievements of nations which give them supremacy and permanence, for, as some learned man very truly said, history is only the history of successful military people, as the unsuccessful are destroyed or absorbed. History, as a rule, takes little or no account of those advances in the arts which add comfort, ease, and elegance to society, and does, too, its main business, the fighting of great battles, very badly indeed. We, however, occasionally catch glimpses of other matters; historians occasionally quote laws which throw a little light on the improvements in husbandry, in food and its cooking, on the clothing and housing of the people, on their furniture, weapons, implements, ornaments, games, and amusements, as well as on those fine arts they cultivate. Our main knowledge of these subjects is, however, owing to occasional notices in works on other subjects, such as Plutarch's Lives, Plato's Dialogues, Aristotle's Ethics, and Politics, &c., and to stray treatises that have come down to us, such as Vitruvius' work on Architecture, the Elder Pliny's Natural History, Pausanias, &c.

Analytical as this age is, you cannot analyse any subject completely until you have the whole of it before you, and though what is known and analysed has thrown more light on deceased architecture than was ever known before, the necessary information to write complete histories of any architecture from Greek downwards is still wanting. Gothic, since its abandonment in Renaissance days, was generally overlooked until the last century. I say generally, for Wren certainly studied its construction. It has, however, points of attraction that are not found in any other phase of architecture, for though lineally descending from Greek architecture through Roman, Byzantine, Romanesque, and Saracenic, it varies so much in form and principle from them that it may be looked on as a new art. It should be attractive as a study, as it went through so many phases during its short existence of little more than 400 years. It is in some respects the most interesting of all architectures, for it made giant strides in construction, and was quite original in its aesthetic presentations and in its emotional effects. In spite of the researches of Professor Willis and Viollet-le-Duc, to speak only of its typical elucidators, there is still a huge body of information wanted to give us due information on the subject. We not only want a vast amount of knowledge of Medieval times in the country or countries that gave Gothic architecture birth, but we also want a much greater knowledge of Saracen records than we have hitherto got. Every schoolboy is unfortunately not like Dr. Thomas Young, who, after correcting his

master's Greek, taught himself Arabic, French, and Hebrew in his spare time. I am loth to make any remark on so great a man as Viollet-le-Duc, but I cannot help thinking that his patriotism ran away with him, for though he admits that the Crusaders, during their stay in Palestine, got advanced geometry from the Saracens, he says that though he has heard much of Saracen influences, he has never found any signs of it in Gothic, but believes that all its peculiarities were due to French invention. I confess that I think he was wrong there, for surely the cusp was got from the Saracens. Some think the Saracens took the idea from the upright tombs excavated in the rocks of Persia, where the sinkings for the head and shoulders made the complete cusp and two half-ones on either side, while others believe it was got from Northern India, where cuspidation was employed at an early date, though what that date was nobody knows. Cusped arches were certainly used by Abd-el-Rahman in his mosque at Cordova, built in the latter part of the eighth century; and the earliest Gothic was without cusps. It never appeared to me that there was much direct adaptation of Saracenic architecture, but a great deal of indirect influence, for we must recollect that the Saracens were probably the most civilised people in the world at the time of the Crusades. The gorgeously of the Court of Muctadir, the magnificence of his palace and its fittings, astonished the ambassadors of Constantine Porphyrogenitus, accustomed as they were to all the splendour of the Byzantine Court; this was early in the tenth century. In the second quarter of the twelfth century, Averrhoes was born, and died towards the end of it. He made the great commentary on Aristotle, spoken of by Dante, a translation of which is said to have been used in the Italian universities until the last century. The late Dr. Middleton heard Aristotle commented on, probably according to Averrhoes, in Arabic at the University of Karoum.

Although Averrhoes was the greatest of the Arab philosophers, he was only the head of many, and the Arabs alone at that time were the great translators of Greek works, which were mostly re-translated into Latin by the Jews, and thus only were Greek works known to Europe, until the revival of Greek in Italy at the end of the fourteenth and the beginning of the fifteenth century. Gemistos Plethon, who was one of the great teachers of Greek in Italy, only died in 1450, and his body now rests in one of the niches in the temple to Isotta at Rimini. It was brought from the Morea by Pandolfo Malatesta.

To surpass the ephemeral architecture of the Saracens was, in my opinion, the aim of the Gothic architects, and I think the lessons the Saracens gave them of producing magical effects by the endless combination and repetition of a few simple forms was not lost on them.

In my third lecture I told you how much the stepped canopies on the centre gable of the portal at Reims were like Saracen stalactite work. Some of the late vaulting at Oxford Cathedral strikes any one familiar with Saracen work as being very Saracenic in appearance, and quite Saracenic in principle; while many lattices and similar patterns might be taken for either Gothic or Saracenic. The Christians, we are thankful to say, were not debarred from the representation of man or beast, and therefore, were not driven, like the Saracens, to wholly devote themselves to forming ornament out of geometrical patterns and a few flowers.

It is most agreeable to find a shoemaker, a baker, or a sword cutter that you go to, conversant with the history and archaeology of his trade, and you think him a praiseworthy person if he knows these things, and is a good tradesman as well, but if he gives you shoes that wring your feet, heavy or gritty bread, or an intemperate sword, you wish he had spent the time he devoted to archaeology in learning his trade.

Architecture makes so many and such varied demands on a man's time that if he be an architectural archaeologist as well he is a phenix.

It must, therefore, strike every one that what an architect first wants to learn are those things that form the very foundation of structural knowledge. That an acquaintance with the forms that were agreeable to nations hundreds or thousands of years ago, can at the best be but agreeable information; unless, indeed, architects are so enamoured of the present taste, as to desire to keep a shop for fancy dress architecture. The so-called Renaissance architects were, as a rule, wholly ignorant of the very foundation and aims of architecture, that of meeting wants in the best and most economic way, of adorning such parts as require adornment with elegantly designed mould-

* Being the fifth Royal Academy Lecture on Architecture this session. Delivered on the 8th ult. by Professor Aitchison, A.R.A.

ings, that tell the tale proper to the building in the climate it is built in. How could men who were goldsmiths, sculptors, painters, or literary men, who knew absolutely nothing of the art of constructing, or of the strength and qualities of materials, and whose aim was solely to make a building look something like what they knew of a Roman building, be real architects. A few of the great geniuses picked up a little superficial knowledge of construction. The Renaissance architects ought to have been at their very best in the great cathedral of the world, St. Peter's. What did they do? I think they made the biggest one, but it was a badly-constructed artistic failure, with about ten times the material a Gothic architect would have required.

Greek architecture, Roman architecture, and Gothic architecture are dead; but, like the discreet statesman, they do not wish it to be known. What is not dead but only sleeping is the method that the barbarians began and continued until at last they became the most skillful builders in stone the world has yet seen. They keenly observed, they accurately deduced, they dared and strove; if a wall tumbled down, they set themselves to find out why. Was it a bad foundation, bad stone, had mortar, or bad workmanship? Or was it insufficient to resist the pressure of the wind? And they did the work over and over again, correcting one or more of the faults they had discovered until it stood; they mostly had near them Roman or Byzantine buildings that had groined vaults, or learnt the art of vaulting from Byzantine builders, and they used these vaults in the narrow aisles of their churches, and roofed the wide naves with wood. These roofs were burnt over and over again by lightning or otherwise, so they tried to vault them in stone. These vaults fell down and partly or wholly destroyed the building. They then tried counterforts and ties without avail, and then they tried binding the whole together with timbers built in the walls; but these rotted and the vault fell again. They noticed that the flat part at the top of the vault was the first to go, so they gradually made them pointed, and eventually found that groined vaults over clearstories could be safely abutted by flying buttresses which carried the thrust into the ground. I should say that they were always short of money, and so bad to study the greatest economy. While they were making these experiments the Abbey schools were teaching their scholars some of the necessary elements—geometry and drawing, the use of the tools for their respective crafts and giving them probably the best information about building that could be got in the civilized world. Towards the end of the twelfth century the architects formed themselves into a trade guild. We must believe that they were then pretty sure of having solved all the main difficulties, but they did not rest and be thankful, but strove to their utmost to improve what had gone before, not always, perhaps, to our satisfaction, but, structurally speaking, they became more and more skillful, and artistically, more and more elaborate and wonderful.

If any one will take the trouble of following the style out from the first ignorance and blundering of the uncivilised barbarians, he will be kept, like they were, in breathless expectancy as to the result of the experiment, although from our greater knowledge we feel sure that the experiment must fail, and when they had mastered the great problems, or as I might say made their wonderful discoveries, we can see the great care that was taken to think out every problem, and to solve it properly, for each step was new. We are struck with their readiness of resource, and with the justness of their provisions.

The difficulties involved in counteracting opposing thrusts of various intensities were very great; and to get all these thrusts to neutralise one another, and to become vertical, was wonderful, but it had to be attained when all these counteracting thrusts were to meet on the top of a slender shaft. There is a central shaft in one of the chapels at Lincoln, I should guess the height of the pillar at 24 ft., and it is 18 in. each way on plan, and hollowed out like a Maltese Cross, and this pier bears the transverse and diagonal ribs of the chapel which is about 40 ft. by 30 ft., the shaft being of polished Purbeck, and it seemed to be upright. We all know how much out of the perpendicular the shafts in the Temple Church of London are. It is in cathedrals or large churches with high naves and clearstories, where forethought and care is most apparent; e.g., where there are attached columns or piers in small stones that are opposite to monolithic columns which bear the transverse ribs of the vault, so that it was necessary to provide for the squeezing of the numerous joints on one side, while the monoliths

on the other side would not squeeze. Similar lessons may be learnt by observing the flying buttresses of small stones corbelled out, and the false bearings to get the sum of the thrusts vertical.

You must, I think, allow that these architects were most skillful.

What would we not give to know the architectural education they received?

I am by no means sure that if by the wave of a magician's wand, thorough knowledge of construction could be given to every student, that the succeeding generation of architects would be able to make buildings that would out rival the Gothic achievements; but architects must have this knowledge to do so, and besides this, it is attainable. The present generation would not learn it in the same slow and extravagant way that the Romanesque and Gothic architects did, they would learn it by mastering statics and the strength of materials in the first place, and by observation and experience they would perfect their theoretical knowledge, and this being done, no one can reasonably doubt that the architects of that generation could exceed in their buildings the height and slenderness of the spire of Strasbourg, or the lantern of St. Ouen; but beside that, it is a scandal that architects should not learn the very foundation of their art, and we must, too, recollect that we have materials in the shape of iron and steel, that are ten times as strong as any material known to the Gothic architects. The hardest granite will crush with 5 tons on the square inch, while cast iron will bear 44 tons. We cannot for a moment believe that if the Gothic architects had possessed such materials they would not have used them. We know that they sought out and found, wherever they worked, the stone most adapted to their purpose; they used soft, fine-grained stone for internal carved work, hard stone for corbels, lintels, &c., and for all places where stiffness was necessary, for instance when they wanted small isolated shafts, they cut them out of hard strata against the bed, and, in England, for the larger but relatively slender shafts they got the material from Purbeck or from the Derbyshire beds of black encaustic marble; for one of their objects was to make the piers as small as possible so as not to interfere with the circulation.

The great problems the Gothic architects had to solve were to ceil their buildings with stone, to remove all the solid parts of the walls so as to have the building all window, except at the buttresses, and in solving this problem they wanted a stone framework to their enormous windows to prevent the lead lights being blown in. They wanted to make the naves of their churches as high as possible, and in solving all these constructive problems they also wanted their buildings to be as beautiful as possible, according to the taste of the time. These problems are the same that we have to solve, and we can solve most of them structurally in a different way; for example, we can get a span by means of iron girders or trusses, so enormously greater than any span we are likely to want, that that difficulty may be said to have been removed. We can use iron columns of a height and slenderness that would dwarf the choir of Beauvais to a cell; but, at present, we have no idea of how to make anything we do beautiful according to the taste of the day, for this excellent reason, that there is no taste and no desire for beauty in any form. It is a utilitarian age, eager for wealth; but when it has got wealth, having no idea of using it in any noble way, but simply in sensual enjoyments. I noticed in some of the addresses of new M.P.s, that they aimed at destroying the last popular surviving visual fine art, painting, as many of them before have tried to destroy architecture. Who will collect pictures if they are to be heavily taxed on going to their owners' successors? Who will build magnificent mansions if they are to be taxed on their cost? The poor, ignorant creatures have not discernment enough to see that the mere building of a magnificent mansion employs thousands of people of every condition, many hundreds of whom are engaged in trades that give scope for their intelligence, invention, and skill, from the meanest bricklayer to the cabinet-maker, the carver, the modeller, and the architect; and leave a work to delight posterity, and to be a perpetual record of the intelligence, skill, and glory of the country. I presume that those who would tax painting would also tax sculpture, so that no visual fine art should exist to charm posterity, and to convey to the distant future a picture of the highest qualities of the day. Do they want to leave no memorials of

England behind them but broken beer-bottles, and the lobster-tins whose contents have been eaten to provoke thirst?

"Invention," says Sir Joshua Reynolds, "is one of the great marks of genius; but if we consult experience, we shall find that it is by being conversant with the inventions of others, that we learn to invent; as, by reading the thoughts of others we learn to think;" and where will architects find more invention than in Gothic architecture?

There is constructive invention and æsthetic invention, and we urgently want both; and in the labours of the Gothic architects these are both combined. You see, not only how they thought and reasoned, and strove to meet the structural difficulties that beset them, but bow at the same time they brought their new constructive inventions into the pale of art. The flying buttress perhaps the greatest, but certainly one of their greatest inventions, was purely structural, and was at first solved in a purely structural way. I was at first a mere plain arch or part of an arch and it was not put exactly in the right place for nearly a century. Many of the cathedrals were obliged to have their early flying buttresses shifted at a later period. The architects of those days were not satisfied with a mere piece of building, put side by side with the elaborate decoration of the rest of their buildings, but turned their flying buttresses into decorative features, and made them, too, only strong enough to do their work when they were new. The effects of the weather have in many cases so weakened them that they have now to be replaced, as the thrusts of the vaults they abutted were threatening ruin to the structure. I strongly recommend you to study the flying buttresses of St. Urban at Troyes. The Gothic vault was another purely structural invention, but the architects gradually inserted more ribs to make these vaults more conducive to effect. You may see how effective they are in Westminster Abbey. At last the ribs made stars and other patterns. The stone framework, or stone sashes of windows, was another purely structural invention, to prevent the lead lights being blown in, and these went through immense changes, from the early geometrical patterns to the last flamboyant. You all know what is sometimes called the leaf window, a rose window, in the south transept of Lincoln. Flamboyant is mostly seen in France, and the patterns are always ingenious, and sometimes beautiful; but they mostly have one, if not two, grand faults when looked at as part of the decoration of the front or sides; the tracery is too thin and the patterns are too small, so that, at the distance, they are seen to take in the whole front or bay. They do not compose with the rest. Their other fault is that they look as if they moved—a distressing fault at all times and in all ornaments. Still, in spite of these drawbacks, they are most wonderful instances of human ingenuity in the pattern, and of skill in the execution.

To know the strivings and inventions of the Gothic architects, I cannot recommend a better nor more fascinating book than Viollet-le-Duc's "Dictionnaire Raisonné," for it is more interesting than half the novels, and is, too, most charmingly illustrated. I must warn you, however, not to believe in every word of it, as if it were Gospel truth, for some of the statements are absolutely incorrect. He was, too, so brilliant a theorist that he was inclined to found theories on very slight and insufficient grounds; but, above all, I must warn you against this error; he was so interested and absorbed in the efforts of the Romanesque and Gothic architects to get all their rules by observation and experience that he always depreciated the science of building. As the science of building is founded on experiments, and the fundamental laws that have been tested, it puts into the hand of youth a weapon of incomparable temper:—

"As Balen's spear through Launcelot's shield
Clove as a ploughshare cleaves the field."

So does the spear of science pierce the armour of ignorance. Experience consists of but a few vague inferences, founded on a few doubtful facts, while the other is founded on numerous exact experiments, from which the law is deduced. I by no means want to decry experience, as it gives us information of the working of causes, inseparable from actual work, that do not exist in scientific experiments. At Amiens we see that the piers that support the triumphal arches have been pushed outwards by the thrust of these arches and the vaults above, and inwards by the thrust of those of the aisles, &c., so you see that experience is

sometimes at fault! Every architect, before he fits to practise, ought to know what weight the ground he builds on will bear on the square foot, what his walls and their loads weigh, and what force of wind will overturn them, the sizes wanted to resist the pressure of earth and water; the proper thickness of arches of different heights and spans, and what their thrusts will be when weighted, and the same of various vaults including domes. He wants to know what square and round pillars will bear, according to their height and diameter, and the various sorts of wood, brick, stone, iron, and steel, of which they are composed; what beams of various materials will bear in cross strain, the struts on trusses, &c.; yet, until the classes of the Architectural Association were started, all this knowledge was supposed to come by nature, if a man could draw the human figure or sketch in perspective.

To become a beautiful architectural draughtsman is a difficult art, but it does not make a man a designer, and to be an excellent designer and a beautiful draughtsman as well, does not make a man an architect. Yet, to make a man a good draughtsman, and to try and make him a designer, is all that has hitherto been taught since Renaissance days.

My most ardent desire is to see architecture brought to life again, and become a progressive art, as it was in Gothic times, and, being an Englishman, with English weaknesses, I should like English architecture to take the lead; but it never can be brought to life unless we go the right way about it. Plato tells us that Pericles wanted his son to be a statesman, and gave him the best education he could, and he so far succeeded that his son could ride on two horses, but he never became a statesman; that seems to be the modern method of teaching architecture. The architect is to know everything but his business.

The Gothic architects used every power of mind they had, and persevered till the thing they aimed at was done. Men are made valuable to themselves and others by determination, perseverance, and assiduity, and by using their brains, and striving, and whatever may be your difficulties—and I know they are so numerous as to be appalling—don't be cowed by them. If you will consider the difficulties that the Romanesque and early Gothic architects were surrounded with, you will not despair. If there is no one to teach you, teach yourselves; "self-taught is well taught." I feel confident that if each of you will do his best, we shall get out of the wood at last; and, mind you, it is a noble task—the noblest task an architect can set himself. Never copy. Be sure that he who stole his brooms ready-made never becomes a good broom-maker; and, once having determined to undertake the task, be not deterred by poverty, neglect, insult, or contempt. The task, once fairly started on, will attract others, and in the long run it will prevail. Let me give you my good wishes, that God may speed you in your task.

The sixth and concluding lecture of this series will be given, not in our next issue, but in that of March 20, as we shall not have space for it in that of March 13.]

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

THE EDUCATIONAL TRAINING OF ARCHITECTS.
A SPECIAL general meeting of this Institute was held at No. 9, Conduit-street, W., on Monday (Professor Aitchison, A.R.A., President, in the chair), for the purpose of electing the Royal Gold Medalist for the current year.

The Chairman moved, and it was unanimously agreed, "That, subject to Her Majesty's gracious sanction, the Royal Gold Medal for the promotion of architecture be presented this year to Mynheer P. J. H. Cuypers (hon. corr. member) for his executed works as an architect."

The ninth general meeting (business) was then held, when the following candidates for membership were elected:

As Fellows: H. C. Charlewood, Newcastle-on-Tyne; J. G. Sanksy, M.A. Cantah, Blackley, Manchester; and J. D. Mould, Manchester.

As Associates: H. W. Bird, Hong Kong; China; C. F. Innocent, Sheffield; A. E. Corbett, London; S. P. Rees, London; C. H. Dorman, Northampton; A. C. Bond, B.A. Oxon, London; G. W. Fraser, Bootle, Liverpool; Delmé G. Moolham, London; C. O. Nelson, London; R. C. Austin, Harrow-on-the-Hill; H. G. Fisher, London and Northampton; and C. S. F. Palmer, Sittingbourne.

Mr. Owen Fleming then moved: "That it be

referred to the Science Standing Committee to consider the desirability of formulating a definite standard size for bricks." Such a recommendation, if carried, might be found to obviate many difficulties met with in practice in building.

The Honorary Secretary, Mr. W. Emerson, formally moved that the proposal be referred to the Science Committee.

Mr. Cooper seconded, and the motion was agreed to.

Mr. William Woodward referred to the subject of the new conditions of contract, and quoted letters from the Master Builders' Association and others to prove that builders would not sign them, and therefore the old conditions should be reverted to.

The Honorary Secretary replied that, at all events, 3,000 copies of the new conditions had been sold by the Institute.

The Chairman then called upon Mr. John Slater to read a paper by Mr. Leopold Eidlitz entitled "The Educational Training of Architects."

Mr. Slater, before reading the paper, said that a few days ago he had received a communication from the Vice-President, Mr. Graham, saying he would be much obliged if he, Mr. Slater, would read the paper by Mr. Eidlitz. The paper was characteristic and essentially American. The Americans were strictly utilitarian people. They had rather a contempt for tradition and traditional usage and they had adopted methods of their own with regard to building, and he was bound to say that with a great deal of what was in the paper he could not personally agree. Mr. Eidlitz was an architect, he believed, practising in New York, and he was the author of a book which was published some years ago, and which was in the Institute Library, on the "Nature and Functions of Art." He (the speaker) had only been able just to glance at this book; it was rather a large one and contained a great deal, no doubt, which was very suggestive, and there were points in this paper which themselves were very suggestive; but when an architect asked people to throw over tradition altogether, and believed that the study of old work was of very little use to the architectural student, and to be put off till after his student days, he was afraid a great many people in England would hardly agree with him. The main point that Mr. Eidlitz seemed to make was that form in architecture should always be connected with a proper relation of points of support to the strain of weights that they had to carry. No doubt there was a great truth in this statement, and he remembered very well that some years ago his friend Mr. Statham read a paper before the Royal Institution in which he very happily commented upon the lack of this element in construction with reference to one of our bridges, where there was a huge projecting pier, of which he (the speaker) thought Mr. Statham gave a diagram, supporting a young lady with a parasol.* No doubt there was a great truth in the fact that their points of support ought to be correlated to the weights they had to bear, and his own opinion was that the disappointing feature of American architecture was very largely due to the fact that these huge, lofty buildings which were erected in the States were constructed solely of iron, the iron supports were cased with stone to look like stone piers, and they had a building of thirteen or fourteen stories high which apparently rested upon a stone pier, which it was perfectly evident was not sufficient to carry it. Now, he did hold most strongly that the supports of a building ought not only to be actually but apparently proportional to the weights they had to carry, or we should not get any pleasure from the aspect of the building which we looked at; but he was afraid if we were to adopt, as the text-book of our architectural studies, or our architectural education, the mere mechanical formulae of proportion of weight to strains we should not clothe the dead bones of buildings with any architectural life at all.

Mr. Slater then read the paper by Mr. Eidlitz, in which, after a few preparatory remarks, it was observed that up to the thirteenth century architects were builders who arrived at progressive methods of construction mainly by practical experiment, the results of which were stored up as rules-of-thumb by guilds and individuals, and modelling and decoration were mainly matters of feeling. During the last century the science of mechanics had been developed, which enabled us to compute with precision the strains caused in all combinations of matter which had served or might serve to form

* There was "no lady in the case," the column was shown as supporting only a small balcony. It was the granite column on a pier of Blackfriars Bridge.—Ed.

constructional elements. A certain distribution of weights being given to be sustained between two points of support, we knew what was the line of pressure caused by those weights, hence what was the form of arch to sustain them with the least amount of material. We could compute the transverse strength of a beam or a lintel, the bending moment of a pillar, or the deflection of either, under loads so small that it could not be measured.

We were all ready to admit that this knowledge was useful, but many of us doubted that it had anything to do with architecture as a fine art. But in architecture, harmony of form could be attained only by a strict observance of the mathematical relation of strains. Harmony of strain meant that stress should be always resisted by a proportionate amount of material, no more, no less. This did not mean that there should be no more material used than was absolutely necessary to perform a given amount of mechanical work, such, for instance, as we considered proper in economic structures, factories, warehouses, tenements, &c.; but whatever the amount of material to be used in a given architectural monument, which, in the opinion of the architect, was commensurate to its character of stability, dignity, and elegance, should be proportionate to actual strains throughout the whole design. To be explicit, each building material sustained a certain amount of strain at the breaking point. The actual strain permitted in any structure in practice was but a fraction of the ultimate strain of the material at the breaking point. This fraction was known as the factor of safety, and should, for the same material, vary in different buildings in accordance with their dignity. The architect might use one factor of safety for a school-house, another for a library, and yet another for a church. The factor of safety so chosen became the keynote of his design, and a constant reference to it insured harmony. Factors of safety varied with the different materials, and more or less depended on limits of elasticity, methods of construction, probable effects of the weather, corrosion, &c. Strain was the sum of weight, its direction, and resulting bending moments. The greater the admissible maximum strain, hence the greater the admissible maximum strain, hence the more elegant the structural forms. In the use of modern rolled iron, form became attenuated far beyond the limits of the forms the architect was familiar with. Mr. Ruskin said, "There is no law, no principle based upon past practice, which may not be overthrown in a moment by the arising of a new condition or the invention of a new material." But there was still the law of mechanics, which could not be overthrown by new conditions or new materials. An example of gross discord was in an existing building (diagram shown) where there were granite columns of the same apparent size, five of them supporting a portico 35 ft. high, and two carrying a wall 300 ft. high. The shafts of the two latter, moreover, consisted of two pieces vertically joined. These two columns carried a load of 480,000 lbs. each, the five similar columns only 40,000 lbs. each. But the two columns with the heavier load concealed iron posts, which the architect had enclosed in pieces of granite to convert them into a form of support known to him in Greek and Renaissance architecture. If the architect did not like the appearance of the iron, a granite column proportioned to the load was perfectly practicable. No new style of architecture could be expected when new conditions and a new material, such as steel, were referred to the Greek portico, instead of to the law of gravitation. The constant study of architectural history was a great stumbling-block to the student of architecture in this respect. The system of the Ecole des Beaux-Arts, which was imitated in many schools outside of France, was utterly subversive of possible logical architecture. Students were required to prepare sketches, often of important architectural monuments, in from six to sixteen hours. Criticism of these designs by teachers admitted transgression against good construction as comparatively pardonable, but insisted on observance of traditional treatment of form as imperative. The study of architectural history should be postponed for a post-graduate course, or should be left for private reading after the academic course was completed. A future text-book of architecture for universities, polytechnic schools, and academics of the art of architecture would doubtless bear the title "The Theory, Practice, and Art of Building." This text-book would assume the student to have attained a mathematical training sufficient to read with comfort and refer to with ease, say Rankine's

"Applied Mechanics," or any other work equivalent to it, at least, as far as statics were concerned. It would contain essays on the subject of modelling (moulding) structural parts, with reference to mechanical work done and the strength and elegance with which it was to be done, when considered in connexion with the dignity of various buildings, and how modelling was affected by the nature of the material used. Also an essay on carved ornament and colour-decoration, and their relation to mechanical function, the character of the structure, and the nature of the material used. All this would be illustrated with diagrams and decorative designs, selected from existing sources, composed anew from natural objects, conventionalised in accordance with the nature of the material. Then there would follow the architectural scales, which, like the scales in music, would serve to train the student preparatory to the work of actual composition. What was meant by architectural scales might be best illustrated by one or more examples, for instance:—Given a pillar of a certain length, and the load it supported in pounds, what would be its sectional area, and what its form, modelling, carved ornament, and colour-decoration (if any) in a warehouse, a public school, a library, a court-house, and a parish church, when the pillar was made of wood, cast-iron, wrought-iron, bronze, brick, sandstone, marble, or granite? The text-book would answer these questions, and illustrate the answers by drawings and diagrams. Assuming the architectural scales to comprise the first part of the text-book, the second part would treat of the construction of single cells, and the combination of these into piles. Monuments thus conceived and designed would be expressive of their meaning and the individuality of their author, they would be harmonious in themselves, and would vary from the forms of the past in the degree as new wants, new material, new methods of construction varied from those handed down to us in history. At present architecture alone, of all human pursuits, retained obsolete forms and neglected underlying principles and organic laws. It must be remembered, however, that this was not the case prior to the fourteenth century. A period of one generation was quite sufficient to initiate renewed rapid progress in architectural art, provided that we were willing to refer it to its true and fundamental principles, and to teach it rationally.

Mr. H. H. Statham said he should be happy to propose a vote of thanks to Mr. Eidlitz for his paper. He had listened to this short paper with a mingled feeling of interest and something of melancholy, as to the latest attempt to found a new and perfect theory for evolving a new style of architecture. There were some valuable suggestions in it, but he feared they would not come to any practical result. What was of some value was the suggestion for an "architectural scale" for giving pupils a problem of this kind: Given a pier, of a certain length, and given the weight it supports, what should be its sectional area and its width? They could go as far as that. Then the author went on to say: "What should be its moulding and its carved ornament?" And that, it appeared to him, had nothing to do with its practical power of strain at all. The paper repeated the old fallacy, that we should endeavour to carry out architecture as people carried it out before the fourteenth century, without any reference to precedent. He wished people could once for all recognise the fact that that was absolutely impossible. We were not in the position of people before the ages of printing. The people who built the fourteenth century cathedrals, the people who evolved Gothic out of round-arch Gothic, worked in a spontaneous way, and without reference to other styles, simply because they knew of nothing else; they did not travel much, and were unacquainted with other places. Now we had before us in books, photographs, and by travel, a knowledge of everything in other countries, and of everything that went before us. Even the Romans had no real knowledge of Greek architecture. Vitruvius wrote about Greek architecture, but it was improbable that he had ever visited Athens. That idea that we could ever practise architecture as it was practised before the era of printing was an illusion, and the sooner it was dropped the better. Some hard things had been said in this paper about the system of the Ecole des Beaux-Arts, which was said to be subversive of true architectural training; but, nevertheless, the late Mr. P. C. Hamerton, one of our ablest and most thoughtful modern art critics, who spent a good many years in France, left it on record as his

decided conviction that there was more living architecture in France at this moment than in any other country in the world; and Hamerton, it must be remembered, was not an architect, and as a critic he was singularly independent and original in his views, and therefore his opinion was of some value. For some years back he (the speaker) had looked annually through the architectural designs at the Salon, and from the original character of some of the designs, as well as of some of the new buildings in and around Paris, he was convinced that the teaching given in the Ecole des Beaux-Arts had not produced such ill results as was supposed. The Gold Medal for Architecture of the Salon last year was awarded to M. Seillier de Gisors for a set of drawings for the new central depot of the Post and Telegraph Office—an eminently practical treatment of a purely technical building, with nothing academical about it. Therefore he did not share the misgivings of Mr. Eidlitz, as to the unhappy results of the teaching of the Ecole des Beaux-Arts. He agreed with him that it was a great advantage to students to direct their minds to the consideration of the stresses in the buildings they designed, and to design in relation to that; but he did not think that it was of any use to try to shut them out from any architectural precedents, because if they were kept from all books and knowledge of architectural history they will have nothing to go upon as a basis for designing at all; and no one generation of men can absolutely originate a style. Mr. Emerson said he had much pleasure in reading the vote of thanks. He thought the teaching of the Ecole des Beaux-Arts, which was essentially that of classical architecture, was really subversive of the architectural problem that Mr. Eidlitz wished to work out, which was a problem of constructing an architectural building of, say, from fifteen to twenty-two stories high. Such a building in America naturally meant a construction of steel or iron, which was an architecture that we ought to study at the present time. In Mr. Cates's absence he would read some remarks written out by him:—

Mr. Cates, in his communication, said that the educational training of architects, with which the Institute was concerned, aimed at fitting the student for the acquisition of the knowledge necessary for the satisfactory practice of his profession in developing his natural artistic and scientific ability, so that he might apply both to the expression of his ideas in design and in the realisation of his conceptions. In the complex conditions of the practice of the day the architect must aim at acquiring the power to attain success in designing buildings which should be convenient and appropriate in arrangement; of stable construction, and of suitable and beautiful design. The first studies of the aspirant should be devoted to a mastery of Classic and Medieval work—intelligently studied, with a thorough acquaintance with form and detail—leaving the Renaissance and later developments to a subsequent period, when he could bring to bear on their consideration the knowledge acquired in the first years of his studies. In both periods the sedulous cultivation of the art of accurate and effective delineation, and of sketching detail and ornament, from buildings and from memory, thus bringing eye and hand and brain into harmonious and mutual action, was of the highest importance. Concurrently with this, the study of the history of the several periods of architectural art was of the greatest value, not as a mere matter of dates and names, but as giving life and interest to the subjects studied, connecting them with the actual social life of the people by whom they were evolved, and with the political, social, and religious influences which controlled their design. It had been well said by Professor Ware:—"If ever you have a new idea, however slight and unimportant it may seem to be, cling to it, cherish it, develop it, and some day you may awaken and find yourself immortal." This immortality was not likely to be attained by the study of the suggested "future text book of the theory, practice, and art of building." The "factor of safety," which it appeared might vary in different buildings, in accordance with their dignity, was apparently the key to this "text book;" but surely the first elements of design dictated that the considerations of form, outline, masses, and stability, in both appearance and fact, must be the essentials to be primarily dealt with, and these, as well as the character of the detail and of the ornament, must be governed by the nature of the material to be employed. The skill and talent of the architect was displayed in his artistic and scientific use of such materials, in accordance with their qualities, and in their application to the best advantage for convenience,

strength, and beauty. No "text book," nor "architectural scales," nor "combination of single cells into piles" would enable the architect to effect this. His success would depend on his application of the capabilities of the materials he used, and would be the greater as he might have been blessed with the divine inspiration of artistic genius, and have cultivated and developed it by earnest study, of which mechanical constructive details would not have occupied the most important part.

Mr. William Woodward said he wished to confine himself to one practical point in this subject. Mr. Slater said that not only should the column or pier carry the superstructure, but it should appear to carry it. In other words, that, supposing with a cast-iron stanchion encased in stone they can carry the superstructure with a diameter of 2 ft. 6 in., Mr. Slater's theory carried into practice would mean, speaking roughly, a pier or column 5 ft. in diameter. That, in the case of a commercial building, would, of course, be a pier which would not be tolerated by the person who had to pay for the building. To his mind it was a perfectly defensible proposition that an architect should take advantage of a cast-iron stanchion, and enclose it with terra-cotta or stone, and thereby reduce the diameter of that column. So long as that column was in proportion, to his mind it was quite a defensible design.

The Chairman said that some seven or eight years ago he happened to pick up Mr. Eidlitz's book on "The Nature and Function of Art, more especially of Architecture," at an old book shop, and was struck by its title. He read it through (no small task, he might say, for it was rather a large book), and found the author was the only person he had ever come across who had a due belief in the importance of art to mankind. He had spoken to a great many artists at various times, but they almost all agreed in the modern maxim that art was solely for delight. Now, Mr. Eidlitz was certainly of opinion that it is one of the great means of education of the masses, that the sort of vague ideas that they got from it were the only ones that they could possibly get; and, as he said, at present it was thought that we could do without art. But it was just as necessary now if they wanted to teach the people as it was two thousand years ago. Well, that alone was a great charm in the book. He could not say that he wholly and entirely agreed with all his remarks about architecture, and, amongst other things, he did not agree with his idea that the whole scheme of architecture can be changed in a generation, or anything like it; but he considered that the paper they had heard was one of the most important papers ever read in that Institute since he had been a member. They knew that one of the great difficulties of architecture was proportion. Now, the proportions of parts originally laid down by the early builders were based on the strength of materials as their experience taught them to use them. He had not the least doubt of that, although he could not prove it. Well, these proportions had now come from study and from their being constantly before us to take a form that was agreeable to our eyes—custom would do that. Mr. Eidlitz had, in his opinion, made architecture take one step forward. He said that you would find that if you took a constant according to the desired appearance of a building, and multiplied by that constant every portion, first calculated for its absolute stability, you would get a proper proportion without any more trouble; and that, in his opinion, was a true as well as a most valuable remark. Mr. Statham's remarks about the effect of things past on the minds of the present generation were certainly perfectly true. He did not think there was anything in Mr. Eidlitz's paper that at all went to show that he was of a different opinion. He agreed with Mr. Eidlitz's remarks about the usual study in our country of what was called historic architecture. As applied now it was perfectly useless, and not only useless but very destructive of any kind of progress, for, as Mr. Ruskin said, studies of old buildings are not to be put into a store-house for use, but into a gallery for study. The thing that we wanted to do, in his opinion, was to express in the taste of the day the things that were wanted. We wanted to arrange a building as exactly as was possible for its purpose; we wanted to make it bear what it should bear in each portion of it, and to give it the ornament which was necessary to convey to persons of our own day an idea of the use to which that building was put, and to evoke the proper emotions, and all these things were more or less embodied in Mr. Eidlitz's paper. But there was

one point with which he could not agree, viz., that not only the rough form, but the absolutely finished form, could be got at by the consideration of strains. That he did not think was the case. Architecture appealed to emotions which no mechanical methods could produce. The only thing he would say about Mr. Statham's remarks was that the Roman architects, and even the earlier Romanesques, were not so absolutely without anything to give them an idea. There then were in most places the Roman ruins. There were the works of the Byzantines; and the Romans themselves, they must recollect, when they became great builders, had conquered all the civilised world—all the whole of the countries round the Mediterranean were portions of the Roman Empire—and therefore they had had a great opportunity of seeing the native architecture of those places. And so the Romanesque architects learnt the little they could from the Roman and Byzantine buildings around them, and what they did then was nothing to what they afterwards accomplished when they had made a tour through Europe, Asia Minor, and Syria; and they must recollect that it was not till 1291 that the Crusaders were eventually driven out of Acre. These people had not only a fine opportunity of seeing a great many things that had been done, but they were also in contact, as well as in conflict, with those people who were then the most civilised in the world—the Saracens. They must have seen an immense quantity of their rather ephemeral works, and he believed it was the endeavour to rival, rather than to imitate them, which gave the peculiar character which Gothic, and especially late Gothic, took.

The Chairman announced that the next meeting would be held on the 15th inst., when Mr. W. H. St. John Hope, M.A., F.S.A., would read a paper on "Heraldry in English Medieval Architecture."

The meeting then terminated.

THE LONDON COUNTY COUNCIL.

The usual weekly meeting of this Council was held on Tuesday, Sir Arthur Arnold, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee it was agreed to lend the Battersea Vestry 13,000*l.* for the purchase of the freehold premises for an electric lighting station; the Hampstead Vestry 8,380*l.* towards the cost of the High-street improvement; the Westminster Vestry 12,400*l.* for local street improvements; the St. George's, Southwark, Vestry 1,050*l.* for the erection of a shelter for persons whose houses are being disinfected; and the Hackney Guardians 19,550*l.* for the erection of casual wards, infirmary, &c.

North Woolwich Drainage.—The Works Committee reported as follows:—

"We have considered the estimate, amounting to 48,000*l.*, and specification submitted for the drainage works at North Woolwich. It has been reported to us that since the estimate was prepared by the Main Drainage Committee on October 1, 1896, the cost of bricks, ironwork, and other materials has considerably increased. We have therefore to report that we are satisfied with the amount of the estimate of 48,000*l.*, subject to an allowance of 1,000*l.*, due to the increased value of materials since the estimate was prepared."

Charges for Water Supply.—The same Committee also reported as follows:—

"We have to report that the following charges have been made for the supply of water at the Lewisham Sewer Works in the districts served by the undermentioned companies:—Kent Waterworks Company, 10*l.* per thousand gallons, after 84,000 gallons have been supplied; for the use of each meter, which includes the supply of 84,000 gallons of water. Lambeth Waterworks Company, 1*s.* per thousand gallons, and 10*s.* 6*d.* per quarter for the use of each meter. We have endeavoured to obtain a reduction of the charges of the Lambeth Waterworks Company, but without success. We have been informed that an estimate, amounting to 6*d.* per thousand gallons, has been obtained from the same company for the supply of water for the Lambeth Baths which are situated in a district also served by the Southwark and Vauxhall Water Company. We report these facts for the information of the Council."

Fleet-street Widening.—The report of the Improvements Committee contained the following paragraph, the consideration of which was adjourned for a week:—

"We have had before us a letter from the City Commissioners of Sewers stating that they propose, with a view to continuing the widening of Fleet-

street, to acquire the freeholds of the properties between Bride-lane and Salisbury-court (Nos. 82 to 97, Fleet-street, but excluding No. 89, in respect of which the Council has already agreed to contribute), and asking the Council to contribute half the cost of the proposed improvement. The present width of the road is about 45 ft., and it is proposed to increase this to 60 ft., the cost of so doing being estimated at 170,780*l.*, but it is probable that that amount will be reduced, as the Commissioners propose, by acquiring the freeholds, to allow some of the short leases to run out. We may point out that the Council has already agreed to contribute half the cost of widening Fleet-street between Ludgate-circus and Bride-lane, and at No. 89, and that the Council, when so agreeing, had regard to the fact that the widening of Fleet-street is necessitated not by local but by general through traffic and from all parts of the county, the street being one of the main thoroughfares of London. The present application is in respect of a proposed widening of the road for a length of about 216 ft. In March, 1896, when the Council agreed to contribute half the cost of widening the portion of Fleet-street between Ludgate-circus and Bride-lane, we made reference to the present proposal, and stated in our report that 'there would still remain two other portions of the street, between Salisbury-court and Temple Bar, having together a length of about 1,100 ft., which at some future time would require to be widened. It is, therefore, evident that the present improvement is only the commencement of a much larger scheme which, in its entirety, will doubtless cost something approaching a million pounds sterling. We must point out, however, that if the Council agree to contribute part of the cost of the improvement at present proposed, it will not necessarily be absolutely committed to contribute towards the cost of the larger scheme.' We may here mention that Ludgate Hill, which is a continuation of Fleet-street, has been widened to 60 ft., and that the late Metropolitan Board and the Council contributed to the cost of the work. We are strongly of opinion that to continue the widening of Fleet-street is a desirable work, and the Council having already admitted the necessity of the improvement, we have decided to recommend the Council to accede to the request of the Commissioners. We may state that the Commissioners have complied with the rules of the Council governing applications for contributions towards the cost of improvements, and are advised that the estimated cost (170,780*l.*) is fair and reasonable. . . . We have sent to the Finance Committee an estimate of the amount required, and we recommend—

"That the estimate of 85,300*l.* submitted by the Finance Committee be approved, and that the Council do contribute on the usual conditions one-half of the cost of widening Fleet-street between Bride-lane and Salisbury-court (Nos. 82 to 97, Fleet-street, but excluding No. 89, in respect of which the Council has already agreed to contribute), as shown by a black line upon the plan submitted by the City Commissioners of Sewers, such contribution not to exceed the sum of 85,300*l.*"

Hackney Wick and Isle of Dogs Relief Sewer.—The Main Drainage Committee reported as follows, the recommendation being agreed to:—

"On March 1, 1892, the Council accepted the tender of Messrs. E. & W. Iles, amounting to 36,600*l.*, for the construction of the Hackney Wick and Isle of Dogs relief sewer. The work was commenced in May, 1892, and completed in May, 1895. During the execution of the work great difficulties were met with in crossing the river Lee at Bromley, inasmuch as the trial borings on which the engineer's estimate and the contractors' tender were based proved to be unreliable when the ground was fully opened, and it was found necessary to deviate the line of sewer from that laid down in the contract. An entirely different method of constructing the sewer had to be adopted in place of that contemplated when the contract was let, and the navigation of the river Lee had to be interfered with, considerable additional expense being incurred thereby. Certain additions were also made to the work specified in connecting the sewer with the low-level sewer. The Engineer now informs us that the account rendered by Messrs. Iles amounts to 52,338*l.* 19*s.* 4*d.*, and that the several claims made by them have been thoroughly inquired into by him, with the result that his award, subject to arithmetical checking by the Comptroller, amounts to 44,059*l.* 10*s.* 5*d.*, of which a sum of 33,700*l.* has already been paid, leaving a balance of 10,359*l.* 10*s.* 5*d.* To meet this expenditure there is a sum of 1,064*l.* 8*s.* available from the estimate adopted by the Council in respect of this work, and it becomes necessary for us therefore to ask the Council to pass an excess vote for the remainder, viz., 8,395*l.* 2*s.* 5*d.* We recommend—that the Council do sanction an additional expenditure of 8,395*l.* 2*s.* 5*d.* in respect of the construction of the Hackney Wick and Isle of Dogs relief sewer, and that, subject to its being checked by the Comptroller, Messrs. Iles' account be settled in accordance with the Engineer's award."

The Works Department.—The Works Department submitted a list of nine jobs, the estimate for which was 23,218*l.* 2*s.* 8*d.* and the actual cost 25,696*l.* 0*s.* 4*d.* Six other works, for which cer-

tificates had not been obtained, were reported to have cost 33,971*l.* 13*s.* 1*d.*, as against the Managers' revised estimate of 32,030*l.* 5*s.* 6*d.* The consideration of the report was postponed for a week.

Re-naming of Streets, &c.—On the motion of Mr. Fox it was agreed (1) "That, in view of the congested state of the foot traffic in many parts of London, it be referred to the General Purposes Committee to consider whether a suggestion should not be made to the Commissioner of Police that notices be placed in the principal thoroughfares requesting pedestrians 'to keep to the right.' (2) That it be referred to the Building Act Committee to consider whether it should not be proposed to the Local Authorities in London that, in cases where streets are re-named, the original name be allowed to remain for at least twelve months after the date at which the new name shall have been affixed in the thoroughfare."

The Council adjourned, after an unusually short sitting, at 5.40 p.m.

THE PROVIDENT INSTITUTION OF BUILDERS' FOREMEN AND CLERKS OF WORKS.

The Annual Dinner of this Institution took place in the King's Hall, Holborn Restaurant, on the 27th ult., Mr. Benjamin J. Greenwood (Messrs. Holliday & Greenwood) occupying the chair. The company numbered 420.

The loyal toast having been honoured, The Chairman proposed the toast of "The Architects and Surveyors," coupled with the name of Mr. G. D. Stevenson. The modern architect, he said, was a man of considerable ingenuity and talent, and in London, what with the law of ancient lights on the one hand and the regulations of the County Council on the other, much skill was requisite in surmounting the difficulties which occurred in the architect's professional life. For both architects and surveyors, builders' foremen and clerks of works felt much esteem.

Mr. Stevenson having briefly replied, Mr. W. H. Sharpington proposed the toast of "Builders and Contractors" or "Builders and Contractors Proper," as he phrased it; and in the course of his remarks he spoke of the difficulties which builders, as well as architects, had to contend with in dealing with ancient lights, &c.

The Chairman, in response, said that those who were not builders and contractors proper were willing and anxious to secure contracts for buildings, but whenever they had occasion to erect a building for themselves they called in an outside contractor to do the work. The difficulties of architects in regard to ancient lights were shared to a large extent by builders, who had many troubles of a similar character to contend with.

Mr. John Beer, Hon. Sec., proposed "The Governors, Trustees, Donors, Honorary Subscribers, and Visitors," coupled with the name of Mr. K. Adams, who, in responding, urged all builders' foremen and clerks of works who were not already members of the Institution to join at once.

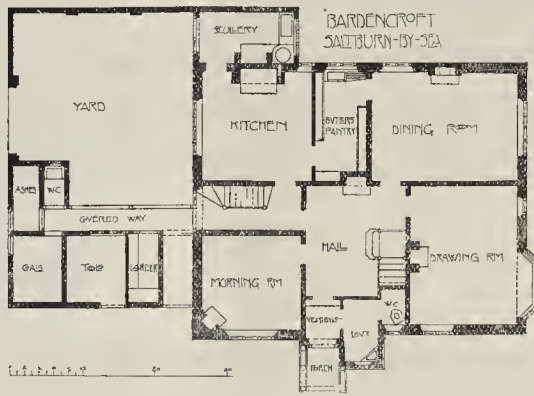
The toast of the evening, "The Provident Institution of Builders' Foremen and Clerks of Works" was then proposed by the Chairman. The Institution, he said, existed for the purpose of enabling builders' foremen and clerks of works to make provision for the future, and all men of common sense made such provision; those who did not while they could were a nuisance. The Institution had, during the last fifty-six years, carefully disbursed no less a sum than 10,032*l.* to afflicted members, their widows, and orphans. He hoped that builders' foremen and clerks of works who were not already members of the Institution would join at once—to support it in the day of their prosperity and receive aid from it, if need be, in the day of adversity.

Mr. J. W. H. Bedford, in response, said that during the past year 306*l.* had been distributed to twenty pensioners.

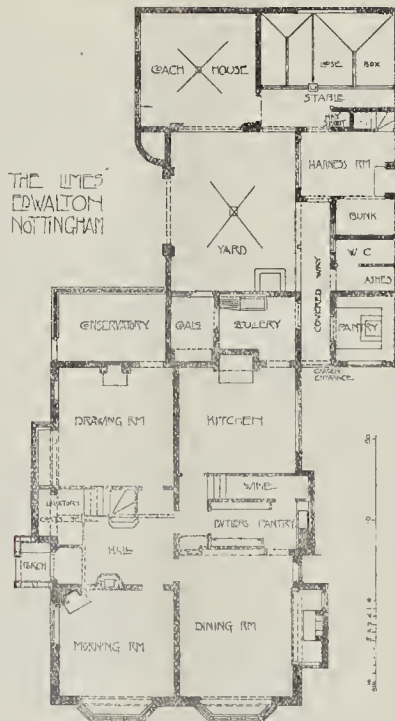
Other toasts were "The Chairman," proposed by Mr. J. Stapleton; and "The Press," proposed by the Chairman and responded to by our representative.

During the evening a list of subscriptions for the coming year was read, the total exceeding 120*l.*, including 15 guineas from the Chairman.

HOME ARTS AND INDUSTRIES.—The third annual exhibition of this Association will be held at the Albert Hall, from May 20 to 24. The exhibits will include the work of the Princess of Wales's classes at Sandringham.



THE LINES
EDWALTON
NOTTINGHAM



Books.

Ironwork. Part II. By J. STARKIE GARDNER. London: Chapman & Hall. 1896.

THIS small work, published for the Committee of Council on Education, is a continuation of Mr. Gardner's first handbook, and comprises the time from the close of the Medieval period to the end of the eighteenth century, excluding English work. The book is divided into chapters treating each country separately, which is the best arrangement, as the ironwork of each country has a separate character.

Mr. Gardner has the advantage of being fully acquainted with his subject practically as well as historically, and the number of illustrations given render the book an exceedingly intelligible and useful outline of the subject in a small compass. It is curious to notice how restricted a part Italian Renaissance art plays in ironwork, except in a few special localities such as Siena; iron having been regarded apparently as a material more fitted for practical than for decorative work. A fine specimen of a torch-holder, worked with exceedingly free though simple foliage, is given; one of four examples in the South Kensington Museum. Mr. Gardner says—"As these, and the banner-holders, were only allowed as a mark of great distinction to the few, they are generally richly worked." A candlestick from Pistoja, now in the South Kensington Museum, also illustrated, is remarkable both for its grace of line and also because it presents a kind of union of Renaissance gracefulness and refinement with Medieval freedom in detail, the form of leafage being a suggestion from nature treated in a form suitable to ironwork.

The finest achievements of Renaissance Italy in metal work were in chased and Damascened suits of armour; but we presume it is considered that Damascening, being the introduction of other metals upon iron, hardly comes into the subject of pure ironwork; at all events no illustrations of it are given.

The object of the book is obviously historical and illustrative rather than didactic; but some brief guiding criticism as to what is really good or bad in the examples given might well have been added; there is occasionally a remark of the kind, but not often. For instance, the seventeenth century screen, fig. 22, with the vase and naturalistic foliage in the centre of it, is given apparently as an example of a fine piece of work, and without further comment; but it surely should have been pointed out that while the border is good design the central panel is bad in design, and moreover is entirely out of character with the border. This is the more important as one of the frequent mistakes in wrought iron design of to-day is the mingling, in one piece of work, of conventional and realistic foliage. This is even worse, perhaps, than entirely realistic foliage, as the two elements will not blend. Again, the German example, fig. 34 in the book, called "a magnificent window grating," is no doubt splendid workmanship, but it is exceedingly bad design, and though it was right to give it as an example of a type of work, the student should certainly have been warned against it as an artistic model. The answer may be, of course, that there was not space to go into the question of design, and that the book was not intended to teach design; but in that case it would have been well to insert a prefatory note to that effect, and that the reader must not necessarily regard the examples illustrated as models of art, but only as historic illustrations of different types of work. This point is really of importance, for while there is a great deal of revived interest in ironwork, it seems to be exceedingly difficult to get some of our clever ironworkers to appreciate the necessity of unity of style in such work, and especially of avoiding realism in metal foliage.

Little of the German Renaissance ironwork illustrated in the book is good; the best examples are the stirrup and horse-muzzle. A seventeenth century door-knocker (fig. 3) a good piece of free design, is (like so many other designs for this purpose, old and new) bad as a door-knocker, because there is no suggestion of hammer-like power in the knocking portion. The knocker from Jacques Coeur's house (fig. 4) is instructive in comparison, as it really looks like a thing designed to knock with, though it would have been still better if the lower knob, which does the knocking, had been larger and heavier than the upper one, which is only the hinge.

The chapters and illustrations on Spanish and

DRAWINGS FOR THE ROYAL ACADEMY.

As before, we shall be glad to take charge of and deliver at the Royal Academy any drawings sent to us in time to be photographed before the day of delivery, with a view to subsequent publication in this journal and in the "Builder Album of Royal Academy architecture."

We cannot accept any drawings sent to this office later than Saturday morning March 27, before 12 noon.

Architects sending drawings are asked to give special attention to the following requirements of the Royal Academy:—

1. All frames must be gilt.
2. Every drawing must have a label on the back, giving legibly the title and the artist's name and address.
3. Every drawing must have a similar label attached to the frame by a card so as to hang over in front.
4. Every drawing must be accompanied by a

letter addressed to the Secretary of the Royal Academy, and signed by the artist, containing the artist's name and address, and the title or titles of the drawings sent. If more than one drawing is sent they must be distinguished by numbers, and the corresponding number must be repeated in the labels fixed to each drawing.

N.B.—We cannot undertake to supply or affix labels when omitted by the oversight of the sender.

ROYAL SOCIETY OF PAINTERS IN WATER-COLOURS.—This Society has received the Royal consent to the President, and all future Presidents of the Society, wearing a collar and badge, when attending her Majesty's levees and on such other occasions as may appear fitting. The badge, which has been designed and executed by Professor Herkomer, is of solid gold oval in shape, and supports a female figure carved in ivory. Above this, and attached to the chain, is a gold wreath encircling the Royal Crown, to which the badge is linked.



THE BUILDER. MARCH 6, 1897.

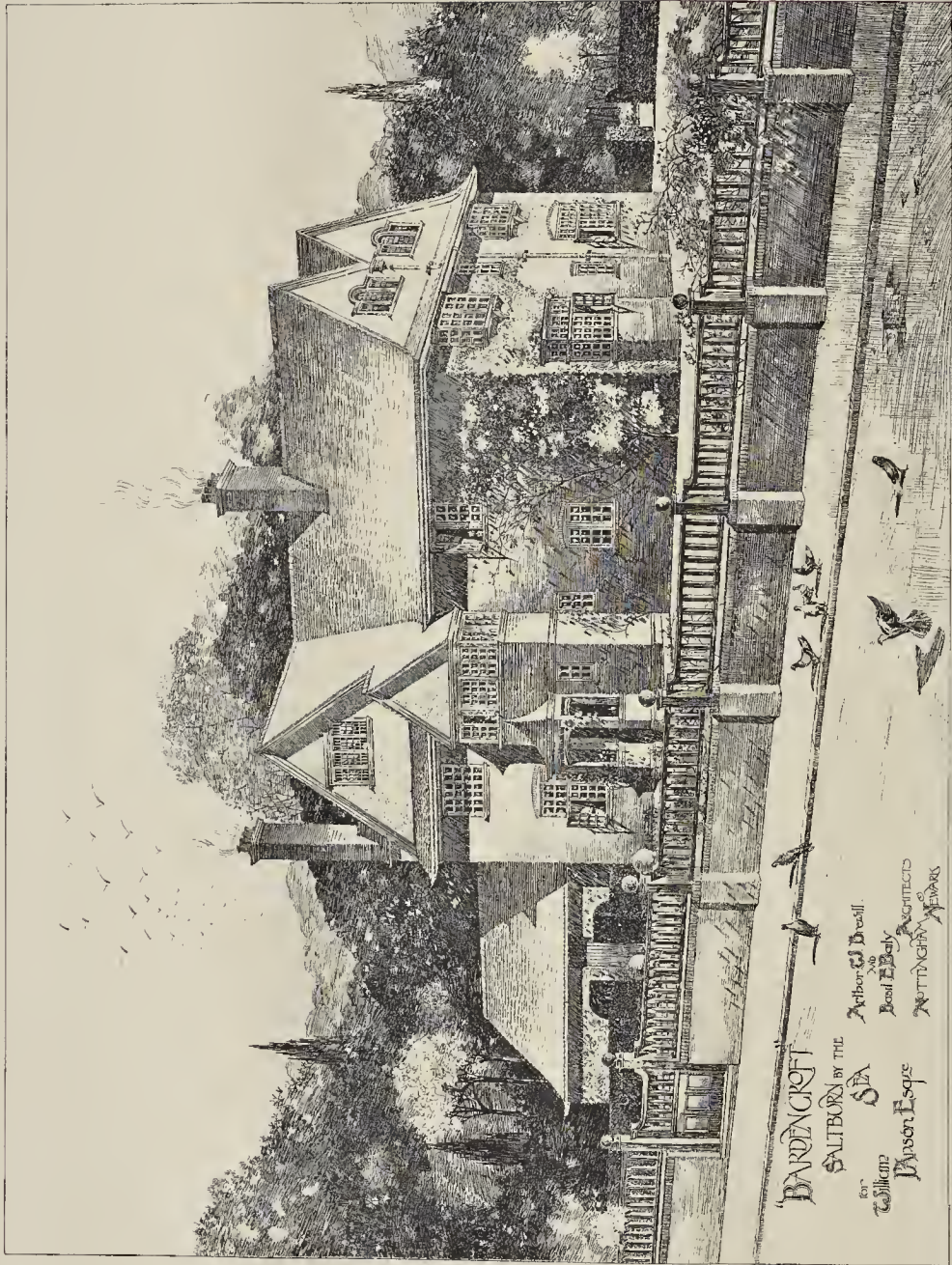
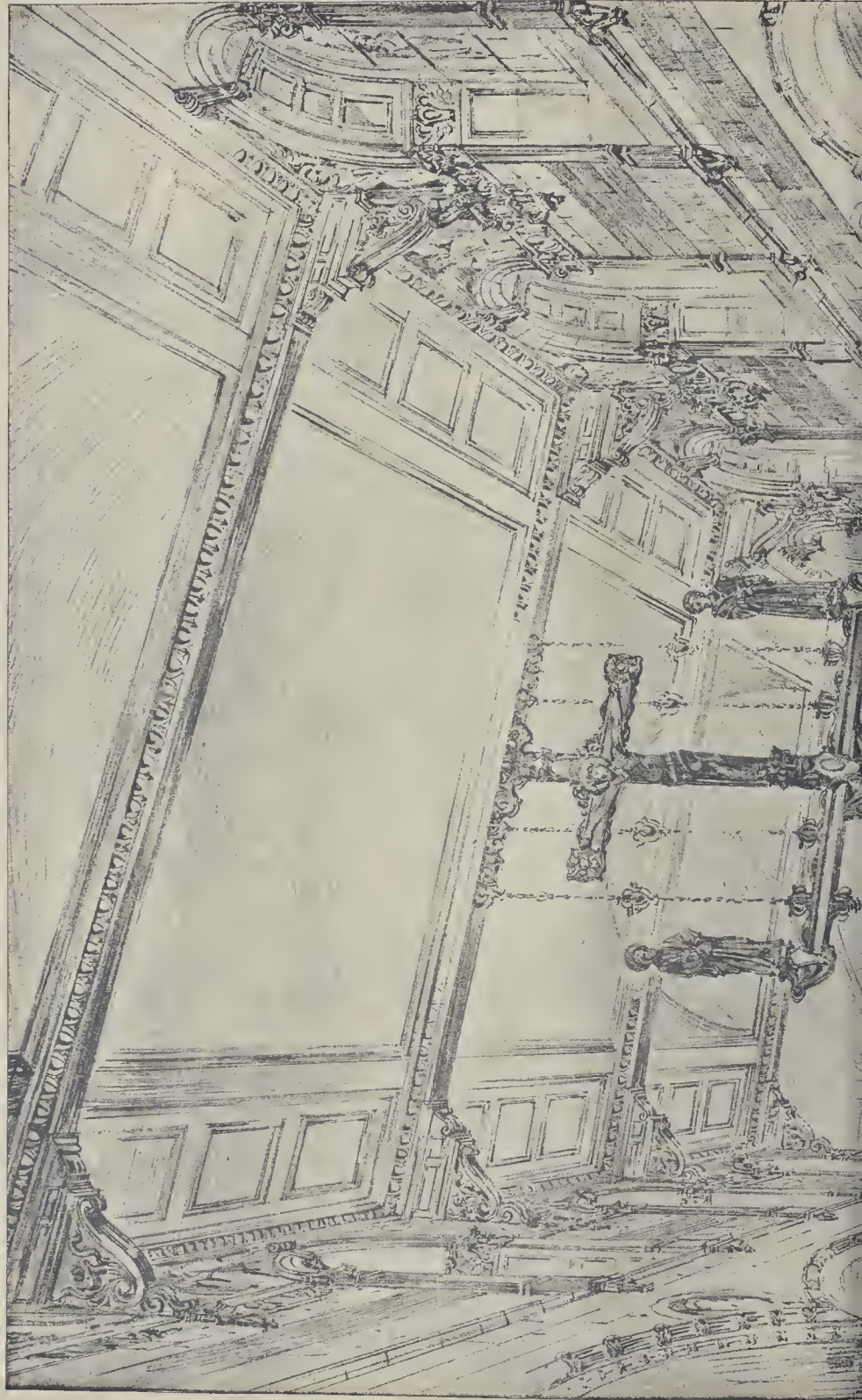
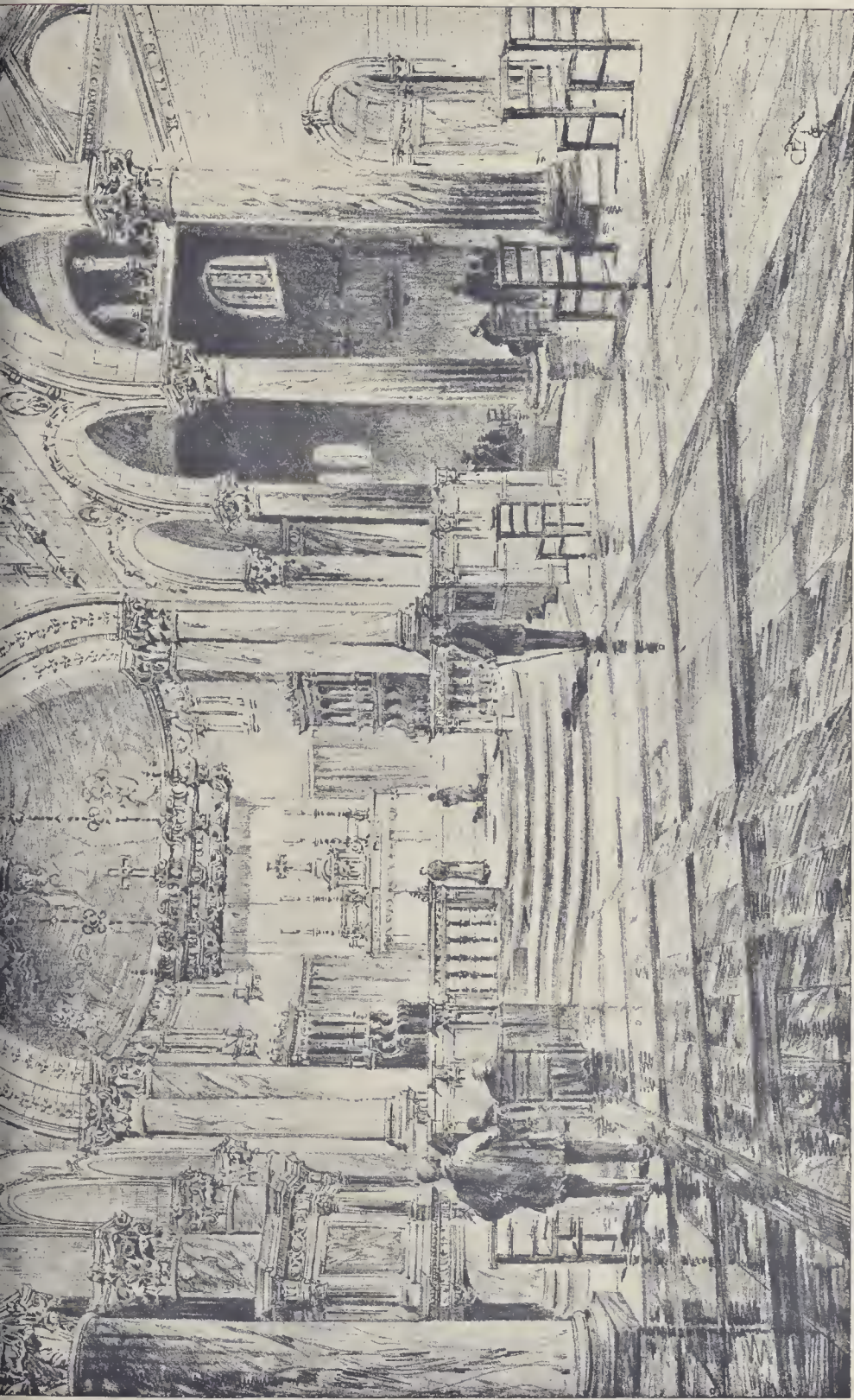


PHOTO LITHO BRISCHKE & CO. 43 EAST MARKING STREET, FETTER LANE, LONDON, E.C.



THE BUILDER. MARCH 6, 1897.





184. PHOTO. SPHAGNE & CO. 4 & 5 EAST HANING STREET, LONDON E.C. 4

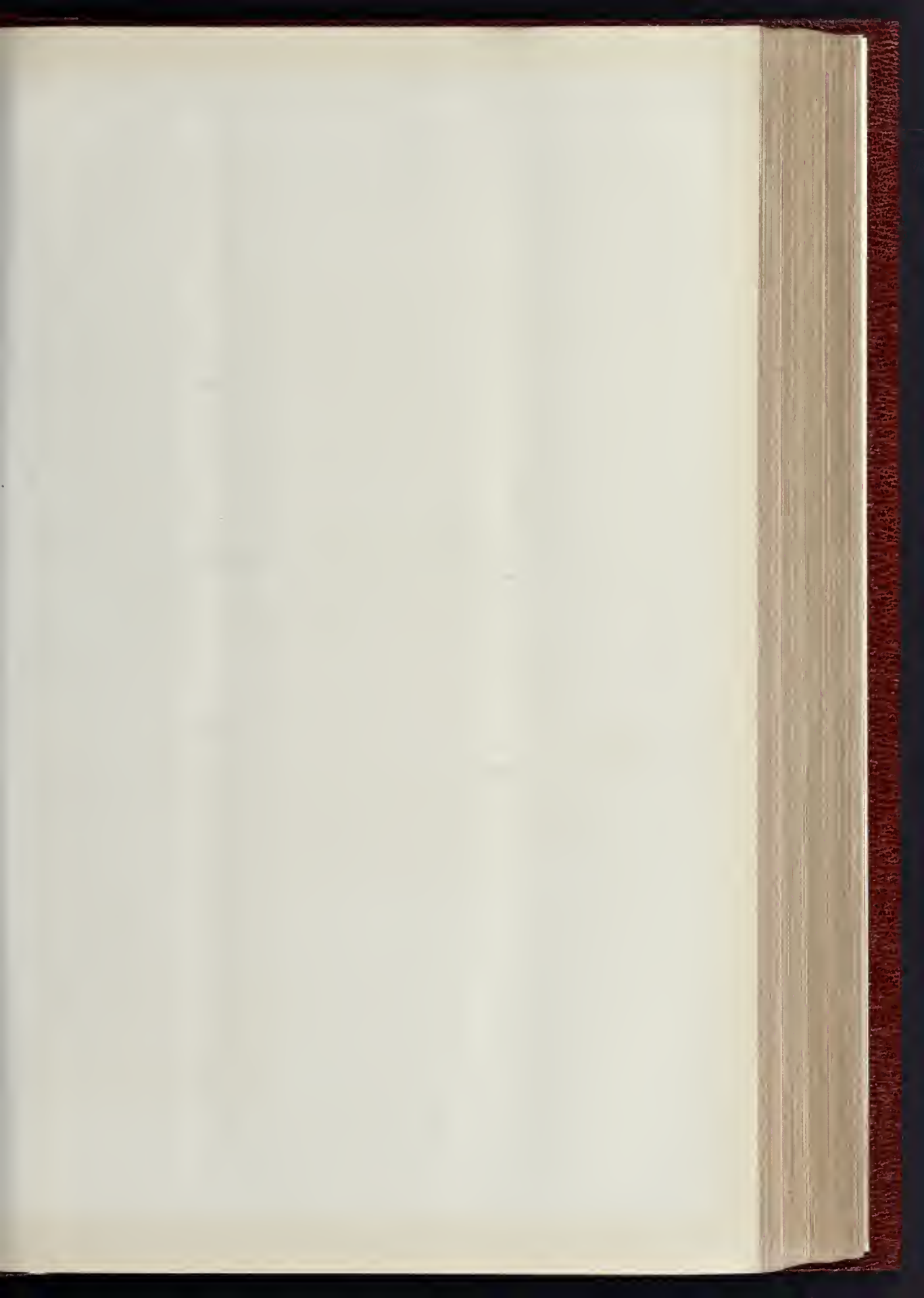
CHURCH OF ST. JAMES THE GREATER, LEICESTER. INTERIOR VIEW. — MESSRS. GODDARD, PAGET & GODDARD, ARCHITECTS.



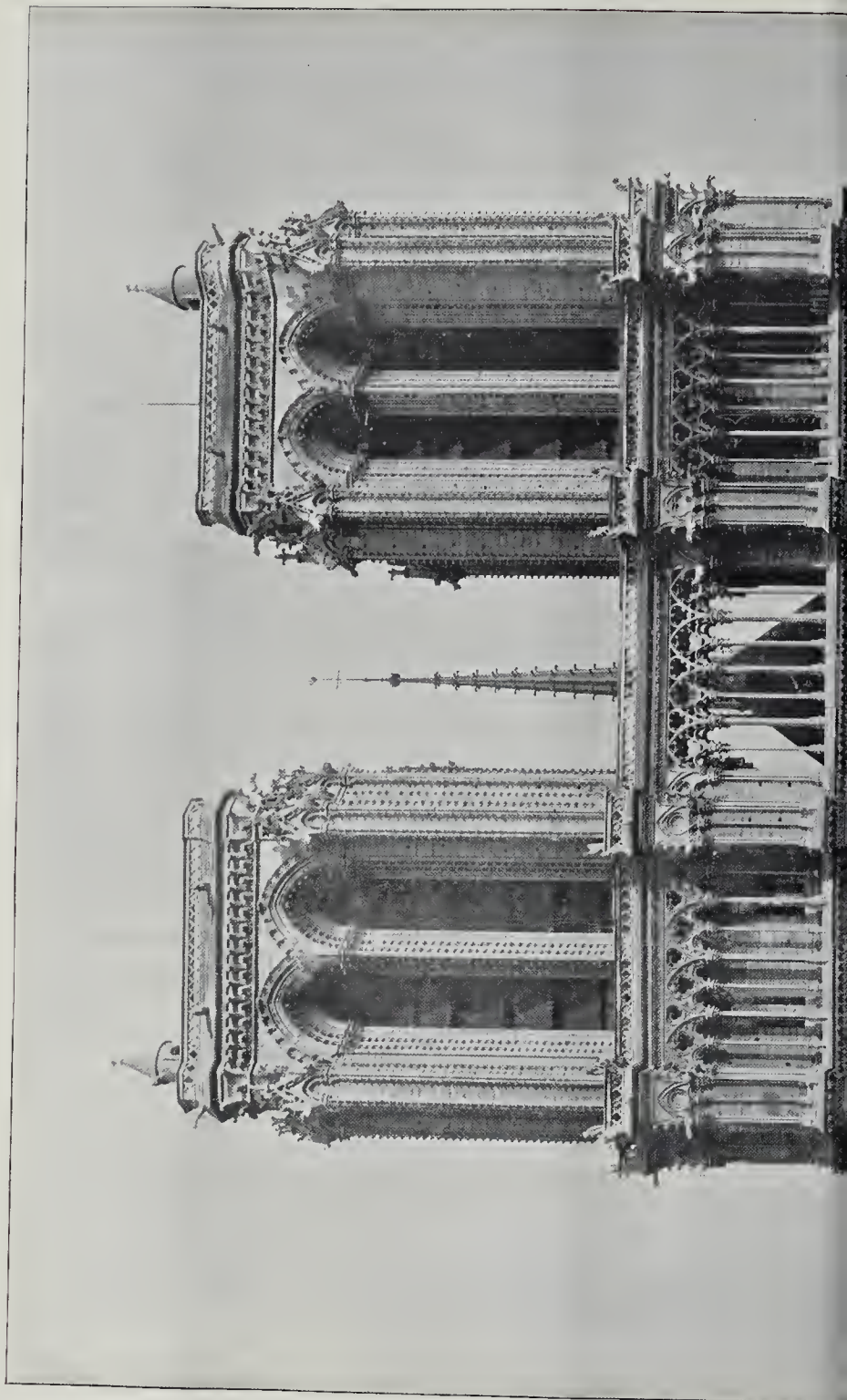
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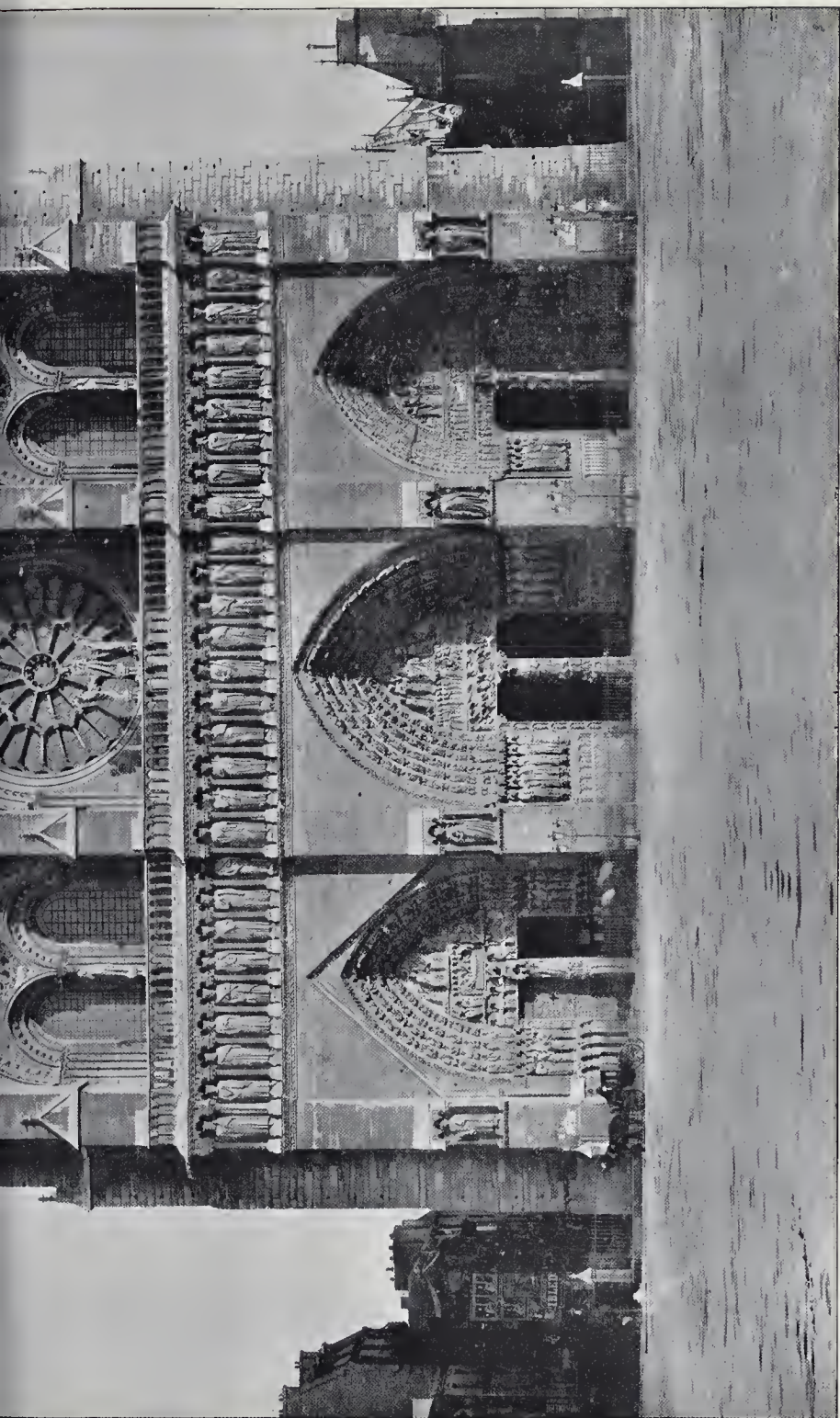


ON PHOTO COURTESY OF THE EAST LONDON STEEL CELLAR ART

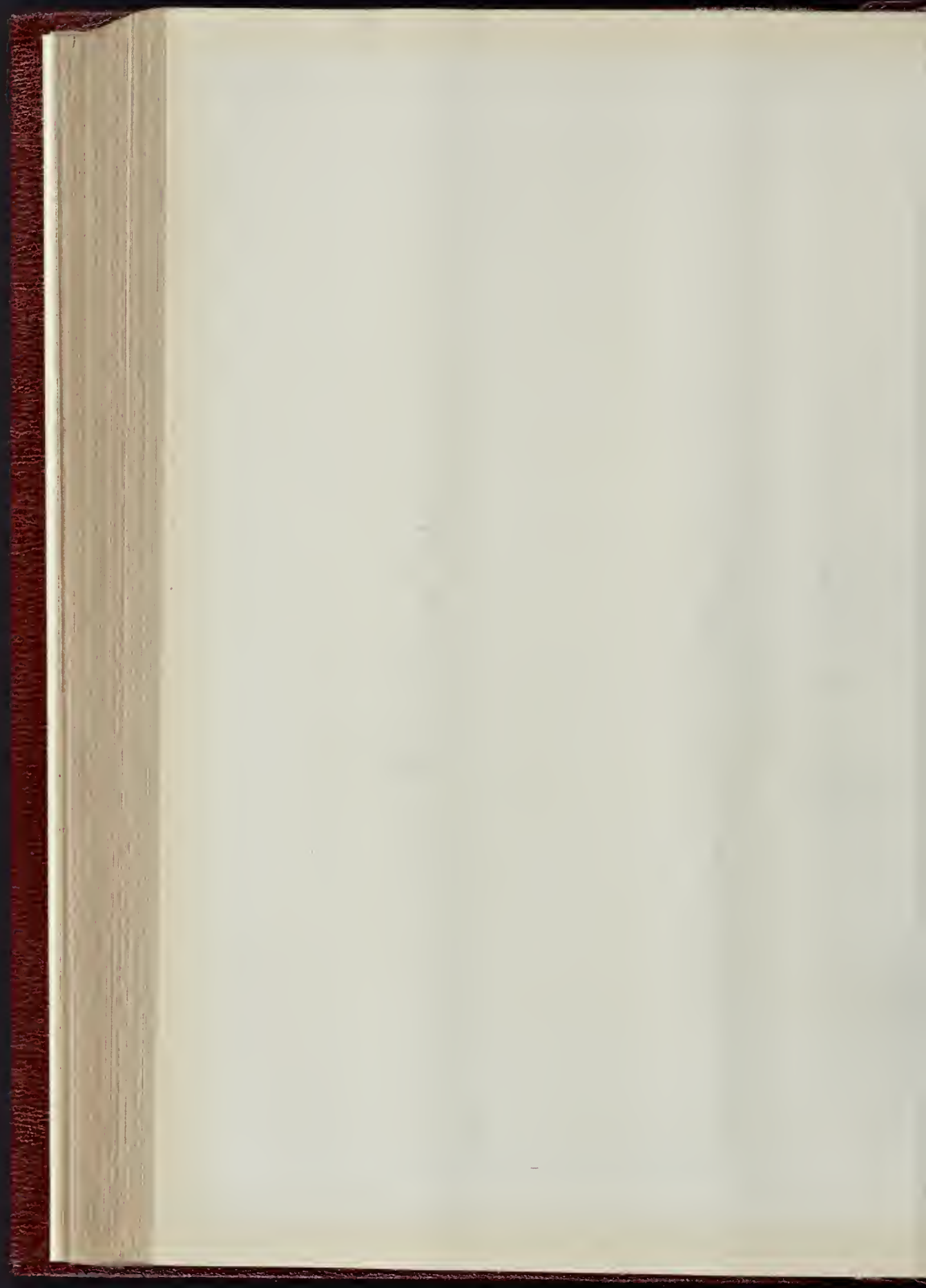


THE BUILDER MARCH 6, 1897.





NÔTRE DAME, PARIS, WEST FRONT.
(An Illustration of Professor Atchison's Royal Academy Lectures.)

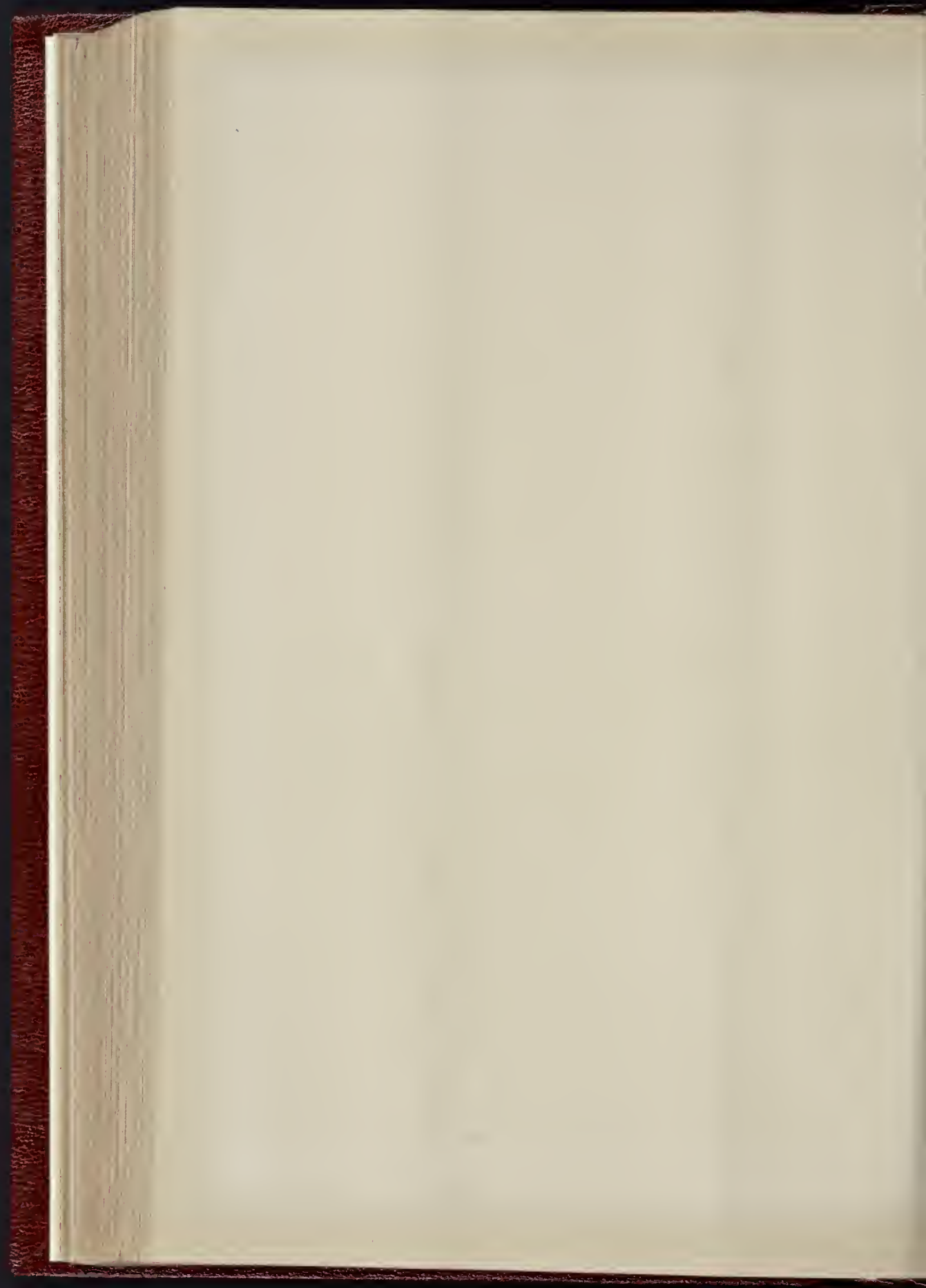




INK PHOTO SPRAGUE & CO. 4 & 5 EAST WASHINGTON STREET FETTER LANE, E.C.

NOTRE DAME DE L'ÉPINE (MARNE).

(In illustration of Professor Aitchison's Royal Academy Lectures.)





THE LIMES EDWARD-LISA NORTH
By H. Cox Esq
ARCHT. W. BEVILL
BY J. L. BULLY
DESIGNS

PHOTOGRAPH BY H. G. & F. EAST, WINDING STREET, LONDON, E.C.

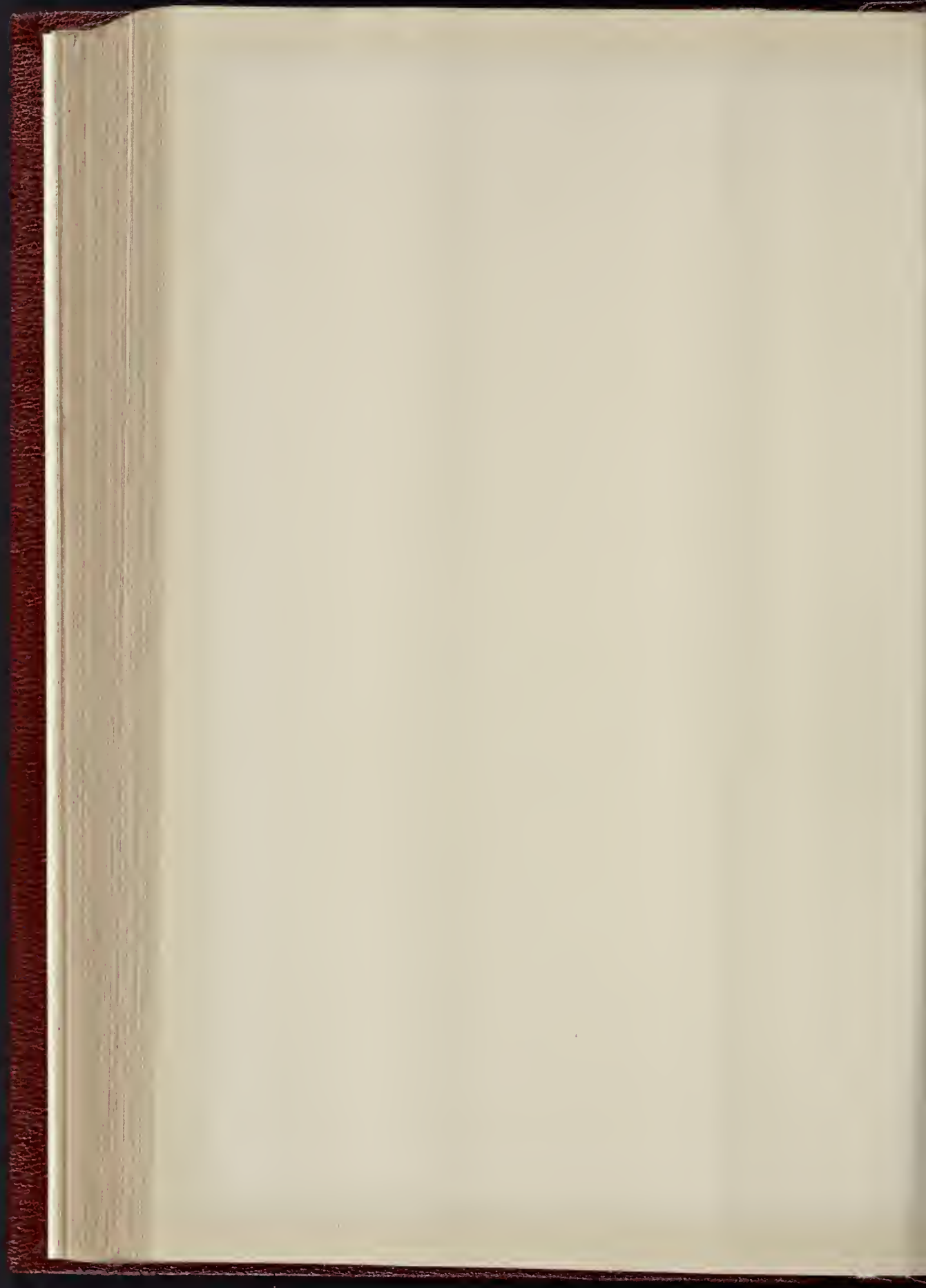




Fig. 1.—Bad Wrought-Iron Design.



Fig. 2.—Good Wrought-Iron Design.



Fig. 3.—A Bad Knocked.

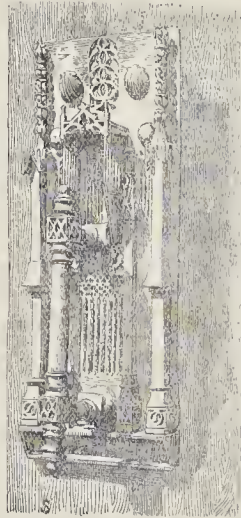


Fig. 4.—A Good Knocked.

duction &c., which may be taken to be the result of experience, and which is for the most part entirely in accordance with our own experience as to method and material. We do not quite understand why the author, in the chapter on etching, should give the first place to the method of drawing the whole subject, partly biting it, and then stopping out the portions which are not to be bitten any more, and only describe as an alternative the method of beginning on the darker portions, and drawing the lighter ones only for the final biting. The latter system saves the trouble of stopping out, and certainly seems the most direct and logical one in a general way. In referring to the difficulty of getting used to see your drawing in light lines on a dark ground (the exposed copper being lighter than the smoked varnish), and to estimate its ultimate effect, which is always a stumbling-block to beginners in etching, (and sometimes to those who are not beginners), Mr. Pennell seems to have overlooked the fact that Hamerton concocted an etching varnish which leaves a white surface and against which the copper shows dark, enabling the artist to see approximately the balance of his darks and lights before biting; it is described, and the method of making it given, in "Etchers and Etching."

We entirely agree with Mr. Pennell in his remark, in the chapter on "Wood-engraving," that the art of engraving round lines made with pen, brush, or pencil, is an easy one compared with that of inventing touch and texture in translating a work in colour into black and white; but while on the subject we should like to have seen a word said in favour of the old system, now nearly superseded from considerations of time and economy, in which the original artist drew the actual lines on the block and the engraver merely cut away between them, a process which, as the author says, "only requires much training and a steady hand," but which makes the engraving the real expression of the artist's line. Now there is little more real "drawing on wood;" the subject is photographed on to the wood and the engraver proceeds practically to draw it, or cut it out; he may be an accomplished artist, but he has not the freedom of line which a man really drawing on wood can have, where the original line can really be as free as in etching. Commercial conditions have altered all this.

Seeing that Mr. Pennell has really a great deal of information and advice to give which is exceedingly useful to beginners in any of the illustrative methods described, it is a pity that he could not be content to convey it in simple and unaffected English, instead of in the kind of off-hand "slapdash" style, freely sprinkled with colloquialisms, which among a certain class of artists seems to be

French ironwork are far more attractive, and Mr. Gardner points out how much there is yet unknown in this country in regard to the glories of Spanish ironwork. Speaking of some of the great balustrade screens (*rejatas*) round the choirs of the Spanish cathedrals, he observes that, as in an example from Avila Cathedral, only the spindle-shaped balusters are forged in solid metal, the pilasters and some of the cornice work being merely of wood cased with thin *repoussé* iron. Many of the objects illustrated in the chapter on France are in every way admirable, until we come to the late Renaissance period, when taste and style became far more questionable. One of these (fig. 1) may serve as a typical example of bad ironwork design, in contrast with the fender and light-holders shown in fig. 2. The examples are all from blocks lent us by the publishers.

The book is generally very well written as well as full of information, but the author has made an absurd mistake in his idea that Othello's sword of "the ice-brook's temper" was a reference by

Shakespeare to the celebrity of the "Innsbruck" weapons. It has nothing to do with Innsbruck; Othello specially says it was "a sword of Spain," and the expression "the ice-brook's temper" refers to the practice of plunging the best sword-blades, red-hot, into ice-cold water, to temper them.

The Illustration of Books: a Manual for the Use of Students. By JOSEPH PENNELL. London: T. Fisher Unwin; 1896.

MR. PENNELL has done such a great amount of book illustration that it may naturally be supposed that he has had experience of most ways of reproducing work, and of making drawings for reproduction; and his book, which deals with line drawing and washed drawings for mechanical reproduction, wood engraving, lithography, etching, and photogravure, contains a great deal of information as to the best materials, the best way of drawing for various methods of repro-

thought a fine way of writing, but which in fact is only a form of literary vulgarity.

Metallic Structures. By JOHN NEWMAN, A.M. Inst. C.E. London: E. & F. N. Spon. 1896.

At the present time there should be few more important subjects for the consideration of the designer of almost every class of structure than the action which the surrounding atmosphere will ultimately have upon it.

We fear it is too often the case, not only with architects, but also with engineers, that the question of the protective coating, on hidden metal work especially, is either left to chance or to the supplier of the material, who, having probably taken his contract at a cutting price, does not spend more than he can help, either on the paint used or its application. If the work is of such an important nature as to require inspection at the maker's works, the inspector generally requires to see it *before* it is painted, and after inspection it is, more often than not, hurriedly painted in the open, "rain or shine," by the cheapest of unskilled piece-work labour.

So little is known by the average engineer and architect about paint and other protective coatings that, beyond specifying that the work is to receive a certain number of coats of "best approved oil paints," very little further notice is taken of what is actually done in what, after all, is of the greatest importance in securing the extended life of the work. A considerable amount of ignorance still unhappily exists as to the galvanic action which certain metals exert upon each other. Not long ago a case came under our notice in which a copper gutter of considerable importance was specified to be put together with *galvanised iron* bolts, and certain fittings were similarly to be galvanised! It is, therefore, an excellent thing when authors conversant with those subjects direct their energies to works on corrosion and its prevention, which has not as yet, we fear, received that consideration which it deserves.

Mr. Newman's book is intended to be "a practical aid book to the safety of works in iron and steel," and contains much useful information. It is, however, somewhat heavy reading, being a volume of 368 pages, closely written, and containing paragraphs extending in some instances over three pages. It seems a pity that authors fail to realise that, although there may be some who can spare the time to read their books from cover to cover, yet, in the majority of cases, the principal use of such works, as we have at present under consideration, is that of reference in particular cases which come under the consideration of the individual reader. It is thus of the greatest importance that the matter dealt with should be classified under head-lines easily recognisable and quickly found. We regret to say that in this respect Mr. Newman fails signally, and as he is somewhat verbose, this fault is accentuated. His somewhat frequent lapses into poetry are also a little irritating, and at first sight it is difficult to see the connexion between Milton's "Paradise Lost" and the prevention of fouling and corrosion in submerged structures.

There is, however, a great deal of very useful matter in the book, which is compiled from many reliable sources of information, as well as from evident personal knowledge, and we therefore recommend it to the notice of those of our readers who wish to be informed on matters in connexion with protective coatings for metal structures, as well as on the important point of knowing good paint from bad.

Practical Tunnelling. By the late D. KINNEAR CLARK. Fourth Edition. London: Crosby Lockwood & Son. 1896.

In the broad sense of the word there is very little new matter that can be written about the making of tunnels, and yet, in detail, the advancement in modern high explosives, in drilling and excavating plant, and in compressed air machinery, has made practically possible works in tunnelling hitherto almost unattainable. At the same time the ever-growing demands for cheap transport for man and his handiworks have created fresh fields for the art of tunnel making.

Tunnelling is not by any means as simple as it may at first sight appear from an inspection of the finished work; nor is it reducible to a hard and fast science to anything like the same extent as are most other engineering feats. And thus it is that the records of what has already been found feasible and satisfactory are of the greatest service to those embarking on fresh enterprises. The

number of engineers in this country is not great who have a practical knowledge of the ins and outs of tunnelling through difficult ground, and the expedients which must be resorted to in order to meet difficulties likely to arise; difficulties which in many cases have to be combated by the contractors' agents or foremen whose efforts are seldom if ever recognised by the public.

A most useful record of the greatest works in tunnelling may be found in the late Mr. D. Kinneare Clark's book, which, in its fourth edition, was greatly extended and nearly brought up to date, by its gifted author, just before his death. The difficulties incidental to tunnelling are not familiar. Technical journals from time to time instance some new success, some fresh achievements of the engineers' skill in tunnel-making, but notwithstanding this, the number of people is small who have a clear grasp of the actual methods employed in overcoming the many difficulties which present themselves from the very outset of such works; and it is thus with the greater regret that we note in passing the recent death of Mr. Greathead, who has done so much in connection with cast-iron tube tunnels. To those resident in London, the works now in progress in connection with the Blackwall Tunnel, the Waterloo and City Railway, and the Central London Railway, are perhaps of greatest interest; the first-mentioned work being, of course, the most difficult to carry out, owing to its great size, and the nearness of the crown of the tunnel to the river bed, which in places threatened to be an almost unsurmountable difficulty. Had it not been for the form of shield used in driving this tunnel, no doubt the work could never have been carried out.

In Mr. Clark's book we find records of all the important tunnels of recent years, both in England and on the Continent, whether for railway, water supply, or subway purposes. The description of the fourth piercing of the Alps by means of the Simplon Tunnel, now in course of construction, which is of more than usual length (twelve and a quarter miles), and the consequent difficulty of ventilation, the possibility of working only from two faces, and the end sections being curved, render it a more than usually interesting case. Reference is also made to the successful invention of Messrs. Fenning & Stannard, which was employed in the construction of the new King's Cross tunnel, resulting in much saving in labour and material. Under this system a short metal lining is formed of needles about 2 in. thick, which, after the work is started, rest upon the outside of the brick lining, provision being made for pushing the needles forward as the excavation proceeds and the lining is inserted. Their front ends are supported on timbering, and the space round the brick lining left by the progressive movement of the needles is filled up by cement grout, introduced through holes in them.

Many other interesting descriptions are also given of tunnelling under various conditions, as well as the methods employing in setting out and levelling, and general rules for construction.

Laxton's Builders' Price Book for 1897. Containing above 72,000 prices. Eighth edition. London: Kelly & Co., Limited. Pp. cvii., 750 and 111.

BOOKS, like men, grow old, and while, undoubtedly, "Laxton's" is still wonderfully young in many respects, traces of hoary age do as undoubtedly grow manifest to the close observer. Perhaps this is especially the case in the section entitled "Smith and Founder," where a description of cast-iron girders appears, and a quite unintelligible table of the loads which cast-iron girders of unknown size and weight will safely bear. Steel riveted girders and stanchions, and steel angles and tees, are conspicuous by their absence. The first three paragraphs of the chapter on "Fireproof Construction" also bear traces of age, and a sentence on page 314 respecting the services to water-closets appears to have been written before the days of separate closet-cisterns. Indeed, to several of the "memoranda" introducing the different branches of builders' work exception might be taken; e.g., under "Ventilation" we read that "the admission of fresh air should undoubtedly be through an external wall, as near the floor and as far from the fireplace as possible. For this purpose air-bricks should be placed in the wall behind the skirting, with a hit-and-miss ventilator let into the skirting to regulate the inlet." Most of these "memoranda" might be omitted with advantage, and with them would vanish nearly all the marks of age to which we have alluded. We notice that the prices for Welsh slating have been

largely increased since the last issue. In the alphabetical list of Yorkshire stone quarries, Kingby has been for the first time included, but, unfortunately, it is printed "Kingly," and is, therefore, not in its proper place in the list.

The book is undoubtedly most useful, but in everything human there is room for improvement, even in "Laxton's." Let us hope that the eighty-first edition will bear fewer marks of antiquity than the eightieth, and will be brought more up to date by the inclusion of a section on Constructional Steel-work. Additional information on terra cotta would also be useful, and on p. 151 the different qualities of oak might be specified and priced.

Kirkpatrick's New System of Carpentry. being an absolutely new departure in this important branch of the mechanic arts. By C. A. KIRKPATRICK, Practical Mechanic. Boston. 1896. London: Sampson Low & Co. 1896.

SUCH is the somewhat startling heading of the title-page, which is further graced by assertions of a similar character, printed in every conceivable variety of type. The introductory chapter deals with this "new system of carpentry," in which the author seems to think highly of being able to obtain the lengths of roof timbers, including valley and hip rafters, from one and the same line. The line mentioned is the level distance from the outer face of the plate to a point plumb beneath the nearest side of the ridge. Our author then goes on to explain this new system, which he seems to imagine a great advantage; but we do not see the improvement on the systems ordinarily in vogue among carpenters.

Yet the author says that he approached them in the "utter dark;" that "the obtaining of many of them was a matter of no small mental strain;" and "in truth, simple as they appear now they are got, the finding of some of them consumed two full days." Little regard to the strict requirements of etymology has been paid in the new names that appear in this "new system." We are afraid that these alone would baffle the comprehension of the intelligent British carpenter.

Architects' Joinery and its Ornamentation. By F. A. FAWKES. Revised edition. London: B. T. Batsford. 1896.

THIS is a revised edition of what may be described as a very superior trade catalogue. It consists of sections of mouldings to door panels, architrave mouldings, dado and picture rails, cornices and ceiling mouldings, skittings, and the like. These are shown in full size, and also in photographs from the finished work, so that one can see the effect of sectional forms when in position, which is just what is wanted.

Various types of doors are shown, and pediments, the design of some of which might be improved. Dado panelling is not forgotten, and there are some really very satisfactory designs for wooden chimney-pieces of a small and unpretending type.

There is one thing in the preface to which we could take exception. It is stated that "the enrichments, which are securely fixed to the wood mouldings, are made of a specially tough composition, which is not liable to crumble, chip, or crack." Is it desirable or necessary, except on the ground of expense, to stick "enrichments" on to wood mouldings made of "composition," whether "specially tough" or not?

Familiar Wild Flowers. By F. E. HULME. Cassell & Company, London, Paris, and Melbourne. 1897.

THIS is a re-issue, as a popular edition, of Mr. Hulme's well-known work, to be complete in twenty-one monthly parts, at 6d. each. The carefully executed coloured illustrations of flowers are thus brought within the means of a very large circle of purchasers.

TRADE CATALOGUES.

WE have received the new catalogue of Messrs. Easton, Anderson, & Goolden, London and Erith. The work executed by this Company is most comprehensive, including as it does "every class of machinery—steam, hydraulic, and electric," many examples of which are set forth in their catalogue. The Company is an amalgamation of Messrs. Easton & Anderson and Messrs. W. T. Goolden & Co., the former having an experience of over seventy years in the manufacture of hydraulic and general machinery, and the latter having devoted their attention to electric

plant. The combination of these two firms should therefore be a strong one, notwithstanding the withdrawal from the business of Dr. William Anderson, C.B., F.R.S., who, in 1864, laid out the Erith works, and who is now Director-General of Ordnance Factories. The Company's works cover an area of some seventeen acres, having both railway connexion and a considerable water frontage on the Thames, and they carry on a considerable home trade in all kinds of hydraulic and waterworks plant, engines, lifts, cordite machinery, electric mining machinery, electric lighting and haulage, cranes, crushing mills, &c. The catalogue comprises some 116 pages, with a large number of illustrations of work actually carried out. Only the smaller class of manufactures are priced, which we consider a wise course, as those given for large machines in a general business catalogue, must as a rule be very misleading. In the matter of lifts, both the hydraulic direct-acting and the hydraulic suspended systems are described and illustrated. A very simple and compact design of electric lift motor and gear is also shown, the advantages of this system of working being pointed out, where the current from an Electric Supply Company is available. The Company also make a good type of hydraulic ram suitable for domestic purposes in several sizes. The catalogue is neatly got up, the various machines being grouped into sections for easy reference. The new catalogue of the Edison and Swan Electric Light Company is a very carefully compiled production and contains many novelties. It shows clearly that the higher voltages adopted by so many supply stations have brought a demand for high insulation fittings. The great improvement shown in the electrical design of these fittings will go far to remove one of the greatest objections to a 200-volt supply from the consumer's point of view. The high insulation lampholders and cut-outs are excellently designed and are a great advance on the older types. The interior of the lampholder consists of one piece of porcelain, into which two metal blocks, fitted with contact plungers, are sunk, thus completely separating the poles and at the same time making contact with the outer metal case impossible. The "anti-shock tumbler switch" is also well adapted for high-voltage supply, and as its price is very little over that of the ordinary switch it ought to be widely used. The section on ship fittings shows the high standard attained by this Company in the manufacture of substantial accessories. On the other hand, the "Ediswan" watch lighting set containing battery, lamp, flexible cord, &c., is cheap and ought to become popular. We have received from "The Lighting Corporation," which is now the holder of the Wenham patents for gas lamps, their illustrated catalogue, in which special attention is given to methods of combining efficient gas-lighting with ventilation. The merits of the Wenham system of gaslight we testified to when the patent was first started; and amid the artificial lights which are endeavouring to contest the palm with electricity it seems likely to keep a prominent place. The catalogue includes also a section illustration of the Company's automatic gas governor, the object of which is to regulate to a uniform volume the consumption of gas in a burner under any variations of pressure. The "Lucal" lamp for contractors appears to be a powerful and economical one for its purpose. The ornamental designs for ventilating globe and half-globe lights are not better than usual, but in every other respect we recommend this catalogue to the attention of those concerned in lighting either public or domestic buildings.—Messrs. Z. D. Berry & Sons send us the illustrated catalogue of their improved radiator for hot water or steam, by which they claim to give greater heating surface per space occupied than is given by any other radiator. The amount of superficial feet of heating surface for each size of radiator is included in the price list.—Messrs. Line & Son, of London and Reading, send us a pamphlet on the advantages of their washable distemper, called "Duresco," which is described as "a full-bodied zinc white, which is ground in a liquid silicate and special varnish of great crum-forming properties." If Messrs. Line & Son will send us a small sample we shall be better able to form an opinion on its value than from a description. If it does all they claim for it it is no doubt well worth attention. We receive also from Messrs. Line & Son their catalogue of wall-papers and decorations in relief. Some of the wall-papers founded on foliage are very good in general design and style, though the firm do not seem to employ any artists of known standing to design them; at all events

they give no designer's name. The catalogue also gives specimens of relief designs in Lincrusta-Walton and "Lignomur," of which a large number of patterns are kept in stock; also of their asbestos "Salamander" decorations for ceilings in relief, and which are recommended as forming a ceiling decoration which is absolutely fireproof.—Messrs. Hamilton & Co. send us their illustrated catalogue of painting brushes, graining tools, and painters' and plumbers' sundries, including paper-hanging tools, brazing and soldering lamps, &c.—Messrs. G. B. Kent & Sons send us their catalogue of painting brushes, both for house-painters' and artists' work.—Mr. Robert D. Stewart (London) sends us his catalogue and price list of paints, colours, oils, varnishes, and also of various special implements for builders, painters, &c.—Messrs. Fierston & Co. (London) send us their catalogue of cast and wrought steel and ironwork, chiefly of constructional character—rolled steel girders, steel plate tanks and doors, fireproof floors, steel columns, iron and steel roofs, &c. They offer also a novelty in the shape of rolled iron mouldings.—Messrs. D. & J. Tullis (Kilbowie, Glasgow), send us a catalogue of laundry machinery manufactured by them, including various types of rotary washing machines. Among the objects described and illustrated is the new patent brass inside shell for rotary washers, which can be fitted to any of their machines. The object is to lessen wear, the rivetting being done from outside only, and all sharp edges are removed from the inside. The catalogue includes also roller ironers, boilers and engines, everything required to complete laundry plant.—Messrs. John Dickinson & Co. (London) send us a set of specimens of papers for wrapping purposes, from thick browns to light papers; a class of article which is of importance to many of our readers in regard to the putting up of drawings, &c.

Correspondence.

To the Editor of THE BUILDER.

THE ARCHITECT'S MODEL.

SIR,—Mr. Edwin Seward's suggestions, that the art of architecture is placed before the general public under somewhat unsatisfactory conditions, is one that will evoke a sympathetic chord in most architect's souls. His practical suggestion for the remedy is one that does not go far enough, perhaps. The people who visit building trades' exhibitions are not altogether those whom we would wish to influence. It seems to me that to fellow-architects, builders, and workmen, we rightly convey our artistic (if any) meaning by means of drawings to scale or perspectives on the flat. We can all imagine the rest for ourselves. The general public, however, do require some further translation; and it does seem probable that a sufficiently adequate translation might be furnished by means of models, certainly made to scale, but not necessarily very elaborate, now constructed at great expense. It is quite true that the criterion of an architect's work must be centred in the buildings he erects, and that there must necessarily be some deception about a mere model. It is, moreover, impossible to give the texture of each material imitated without a large expenditure of both time and money. I believe that the public would forego these disadvantages while thanking us for other advantages furnished them over and above those which are now provided solely by drawings on the flat. I have lately taken some pains to make for my clients simple models of proposed work, and have found from actual experience that greater interest is aroused and their sympathy augmented thereby. I am confident that both young and old prefer to look at an architectural model in place of a drawing wherever practicable. Architects labour under great disadvantages; their finished works are not transferable by train, neither can they inscribe their names legibly or illegibly in the corner of their works. Art, as understood by the general public, must come forth from a studio, and be contained within the limits of a gilt frame. If, therefore, architects do nothing to assert themselves or their art in the same practical manner as do the painter-artists, they have only themselves to blame for the natural consequences. I would therefore suggest that discussions on this matter of models be raised in all architectural societies, but on the idea that any exhibition should stand entirely on its own basis, and not form a mere side-show in an exhibition of a sister art. Heaven helps those who help themselves. I am willing to assist any "trial trip" in the direction of an exhibition, purely architectural, of models (or combination of models and drawings) to the extent of fifty pounds. I cannot say more or do more to any purpose, not being a member of any learned Architectural Insti-

tute or Society, and only personally known to a few fellow architects by the abbreviated name of "PILK."

THE DRAWING OF "A THIRTEENTH CENTURY ARCHITECT."

SIR,—A very good reproduction of the drawing will be found on p. 50 of the *Masonic Magazine*, November, 1891. D. M.

"SKETCHES OF LONDON STREET ARCHITECTURE."

SIR,—In your notice of No. 63, Sloane-street (of which a sketch appears in your last issue) the architect's name is given as Mr. Fairfax B. Wade. This is not correct, as I was the architect.

T. LEONARD WILLIAMS.

* * * We do not understand the meaning of the above letter, as we received the description of the house from Mr. Wade, in what we believe was his own writing.—Ed.

The Student's Column.

SPECIFICATIONS.—X.

JOINER—(continued.)

WE have in the two previous chapters given examples of the mode of specifying the most general items of joiner's work, but there are others less general, but occasionally required, of which it may be useful to the student to have instances, and some of these we now give.

Window Shutters.—The windows numbered on plans to have 1½ in. boxing shutters in leaves three panels high, moulded both sides; the back flaps to be also 1½ in. in leaves three panels high, but moulded and square. The shutters to be full height of windows, and hung with a pair of ¾ in. wrought-iron butts or back flaps, as necessary to each leaf, in 1½ in. cross-tongued and beaded boxings, with architrave moulding out of 3½ in. by 2 in. Each set of shutters to have 1½ in. by ¼ in. steel shutter bar, 3 ft. long, with spring catch fastener and 14 ozs. bell, with spring and clip. All sills to have rebated and beaded joints.

The windows numbered on plans to have 1½ in. boxing shutters, 5 ft. 6 in. high, in two panels, moulded and square each leaf, the back flaps to be 1 in. thick in two panels, square both sides. The shutters to be hung in 1 in. cross-tongued and beaded splayed boxings, with a pair of ¾ in. wrought iron butts or back flaps as necessary to each leaf. Each set of shutters to have 1½ in. by ¼ in. steel shutter bar, 18 in. long, with spring catch fastener. All sills to have rebated joints.

The windows numbered on plans to have 1½ in. moulded and square shutters in two panels each leaf, double hung with best flax lines, and brass hushed axle pulleys in deal-cased frames to match those of sashes. Each pair of shutters to have a 4 in. brass shutter screw and socket, and a pair of brass drop shutter rings, and a pair of 3 in. brass flush shutter lifts to each leaf. The boxing to these shutters to have 1½ in. moulded and square front in two panels tongued to floor, ¾ in. ploughed and tongued back, and 1½ in. hinged cover with rounded nosing, hung with a pair of 2½ in. brass butts.

The windows numbered on plans to have a pair of 1½ in. framed shutters, with solid panels tongued and V-jointed, hung folding with a pair of 4½ in. wrought-iron parliament hinges to casement frames, and fitted with oak blocks plugged to wall, and strong wrought iron cockscrew shutter fastenings, also a pair of 6-in. wrought-iron barrel bolts. Each leaf to have heart-shaped perforation 6 in. by 6 in.

French Casements.—The windows numbered on plans to have 2 in. ovolo moulded French casements, hung folding with hook rebate (or rounded and grooved heels) and moulded weather fillet out of 2½ in. by 1½ in. on meeting stiles, and rounded tongue, 1½ in. thick, on hanging stiles. The bottom rail and sill to have Elliott's weather-bar, p.c. (or specify any other method preferred for keeping out rain between bottom rail and sill). The casements to be hung with a pair of 4 in. wrought iron butts to each leaf to 4½ in. by 4 in. wrought and beaded frame, with hollow groove as water stop 1½ in. wide. Sill to be 6 in. by 4 in. oak, sunk weathered and throated, and fitted with Elliott's weather bar as above mentioned (or otherwise, as the case may be). Put to these casements ½ in. brass espagnolette bolts p.c.

Coach-House Doors.—The doors of coach-

house to be 2½ in., framed, ledged, and braced, the ledges and braces 1½ in. thick, the filling-in of inch matched and V-jointed boarding in half batten widths, stiles, top rail, and braces 5½ in. wide, ledges and bottom rail 9 in. wide. The doors to be hung with a pair of Collinge's gate hinges 3 ft. 6 in. long, to each leaf, to 6 in. by 4½ in. rebated and chamfered frame, and to be fitted with a 12 in. wrought-iron barrel bolt, and 30 in. wrought-iron rod bolt, and 9 in. oak-bound stock-lock.

Stable Doors.—The doors numbered on plans to be 2½ in., framed ledged and braced, the ledges and braces 1½ in. thick, the filling-in of ¾ in. matched and v-jointed boarding in half batten widths, to be hung in two heights with rebated joint to meeting rails, with a pair of 4 in. wrought iron butts to each leaf to 4½ in. by 4 in. rebated and chamfered frame. The doors to be fitted with brass flush-handled stable latch, 6 in. wrought-iron barrel bolt, and 8 in. oak-bound stock-lock.

Cisterns.—Construct cistern to be placed in roof over with 1½ in. cross-tongued and dove-tailed sides and 1½ in. cross-tongued and dove-tailed bottom. The size of cistern to be 4 ft. by 6 ft. by 3 ft. 6 in. internal dimensions. To each internal angle put splayed angle fillet out of 3 in. by 3 in., and leave all internal surfaces fair and clean for plumber. Around outside of cistern, nail tightly-stretched hoop iron 18 gauge inch wide, best quality, three rows 6 in. from top and three rows around middle of height. The cover to this cistern to be ¾ in. matched boarding, made in three divisions each with two ledges 1½ in. by 4½ in. Fix cistern in roof on strong fir bearers, and cut necessary holes and dishings for plumber's work.

Dwarf Cupboards.—The method of specifying these would be similar to that already given for ordinary cupboards, except that the top might be of some hard wood and would be described thus: The top to be of 1½ in. selected Riga wainscot, cross-tongued, and with 1½ in. by 4½ in. ledges on the underside, secured with slotted cups and screws, and buttoned down to framing. The nosing of top to be rounded.

Sliding Partitions.—The sliding partitions in to be 1½ in. framed partitions in (two) divisions, each division in six panels square, the middle panels open and prepared for 26 oz. sheet glass, the others ¾ in. thick. The partitions to be hung from wrought steel rail on brassrunners, with two wheels to each division, and oak threshold 4 in. by 3 in., with small tram rail let in, and steel stubs and plates on lower edge of framing. For the wheels, rails, and stubs provide the p.c. sum of , including carriage and delivery on the works. The contractor is to fix these special items of ironmongery as directed. Each division to have also a pair of brass pull handles, p.c. , and mortice locking-latch, p.c.

(N.B.—There are various patented forms of sliding and folding partitions now on the market which require, usually, some amount of special preparation. The nature of this should be ascertained from the patentee, and specified, and a lump sum provision included for the patentee's work, making it quite clear whether the provision does or does not include for carriage, delivery, fixing, priming, painting or ironmongery.)

Laundry Fittings (domestic).—Fit up laundry with three washing tubs of 1½ in. clean deal wrought h'o'h sides, splayed, and put together with dove-tailed angles in white lead. The size of tubs to be 2 ft. 6 in. by 1 ft. 9 in., and 12 in. deep internally, and to have 2 in. brass plug, washer and waste, and 1½ in. light lead pipe as waste to empty into channel in floor.

Fit up 1½ in. clean deal ironing board, where shown on plan, hung with 1½ pair of 4 in. wrought-iron butts and hanging stile out of 4½ in. by 1½ in., plugged to wall. Put underneath board two folding trussed brackets out of 2½ in. by 1½ in. with heel blocks and pins. Provide two clothes racks, each 5 ft. long by 3 ft. high, with 2 in. by 2½ in. ends, and three rails 1½ in. by 1½ in. morticed and tenoned, and pinned to ends. These racks to have pulleys, lines, and belaying cleats for hoisting to ceiling.

Ironmongery.—In specifying ironmongery it is unwise to follow the example of a bill of quantities and dissociate the items from the parts of the building to which they refer. There are, however, general clauses relating to ironmongery which may be given under the one collective heading. For example, if in the case of locks it is necessary that a master-key shall command the whole, it should be specified that the whole of the locks are to be under one mastership, with (or more, as the case may be) keys to pass.

If sub-master-keys are required for various parts, or if there are several masterships, this should be clearly defined.

As regards quality, it is of little use to specify the best quality or to attempt to define the quality, as this varies, by almost imperceptible gradations, from a very high standard to a very low one. The only really satisfactory method for a young architect to adopt is to put himself into the hands of a trustworthy ironmonger, and include in his specification a fixed price for a fixed quality and article which he has already arranged with the ironmonger. There is, of course, a tariff price for ironmongery, and it would be possible to specify the ironmongery by a p.c. price, leaving the ultimate selection till later; but in this case there is the difficulty that different tradesmen treat the tariff differently, and unless the builder knows, before tendering, through whom the ironmongery is to be bought, his estimate must be speculative unless the architect allows the builder to select the ironmonger—a course which is open to some objections.

GENERAL BUILDING NEWS.

ADDITIONS TO S. GABRIEL'S CHURCH, PIMLICO.—The Bishop of London consecrated, on the 1st inst., the additions which have been made to S. Gabriel's Church, Pimlico. The church is a well-proportioned Gothic building with three aisles, chancel and western tower and spire, but the beauty of the building was not a little disfigured by the unsightly side galleries which have just been removed. The additions, which consist of north and south aisles, a nave, and a choir in memory of the late Rev. Byrner Belcher, the first vicar, a west gallery and a west porch, the gift of Lord Edward Pelham Clinton, have been carried out by Mr. John Thompson, of Peterborough, at a cost of some 6,000l. from the designs of Mr. Arthur Baker, of the firm of Messrs. Baker & Turrill, in harmony with the original design. The extra width given by the additional aisles and the double arcade on each side of the nave have increased the picturesqueness of the interior, which has also been enriched by the groining of the aisle roofs, and by the richly-carved oak front of the west gallery carried on a stone arcade. The chancel has received a new east window, designed by Mr. Kemp.

ENLARGEMENT OF PREMISES, GOLDEN-LANE, LONDON.—Messrs. Suttons, the well known carpenters, are considerably enlarging their premises in Golden-lane, London. The plans have been prepared by Mr. Hamilton, and the contract has been secured by Mr. B. E. Nightingale. The floors of the building are to be fireproof on the Fawcett system, and the structural iron and steel work is being supplied and erected by Messrs. Mark Fawcett & Co.

CAFE, LIVERPOOL.—A cafe in connexion with the Cotton Exchange has just been erected at the corner of the Exchange at Liverpool. The cafe has three entrances, one in Brown's-buildings, one in Rumford-street, and one in Water-street. All the work has been carried out by Messrs. Waring, Limited, Mr. J. F. Doyle, of Liverpool, was the architect.

RESTORATION OF CHURCH, DUFFIELD, DERBYSHIRE.—The contract for this work has been let to Messrs. Bridgeman. The addition of a South Chapel to the existing edifice will be first commenced. The principal alterations to be undertaken are of an internal nature, and comprise a new floor, new oak pews, remodelled heating apparatus, the addition of a chancel screen and organ screen, and paving the chancel with black and white marble, together with extensive decorations. The work will be carried out under the superintendance of Mr. J. Oldrid Scott, F.S.A.

WORKMEN'S DWELLINGS, HORNSEY.—On the 23rd ult., at the Hornsey Urban District Council Offices, Colonel A. G. Dunford, R.E., held a Local Government Board inquiry into the application for sanction to borrow 27,500 for the erection of workmen's dwellings, 2,700l. for purposes of street improvement, 2,770l. for works of sewerage and surface water drainage, and 2,184l. for other works. Mr. E. J. Lovegrove, Surveyor, was in attendance.

RESTORATION OF LANIBEDR CHURCH, BRECONSHIRE.—This church has just been reopened after restoration. The actual work of restoration was commenced in April last, the architect being Mr. J. L. Pearson, R.A. The work has been carried out by Messrs. Luscombe & Son, of Exeter. The whole of the church, with the exception of the tower, has been renovated.

CHURCH, LUNDY ISLAND.—The new church of St. Helena, Lundy Island, is approaching completion. The building is of thirteenth-century style, and it consists of nave, chancel, with north transept, intended as an organ chamber, and vestry. The lower part of the tower (which is 70 ft. high) will serve as an entrance porch, and there is a square turret at the south-east angle of the tower, which gives approach to the belfry, in which is to be a peal of bells. The roofs are of steep pitch, and formed of split stone slabs of Tisbury stone. The building is built of grey granite, with dressings of

Douling stone. In a niche in the tower is a large statue of St. Helena. It is the handiwork of Mr. Harry Hems, of Exeter. The interior walls are lined with red brick throughout, relieved by bands and diaper of blue Staffordshire and cream-coloured Marlard bricks. There is a chancel arch, carried by polished Purbeck marble columns. Two granite stone steps, the work of the workmen of the chancel, and two more to the altar rails. A dwarfed screen of carved stone divides nave and chancel. The altar rails are of oak, upon brass standards. The foot pace, upon which the oak altar stands, is of polished Devon marble. There is a sedilia upon the south side of the sanctuary, and opposite thereto a carved piscina. The east window is a three-light one, filled with stained glass by Messrs. Clayton & Bell, of London. Immediately beneath the window is a carved and sculptured reeded. The super-altar is of polished veined alabaster, and the main portion of the reeded proper consists of three distinct divisions, gabled and crocketed, and divided from each other and flanked by clustered columns of polished Purbeck marble. The sculpture is in exceptionally high relief, the central part representing the Last Supper, whilst that on the dexter side shows the Institution of the Passover, and on the sinister of the Scape Goat. The pulpit is of carved stone, and on the north side, and the font is of the same material, upon a grey granite pedestal. There are encaustic tiles from Lugwardine, Herefordshire, in the chancel and sanctuary floors, and under the seating, which, like the stalls, are of oak, the floors are of wood blocks. The eagle lectern is of oak. The floor of the organ chamber is somewhat lower than is the nave, and is laid with wood blocks. The contractors for the general work are Messrs. Britton & Pickett, builders, of Ilfracombe. The pulpit, altar, screen, font, &c., as well as the sculptured reeded, and other sculpture, are by Messrs. Harry Hems & Sons. The architect is Mr. John Norton, of London.

CATHOLIC CHURCH, FRIZINGTON, CUMBERLAND.—The new church of St. Joseph, Frizington, was opened recently. The new building, which is in Gothic style, stands on the same site as the old one, and is built of brick. The length of the building is 75 ft., the breadth 34 ft. across the body of the church, and 45 ft. across the altar part; the height to the eaves, 14 ft. 6 in., and from eaves to ridge, 17 ft. 6 in. It is lighted by six windows on each side of the nave, and three lancet windows in the north end. Over the vestry on the west of the building is the belfry, 35 ft. high. The church is entered by a porch, with side doors. Over the entrance is an organ gallery. There are two passages leading up the church to the sanctuary, which is entered by three arches—a large one in the centre, 25 ft. 6 in. high and 18 ft. wide; and a smaller one on each side of it. There is seating accommodation for 100 people, the seating being of pine. The lady altar and baptistry are on the left of the high altar; and the vestry is on the right, having an entrance from the adjoining presbytery. Mr. Robert Pearson, of Cleator Moor, prepared the plans, &c., for the erection of the building, and the work was carried out under his supervision. The woodwork was submitted to Mr. Mandrake, and the plumbing work to Mr. Jackson Sumpton. Mr. Millican had the painting; Mr. John Hazzard, Frizington, had charge of the hauling; and Mr. Reuben Pearson had charge of the mason work. The high altar has been executed by Messrs. Boulton & Sons, Cheltenham.

NEW BATHS FOR MORLEY.—The Morley Corporation have decided to erect a set of public baths in the borough. The site selected for the purpose is a sloping piece of ground fronting on to Fountain-street. Out of the fifteen plans submitted in the recent competition, those sent in by Messrs. Holton & Fox, of Dewsbury, have been awarded the first premium, subject to a tender for the execution of the work at 6,000l. (the amount of their estimate) being submitted and approved. In the centre of the front elevation, where the bath superintendent will have his home, the building is to be two stories high. The rest of the structure will be a single story. There will be two entrances to the baths. On the left will be the men's slipper baths—two first-class and four second—two shower baths, a needle bath, and a vapour bath. A visitor to the first-class swimming bath will also enter by this door, and, passing the pay office, beneath the superintendent's house, will turn along a short corridor to the left, where he will find the entrance to the bath-room. The length of the first-class bath will be 65 ft., the breadth 24 ft., and the depth will vary from 3 ft. to 6 ft. The entrance on the right-hand side of the building will lead to the ladies' slipper baths, of which there are to be a similar number to those provided for men. Behind these baths will be the second-class swimming bath of the regulation dimensions (water measure—viz., 75 ft. by 30 ft.). As this bath will often be used for entertainments, a gallery has been provided, running the greater part of the way round the room. Dressing boxes of wood, with slate partitions, are to be arranged on two sides of the room. Both of the swimming baths are to be lined with glazed bricks, and adjoining each will be a small soap bath.

SCHOOL OF ART BUILDING, GLASGOW.—Twelve architects were invited to compete in the competition for a School of Art at Glasgow, and the

result was that the design of Messrs. John Honeyman & Keppie was chosen. The site purchased by the Bellahouston Trustees is that piece of land lying immediately to the north of the Panoramia buildings in Sauchiehall-street, between Dalhousie-street on the east and Scott-street on the west, and having a frontage to Raeburn-street. The building itself will face due north, with a length of 250 ft. and a depth of 77 ft. Owing to the conformation of the ground, the building at its south-west angle will have to be carried by a retaining wall. The plans selected show a three-storied building—a basement and two floors—the ground to the north being excavated to form an area for lighting the lowest floor. The entrance is in Renfrew-street, the main door being situated in the centre of the facade. A service door has also been made in Dalhousie-street for access to a janitor's house and for the reception of material. The staircase of the building is situated in the rear centre, and access to all floors is gained from and by it. The upper floor contains the life rooms (male and female), antique rooms (elementary and advanced), a school museum, and a board room. The middle floor is occupied by ornament, still life, and design rooms, and the school library and lecture theatre. The basement holds the accommodation for modelling (large antique and ornament), architectural rooms, and the technical rooms. In these will be placed a forge, a kiln, and a muffle. The basement also contains a house for a resident janitor, the heating apparatus, and various store-rooms. The administration is placed in the centre of the building and on the first floor. All rooms in which instruction is to be given are lighted from the north, the only light taken from the south being that available for the corridors, which on each floor run from one end of the building to the other, at the southern side of the edifice. The light from the south is obtained by the use of wells, there being no reservation in favour of windows in the southern wall. The general scheme at present contemplating building such portion of the plans as can be erected at a cost of 14,000*l.*

NEW MASONIC HALLS, SELKIRK.—The new Masonic Halls at Selkirk were consecrated on the 19th inst. The halls are situated in the Back Row, adjoining the Volunteer Hall. The principal hall is situated on the second flat, and measures 35 ft. by 20 ft. The under hall is smaller, measuring 25 ft. by 20 ft. M. Hippolyte J. Blanc, Edinburgh, is the architect.

VILLAGE HALL, KNOWLES, LANCASHIRE.—Lord Derby recently opened a village hall at Knowles village. The building was designed by Mr. Leslie, architect on the Derby estate. It contains a hall 60 ft. long (or 75 ft. including the platform) 30 ft. broad, and 37 ft. high to the roof ridge. The roof is of open pitch pine. A gallery occupies one end of the hall, which is seated for 440 persons. There are several cloakrooms, and at one end of the building is a room 30 ft. by 20 ft., with separate entrance door, for the use of the parish council and for small gatherings.

NEW POOR-LAW BUILDINGS, WHITBY.—Some time since the Whitby Poor-Law Union purchased the riverside property in Church-street, Whitby, formerly known as the Phoenix Rooms, for use as a board-room, offices, &c. For nearly a year internal alterations have been in progress, and the interior now contains accommodation for the Guardians and their clerk, also for the Overseers and their assistant, the Rate Collector, Staining Officer, applicants for relief, &c. The architect for the works of renovation and improvement was Mr. E. H. Smiles, of Whitby, and the contractor Mr. J. Brain.

THE NEW CHURCH AT BOLSOVER, DERRYSHIRE.—A public meeting was held at Bolsover recently to consider and decide what steps should be taken towards the restoration of the church, which was destroyed by fire a few weeks ago. Mr. Louis Ambler, of London, who is the architect engaged, submitted plans which he had prepared. There were two schemes suggested:—No. 1, to erect a building on the same lines as the old one, the estimated cost of which was 6,000*l.*, including seating, gasfitting, organ, bells, and other requisites. No. 2 scheme provides for some enlargement and extra seating accommodation for 220 persons. The estimated cost in this case was 9,000*l.*, inclusive. Both estimates included the cost of restoring the chancel. It was resolved that No. 2 scheme be adopted.

FREE PUBLIC LIBRARY, LEYTON.—The old public offices of the Leyton Local Board have been renovated and altered so as to render them suitable for the purposes of a free library. The alterations on the ground floor provide a lending library, reference library, librarian's office, and store-room. There is a new public entrance. On the first floor the old Board-room has been converted into a reading-room, with a lift connecting the lending library. The second floor, with two rooms on the first floor, comprise the librarian's apartments, with bath-room, &c. The work has been done by Coxhead, of Leytonstone, from plans by Mr. Dawson, the Surveyor to the Council. The electric lighting has been carried out by Messrs. Spagnoletti & Crooks. The newsroom of the library, which is the old council chamber transformed, is a hall, 50 ft. by 31 ft.

SANITARY AND ENGINEERING NEWS.

REFUSE DESTROYER FOR YARMOUTH.—An inquiry was held at Yarmouth recently by Colonel A. G. Durnford, R.E., with reference to the proposed expenditure by the Town Council of 10,500*l.*, on the erection of a refuse destructor on the Corporation marshes, between Caister-road and the River Bure. The Borough Surveyor, in the course of his evidence, explained that the estimate was as follows:—Building, 3,150*l.*; chimney, 1,913*l.*; fencing, 204*l.*; ten furnaces, two boilers, and other appliances, 3,365*l.*; 125*l.* charging apparatus, 1,000*l.*; dimker furnaces, 100*l.* The steam generated would be used for the production of electric light. The quantity of refuse guaranteed to be destroyed without forced draught was 75 tons per day, and the quantity collected in the district which the destructor was to serve averaged 65 tons daily. The maximum in the summer time was 85 tons in a day, and he expected the destructor would work up to 85 tons. The building would afford room for extension, as it was intended for fourteen cells.

DRAINAGE OF SIDMOUTH.—Mr. W. A. Ducau, of the Local Government Board, held an inquiry at Sidmouth on the 23rd ult., into the Urban District Council's application to borrow 5,000*l.* for works of sewerage. The Clerk having detailed the facts leading up to the application, stated that the town was now unanimously in favour of Mr. Mansergh's scheme. The Local Government Board had sanctioned a loan of 3,824*l.* for the town sewers, the present application being in regard to the outfall works. Mr. G. R. Strachan (Messrs. Mansergh & Strachan) explained the plans.

PROPOSED DOCK WORKS, THE HARTLEPOOLS.—At a recent meeting of the representatives of the Hartlepool and West Hartlepool Corporations, the Shipowners' Society, and the Chamber of Commerce, held at West Hartlepool, to consider certain proposals for improving the dock and trading facilities of the port, the Mayor of Hartlepool (Councillor Mudd, C.E.) laid a scheme before the meeting, which it is proposed to urge upon the North-Eastern Railway Company to carry out. The project includes a proposal for straightening the deep-water entrance to the harbour; a new fish harbour; a new entrance to the Victoria Dock, 25 ft. wide and 25 ft. deep, to accommodate ships up to 6,000 tons; to heighten and improve the coal spouts; to construct a new dock in the Stake; to enlarge the Central Dock, so as to enable vessels of 600 ft. to be built and launched; to widen No. 4 Graving Dock, so as to accommodate an ironclad; if required; to lay the Jackson Dock to the coal dock, and to construct a new through railway station at West Hartlepool, with main entrance opposite the Municipal Buildings, and make Hartlepool the terminus for south trains.—*North-Eastern Gazette.*

WATER SUPPLY WORKS, WITNEY, OXFORD.—Mr. W. O. E. Meade-King, M.Inst.C.E., an inspector from the Local Government Board, held an inquiry at the Witney Corn Exchange with reference to the application of the Urban District Council to borrow 5,000*l.* for water supply works. Mr. Laitley, the Engineer, attended, and explained the proposed scheme.

SEWAGE DISPOSAL WORKS, KNARESBOROUGH, YORKSHIRE.—An inquiry was held recently at the Urban Council offices at Knaresborough by Colonel Luard, R.E., one of the Local Government Board engineer inspectors, as to the application of the Knaresborough Urban District Council to borrow a further sum of 8,800*l.* for the completion of the main outfall sewerage and sewage disposal works, the total cost of which amounts to 10,000*l.* The Engineer, Mr. D. Balfour, of Newcastle-on-Tyne, explained the scheme, which consists in the laying of two main outfall sewers, both 18 in. in diameter, with a total length of four miles, crossing under the River Nidd by a cast-iron inverted siphon. The disposal works consist of ten acres of land, properly underdrained, and laid out on the intermittent filtration principle. The sewage, on reaching the site, is treated in a chamber with alumino ferric, and, after being thoroughly self-admixed, passes into large precipitation tanks in duplicate, the clarified sewage afterwards passing on to the land. There was no opposition to the scheme.

STAINED GLASS AND DECORATION.

WINDOW, DONCASTER PARISH CHURCH.—The great north transept window in the Doncaster Parish Church, which was destroyed by a gas explosion some time ago, has been filled with new stained glass illustrative of the "Te Deum." The six main lights are filled with three tiers of figures representing Cherubim and Seraphim, apostles, prophets, and martyrs, as well as Saints Ambrose and Augustine, the joint authors of the "Te Deum." The figures are surmounted by canopies of broad and simple design, and along the base of the lights is written in bold black letters, "Te Deum laudamus, te dominum confitemur." The Mowbray window on the south side has been replaced by three lights, containing figures of holy matrons. The whole of the work has been designed and carried out under the direction of the architects (Messrs. Demaïne & Brierley, York), by Messrs. Shrigley & Hunt, of Lancaster and London.—*Yorkshire Post.*

MEMORIAL WINDOW, ALLESLEY CHURCH, COVENTRY.—A new stained glass window has been placed in the north wall of Allesley Church, in memory of the late Mrs. James Maycock, of Coventry. The subject is one suggested by the last chapter of Proverbs, describing the virtues of "The Good Woman." The window has two lights. It was designed by Messrs. Ward & Hughes, London.

FOREIGN.

FRANCE.—The Paris Municipal Council is studying the possibility of establishing an evening museum for workmen who are working in industrial arts. This museum will for the present be installed in the Salle Saint Jean, at the Hôtel de Ville, and the present Director of Fine Arts, has promised to give a set of models of ancient and modern works, drawings, and other works of art, to fill the museum. If this scheme succeeds, other evening museums, accompanied by lectures on industrial art, will be organised in the principal mairies of Paris, particularly in the most crowded neighbourhoods. The Académie des Beaux-Arts has just elected, as foreign corresponding member in the painting section, M. Maccheri, of Rome, in place of the late M. de Fosséca, of Lisbon.—The sale of sculptures, furniture, and works of art of the thirteenth century, belonging to the heirs of the brothers Goncourt, has now realised the sum of 182,000 fr. The Chinese and Japanese collection will be sold from March 8 to 13.—The work of suppressing the last of the waterways to be found in Paris is being carried on. These are in the XIV. and XV. arrondissements, on the line of the Compagnie d'Ouest. The expense is estimated at 5,000,000 francs.—The Poissy Municipal Council has decided to pull down the old mill, close to the Poissy bridge. It was built in 1230 by Queen Blanche of Castille, mother of Saint Louis. This ancient building is now in ruins.—A competition has just been opened for the building of a Palais de Justice at Tizi-Ouzou, in Algeria.—The Municipal Council in Algeria have accepted the scheme for the building of a new Hôtel de Préfecture.—Some important alterations in the town of Marseilles are shortly to be begun. The expense is estimated at 8,000,000 francs. The work is to include the draining and rebuilding the quarters behind the Bourse, between the Rue de la Canebière, Rue de la République, Rue Colbert, and the Cours Béhrauc.—Madame Viollet-le-Duc, widow of the great architect, has just been buried in the cemetery at Passy; she died at Saint Germain at the age of 84.—The death is announced, at the age of 57, of M. Albert Lecoy de la Marche, sous-chef de la section historiques des Archives Nationales. Several works on French art are due to him; amongst them "Études sur l'Académie de France à Rome," fourteen studies on miniatures in France in thirteenth and fourteenth centuries, on the art of illuminating and on religious painting.—The painter Frédéric Lix has just died at the age of 67, after a long illness. He was born at Strasbourg, and came to Paris in order to work in the studios of Drolling and Biennoury. This artist gave himself up at the same time to painting and illustration. As a painter he left pictures depicting Alcaïan life. "La Massillaise en Alsace," "Les Adieux à la Patrie," and historical subjects, such as "Camille Desmoulin au Palais Royal," and "Un drame au Moulin Au," which was exhibited last year at the Champs Elysées salon. His illustrations are innumerable.—The death is announced of M. Jules Louis Bertrand, architect, of Valenciennes, at the age of 60.

GERMANY.—The *Deutsche Bauzeitung* reports that the large national monument which is to be erected at Leipzig will be designed by Bruno Schmitz, and that there will be no further competition for this work.—Seventy-four designs have been sent in for the new palm-houses and gardens for Leipzig, and the first premium of 150*l.* has been awarded to Mr. Edward May, of Frankfurt.—A publication has been issued of illustrations of buildings carried out from the designs and under the supervision of Professor Messel, of whose work we have frequently given illustrations.—A memorial tower is to be erected in honour of the ex-Chancellor Bismarck. A competition has been opened for the design, and Professors Ende, Schwechten, and Otzen are the assessors. The locality for the tower is Apenrade in Schleswig.—An interesting series of competitions has been opened by the East Prussian Architectural Society, with a view of obtaining a series of model designs of villa-residences. There are five competitions, each for a different class of building. Competitions of this description should do much to encourage better planning in the smaller German towns.—The "Kreuz Kirche," at Dresden, was destroyed by fire recently; it has only been lately renovated in the interior at an expenditure of 15,000*l.* The building dates back to 1764. It is understood that the church was insured for 75,000*l.*—We regret to record the death of Herr Baurath Kranke, at the age of seventy-seven; he was long associated with the railway works of the Prussian Government, and his life is the subject of a long obituary notice in our contemporary, the *Central Blatt der Bauverwaltung.*—We regret to record the death also of the well-known cathedral architect, Max Salzmann, who has long been associated

with the Dome at Bremen, the restoration of which was placed in his hands after an important competition held in 1888. Herr Salzmann had only attained his forty-seventh year, and was considered to be one of the most prominent church architects in Germany.—The Association of Brickmakers and Limekiln Owners held its annual meeting at Berlin last month, and at the same time the meetings of the cement manufacturers also took place. As usual at these gatherings, a number of highly interesting lectures were given, and there was much discussion on technical questions of the day.

AUSTRIA.—The Architects' Ball which took place at Vienna last month is considered to have been a great success. Among the visitors was the Archduke Otto of Austria. Professor Otto Wagner was the President of the ball. The Prime Minister was present among other political personages.

According to official contemporaries at Vienna it appears necessary to extend the premises of the Great General Hospital by using the site of some historical barracks. The matter will come before the Austrian Parliament during the present year.—A small section of the Vienna horse tramways has been transformed into electrical tramways with a view of giving this system a trial.—The Continental Gas Company at Vienna has just entered into a contract for 15,000 incandescent gas lights for street lighting.

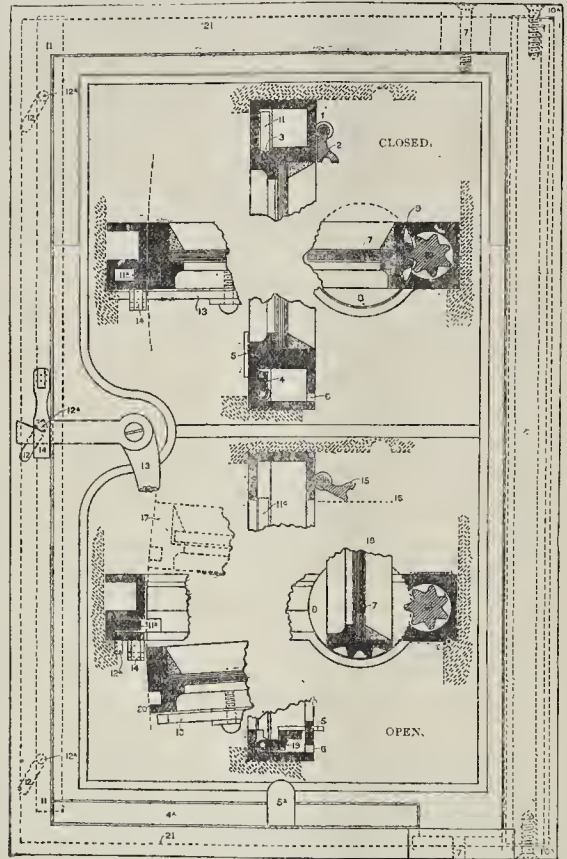
A FIRE IN THE CATHEDRAL AT VERONA.—The ancient cathedral of Verona has had a narrow escape from being destroyed. As it is, damage to the amount of 4,000*l.* has been done, which is covered by insurance; but the old registers in the vestry, some of which dated back to 1503, the altar furniture of gilt wood used on ceremonial occasions, the wax candle offerings at shrines of the past month, objects in silver of the Santa Anna Company, and other furniture were burnt. Fortunately all the most precious objects escaped destruction. The flames were first seen to issue from a window of a room in the building called "De la Cioccolata," because of its serving as a refreshment room for the neophytes.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Messrs. Lumleys, of 22, St. James's-street, have instituted monthly sales by auction of shares in trading, manufacturing, gas, water, insurance, and other companies, which do not usually find a market on the Stock Exchange.—Messrs. W. & J. R. Freeman, stone and granite merchants, have opened a new depot in the Great Northern Railway Goods Yard, King's Cross.

GREENWOOD'S TIMBER CALCULATOR.—This is a card to enable the prices of small-sized timber to be determined at a glance, by showing what a certain price per foot cube amounts to per linear foot in various scandlings of timber. The widths and thicknesses are given in cross columns, and the price per linear foot is found at the intersection of the width and thickness columns. The card is arranged so as to apply to twelve different prices per standard and per foot cube. It is likely to save a great deal of labour in computing prices of small timber in estimating, taking out quantities, &c. There should have been some indication on the face of the tables, however, to show that the central columns represent pence and fractions of pence, which is not immediately apparent, though it is sufficiently to be gathered from the explanatory note on the back of the card. It is sold by the inventor, Mr. Harry Greenwood, Mansfield.

AN IMPROVEMENT IN METAL CASEMENTS.—An improvement in the method of manufacture of metal casements, with special regard to the new feature by which the metal casement can be made to open either inwards or outwards, is worth the attention of architects. Formerly there were, as is well known, two kinds of ordinary casements, the one opening outwards and the other inwards. The former is the more usually adopted by architects, but it has the disadvantage of being difficult to clean from within, and when it is adopted in a series of mullions it is necessary that many more are supplied with fittings to open than are actually required. The casement opening inwards, on the other hand, while being easy to clean from the room, has the disadvantage of only being weather-tight at an extra cost, especially in exposed situations, and also interferes with blinds, window drapery, &c., whenever opened for ventilation. The improvement noted above consists in a patent, which has been taken out by the N. A. P. Window Company, of Victoria-street, S.W., by which each casement opens both inwards and outwards. This is effected by various methods, one of which is illustrated in order to explain the system. The border shows the interior elevation and the plans and sections of the casement when closed and open are shown respectively in the upper half and lower half of the window; the slip or tongue (11), is projected by the handle into the groove when the casement is fastened, thereby making a perfectly weather-tight joint for the closing stile. On referring to the other parts of the window in the illustration, it will be noticed they are rendered water-tight in the following manner:—The corrugated rod (10), which is pivoted top and bottom, revolves as the casement



Details of Metal Casement made by the "N. A. P." Window Co.

REFERENCES TO DIAGRAM.

1. Drip to prevent rain-water passing behind head water-bar.
2. Head water-bar (throated) for automatically rising into position when casement is opened outwards.
3. Condensation groove extending whole length of head.
4. Water-bar which remains in this position for ventilation, but is pushed down by thumb-piece (5, 5a) when it is desired to revolve the casement inwards for cleansing.
- 4a. Elevation of water-bar.
- 5, 5a. End and front elevations of thumb-piece.
6. Outlet holes for any water which may get into the sill.
7. Fivots of casement.
8. Turn-table, enabling casement to revolve freely.
9. Corrugations or teeth, extending from top to bottom of glass stile, one of which always engages a corresponding tooth in the revolving corrugated rod (10) when the casement is closed, and thus secures a water-tight joint.
10. Revolving corrugated rod extending from top to bottom of bunging stile.
- 10a. Fivots of revolving corrugated rod.
11. Slip extending from top to bottom of closing stile, and automatically projected and withdrawn by the closing or opening of the casement handle.
- 11a. Position (automatic) of slip when casement is closed.
- 11b. Position (automatic) of slip when released from handle, enabling casement to be moved inwards and outwards.
12. Guides for pins of slip.
- 12a. Pins of slip—the top and bottom ones being flush with, or slightly below, surface of closing stile, and the centre one projecting and being engaged by notch in latch of handle.
13. Casement handle, the latch of which not only secures the casement in the ordinary way, but also as described in connection with 11 and 12a.
14. Catch for preventing the latch of casement handle being borne down by the weight of the slip.
15. Position (automatic) of head water bar when casement is open for ventilation.
16. Top line of casement when open for ventilation.
17. Casement opening outwards for ventilation.
18. Casement fully open.
19. Water-bar down to enable casement to pass inside for cleansing.
20. Casement opening inside for cleansing.
21. Cement line.

is moved either inwards or outwards, the teeth being in juxtaposition form a close joint. The joint between the head of casement and frame is effectively covered by the automatic bar (2), the action of which is shown in the upper and lower illustrations. The arrangement of the water bar (4) appears simple and effective. The casement is in use at the new Cripplegate Institute, and is about to be used in several buildings in London. The cost appears to be slightly in excess of the ordinary type, but, on the other hand, as fewer casements are required to be opened for cleansing, a saving is effected by this means. The invention, like the other patents taken out by the same firm, deserves our commendation, and we shall be mistaken if it is not largely used by architects in the future.

APPOINTMENT.—It is stated that Mr. W. Wallace Gandy, architect and surveyor, of St. Helens, has just been appointed, out of about 140 applicants, to the position of chief architectural assistant to the Borough Engineer of Accrington.

SOMERSET HOUSE.—A Portland stone wall at the Embankment side of Somerset House, near Waterloo Bridge, has been erected, the work having been

carried out in unison with the prevailing style of architecture of the building. The part thus reclaimed was formerly known as the Dock House, and was in use many years ago as a waterway for the entrance of barges from the river into Somerset House. In addition to the erection of the wall, a large room has been constructed, which will be used as a repository for papers, &c. The work has been carried out under the direction of Mr. Williams, clerk of the works, Royal Courts of Justice.

THE SURVEYORS' INSTITUTION.—The annual dinner of the members of the Surveyors' Institution was held at the Hotel Cecil, Strand, on the 24th ult. Mr. Daniel Watney, the President, occupied the chair, and the company, numbering about 200, included Professor G. Atchison (President of the Royal Institute of British Architects), Mr. C. Oakley, Mr. R. Vigers, Mr. T. M. Rickman, Mr. A. Garrard, Mr. J. F. L. Rolliston, Mr. A. Buck, Mr. C. J. Shoppee, Mr. A. Vernon, Mr. C. Bidwell, Mr. A. Waterhouse, R.A., Mr. E. Windsor Richards (President of the Institute of Mechanical Engineers), Dr. J. H. T. Tudsberg (secretary of the Institute of Civil Engineers), Mr. A. R. Binnie, and

Mr. J. W. Penfold, hon. secretary. After the loyal toasts the President proposed "The Houses of Lords and Commons." Mr. Jesse Collings, M.P., replied. The toast of "The Bench and the Bar," proposed by Mr. C. Oakley, was acknowledged by Mr. Justice Grantham and Mr. E. J. Castle, Q.C. Mr. G. de L. Willis proposed the toast of the evening—"The Surveyors' Institution." He said the Institution was established in the year 1859, and incorporated by royal charter in 1881. The Institution, which was a public authority under the London Building Act, 1894, and other statutes, was now erecting, at a cost of 30,000*l.*, a building in Great George-street for a permanent home. Their membership had risen from 200 in 1869 to nearly 2,800. This year 400 candidates were examined for the Institution certificate. He stated, in conclusion, that the President had provided an endowment of 10*l.* per annum for the best work in the science and practice of forestry. The President responded. The President of the Royal Institute of British Architects and the vice-president of the Royal College of Surgeons responded for the toast of "The Kindred Societies," proposed by Mr. C. J. Shoppee. Other toasts followed.

THE COST OF LONDON BOARD SCHOOLS.—On February 17 last, the Works Committee of the London School Board appointed a Special Sub-Committee to inquire into the cost of the schools now being erected by the Board. The Committee have now received the general report of this Sub-Committee, and have approved the recommendations contained therein, and at the meeting of the Board on the 25th ult. they submitted the report of the Sub-Committee to the Board for their information, together with the recommendations set out below, which, in the opinion of the Committee, are calculated to effect a reduction in the cost of the schools to be erected in future:—"That the Board revert to the old specification in force in 1885-6 for all future schools and enlargements (as suggested by the Architect of the Board), subject to such modifications as the Architect may think it necessary to make, in order to bring the specification up to the present requirements of the Board and the Education Department; and also subject to the further recommendations which are made by the Sub-Committee (see pages 11 to 15 inclusive of the report). That, in future, the brickwork of all piers carrying heavy loads, and also the whole of the external walls, be built in cement, and that internal walls generally be built in mortar. That, in future, the amount which is included in the builder's tender for the supply of glazed brick internal facings be shown on the form of tender as a separate item. That in all building contracts entered into by the Board in future, the quantities shall not form part of the contract. That, in the case of the next six schools erected by the Board upon which the Board's Measuring Surveyor has not commenced any measuring work in connection with the foundations, drainage, &c., the experiment be tried of having the variations on the contract measured up on completion, and the accounts adjusted, by the Quantity Surveyor who took out the original quantities, such adjustment to be completed within a period of six weeks after the completion of the school. That the terms upon which this additional work shall be executed, be the subject of a special arrangement between the Board and the Quantity Surveyors, and that a report be subsequently submitted to the Works Committee showing the comparative cost of the measuring up by the outside Quantity Surveyors, and also by the Board's Measuring Surveyor. That the Quantity Surveyors be required to furnish the Board with all the details and abstracts of their measurements, and also the detailed accounts showing the actual cost of the additions and omissions, for reference if necessary, together with a Summary and Balance Sheet. That, in the above six selected cases, the Architect of the Board be instructed to make the necessary arrangements for measuring the foundations, drainage, &c., during the progress of the work (as has hitherto been done by the Board's Measuring Surveyor), but that the monthly valuations of the work done upon which certificates for payment are given to Contractors during the progress of the work be made by the Board's Measuring Surveyor as at present." A long discussion took place on the subject, and Mr. Diggle reviewed the building policy of the Board at length, and moved that the report go back for further consideration. This was lost by 19 to 18, and a motion (the "previous question") by Mr. Riley, was also negatived; but subsequently a motion to adjourn the debate was adopted.

BERKHAMSTED SCHOOL CHAPEL.—In reference to our comment on Dr. Fry's letter in our last issue, we have been since informed that the executed design was not chosen as the result of a competition, as the phrase "finally accepted design" led us to suppose. Of course in that case our comment on that phase of the matter was not applicable, and we withdraw it.

GESSO.—On Tuesday evening Mr. Matthew Webb gave an excellent practical and critical lecture on "Gesso" at the rooms of the Society of Arts, in connexion with the Applied Art Section. Admitting that it was sometimes not easy to draw the line between stucco and gesso, he thought it was roughly true that gesso was for the brush and stucco for the modelling tool; though the laying on of gesso was, as he showed experimentally, not so much brush-

work as allowing a material to drip from the brush in the line it followed. In the substances usually employed by the gesso worker, all the binding, hardening, and cohesion was given by the hardening of glue and oil; in stucco those ingredients might be injured. It was the difference between carbonate and sulphate of lime, calcium being the metallic basis of both. In gesso proper, whitening or chalk was used, the carbonate, which might be washed away by water; in stucco the sulphate was used, such as plaster of Paris, which would set under water. The various technical difficulties of gesso work were minutely described, and a good many examples exhibited illustrating various points in regard to both the practical nature and artistic use of the material.

THE HISTORY OF THE ARCH.—The ninth of the series of fortnightly lectures at the Glasgow Corporation Galleries on art subjects was delivered recently by Professor F. M. Simpson, of University College, Liverpool, whose subject was, "The History of the Arch." The lecturer began by saying that although the lintel form of construction was older than the arch form, the latter was more ancient than was generally supposed. It was known to and used by the Egyptians 3,000 years before the birth of Christ. The most interesting discovery had been that of the gates of Khor-sabad, in Assyria, which dated from 721 B.C. Both the pointed and semicircular-headed forms were used by the ancients, although the former shape was generally not constructed with radiating voussoirs, but with stones projecting one in front of the other, the joints being horizontal. The god-fathers of the arch were really the Etruscans. From them the Romans learned it, and used it universally in their buildings. All the Roman arches were semicircular, and were constructed on true arch principles. So were the arches used by the Byzantine and Romanesque builders. The pointed form reappeared in the Saracenic work of the ninth and tenth century, and was adopted by the medieval architects to solve certain difficulties in construction—principally those of vaulting over oblong spaces. It was constructed properly with radiating voussoirs, but the old idea that the Gothic men invented the pointed arch was a mistake. At the end of the fourteenth century the arch became again semicircular, and this continued until the Gothic revival at the end of the last century once more brought the pointed form into fashion. The lecture was illustrated with a fine series of lantern slides.—*North British Mail.*

PRESENTATIONS AT AN ANNUAL TRADE DINNER.—The third annual dinner of the heads of departments and representatives of the firm of Messrs. Young & Marten, which took place at the Holborn Restaurant, on the 20th ult., coincided with the 25th anniversary of the firm, and was made the occasion for presentations to Mr. H. H. Marten, the head of the firm, and to Mr. E. M. Edwards, the manager, who each received a testimonial in the form of a piece of silver plate with an appropriate inscription. Mr. B. Carter, in making the presentation to Mr. Marten, congratulated him upon the attainment of the 25th anniversary of the business. Those present were glad of the opportunity of thanking Mr. Marten sincerely for the great kindness and consideration which he had extended to them continually. Mr. E. Montague Edwards, who occupied the vice-chair, next proposed the toast of "The Firm," and coupled with it the name of Mr. H. H. Marten, the proprietor. Mr. T. B. Lupton (manager of the Leytonstone Branch) subsequently made the presentation to Mr. Edwards, congratulating him on the position he had gained, and the share he had had in the practical management and development of the firm for twenty-three years.

DESIGNS FOR INVITATION CARDS, OPENING OF BLACKWELL TUNNEL.—The Bridges Committee of the London County Council are prepared to offer prizes: one of five guineas, one of two guineas, one of one guinea, and seven of ten shillings, for designs in black and white, or in any one colour, for a card of invitation to the ceremony. The designs must be upon thick card, not larger than 12 in. by 8 in., and may, if the competitor please, embody a section of the tunnel, illustrations of which will be sent to intending competitors on application to the Secretary of the Technical Education Board. The prizes will be adjudicated by the art advisers of the Board, and all designs must be received by the Board's Secretary not later than Thursday, March 25. Students in any of the London Schools of Art, or in any of the classes conducted or aided by the Technical Education Board, will be eligible to compete.

CARPENTERS' HALL LECTURES.—A very interesting lecture on the Work of the Electric Current was given by Dr. Fleming on Wednesday evening. Numerous lantern illustrations were shown, and his method of projecting experiments on a screen is a great improvement on the older method of showing them on the lecture table. For example, he projected the mechanism of an electric bell on the screen, and then very clearly explained its action. To illustrate electro-plating, a lead fork was shown on the screen being rapidly coated with lead; as the current was too strong he compared it to a labourer bringing bricks too quickly, so that heaps of loose bricks were soon piled up round the bricklayer. He pointed out that the electrolytic production of aluminium was now a great industry,

A few years ago it cost several shillings an ounce, now it could be bought for 1*s.* 6*d.* a pound. He prophesied that it would soon be as cheap as copper, and that then aluminium ships and girders would be made. The great progress of electric lighting was proved by the fact that the number of lamps connected in London had doubled within the last three years. In the United States, he said that there were 100 miles of electric tramroads working, and that the capital expenditure on electric traction was now over fifty million pounds. He mentioned that all the great practical applications of electricity had sprung out of pure scientific research, and made an eloquent appeal on behalf of pure scientific work as the basis of all advance in the arts. Lord Reay, who took the chair, expressed a hope that the Government would accept the proposal for a National Physical Laboratory, and endorsed Dr. Fleming's remarks on the importance of the search for the truth concerning the forces and mysteries of the world in which we live.

PROPOSED PORTRAIT OF THE EX-PRESIDENT OF THE INSTITUTE OF ARCHITECTS.—The Council of the Royal Institute of British Architects, in furtherance of what they believe to be a very widely-spread wish, have appointed a Committee to take such steps as may be deemed advisable to obtain a portrait of Mr. Francis C. Penrose, F.R.S., to be hung on the walls of the Institute, in recognition of his distinguished services in the cause of architecture, and the admirable manner in which he filled the office of President during the years 1894-96. Subscriptions are invited from members of the Institute. The names of the Committee are Messrs. L. Alma Tadema, Ernest George, Alex. Graham, Ed. W. Mountford, and A. S. Murray.

CAPITAL AND LABOUR.

WAGES IN THE COVENTRY BUILDING TRADE.—At the end of last year the various branches of the building trade in Coventry, except the painters, applied for an increase of wages, and in some cases for alterations, some of an important character, to the working rules. The bricklayers, masons, plasterers, plasterers' labourers, scaffolders, and carpenters and joiners, asked for an increase of 1*d.*, and bricklayers' labourers 3*d.* per hour. The Master Builders' Association, in reply, offered the men half the advance they asked, and in regard to the rules made several concessions, refused demands which they considered ought not to be made, and suggested a few alterations, merely with a view to bringing about uniformity on certain points. The workmen, however, have indicated an unwillingness to accept the financial proposals of the Association, and the replies of some of the societies ignore the attitude of the masters upon the question of suggested alterations to rules. The workmen have agreed to appoint delegates to meet the masters to discuss points upon which there is disagreement, and questions that remain unsettled will go to arbitration. The masters are anxious to meet the men as far as possible, believing, under the circumstances, that they are entitled to some improvement in their position. But they are of opinion that a 1*d.* increase is excessive, and that some of the proposed alterations to the rules would have a consequence disagreeable to both employers and employed. While desiring to act justly to the men, they think it only right to consider the conditions of employment prevailing in the district. In some Warwickshire towns the workmen engaged in the building trade get considerably less than is being received in Coventry, and the concession of such a large advance to workmen, in comparison already most favourably circumstanced, the masters believe might work unfortunately for both parties. In view of the activity in the building trade everything will be done to facilitate a speedy settlement of the dispute, and it is thought unlikely that anything will arise likely to prevent a mutually satisfactory conclusion.—*Coventry Herald.*

THE BRICKLAYERS' AND PLASTERERS' DISPUTE, NEWCASTLE.—The dispute which has existed for more than twelve months between the bricklayers and plasterers, as to which set of tradesmen should do certain cement work, has at last been brought to a termination. Several attempts have from time to time been made to effect a settlement. Recently, at the invitation of Mr. J. W. Dyson, architect, representatives of all the parties to the dispute, together with some of the leading architects, met at the County Hotel for the purpose of discussing the matter in a friendly spirit. At this meeting a suggestion was made by Mr. R. J. Leeson, that two architects, two master builders, two plasterers, and two bricklayers should meet in a round-table conference for the purpose of discussing seriatim the items in dispute. This was unanimously adopted, and the following gentlemen were selected as representatives, viz.:—Messrs. J. W. Dyson and R. J. Leeson, architects; Messrs. Walter Lowry and S. B. Burton, master builders; Messrs. Hope and Drummond, bricklayers; and Messrs. Young and Carron, plasterers. The result has been that a detailed schedule has been agreed upon, defining the particular class of work to be done by each trade. The representatives of the trades and also the master builders have submitted the schedule to their

different societies, and in each case it has been adopted and approved. A further outcome of the conference has been that the gentlemen forming it have been asked by the societies and master builders to act for one year as a Conciliation Board; they have consented to do so, and it has been agreed that all questions in dispute as to cement work should be referred to them for final decision.—*Newcastle Chronicle.*

THE BUILDING TRADE IN GLASGOW.—For some time past the building trade in Glasgow and district has been on the boom, but the zenith seems now to have been reached and a tendency towards decline is beginning to be observed. There is as yet nothing like slackness, but the future prospect is not so brilliant as it was a twelvemonth ago. Wages at present are pretty good. Masons, bricklayers, and joiners are being paid at the rate of 9d. an hour, with 4d. an hour extra for travelling, &c., expenses, when engaged in outlying districts. The joiners are not satisfied with this, and have just sent in an application for 3d. an hour advance, which the masters will have to take into consideration. Plumbers have been in receipt of 81d. an hour, and they are pressing for an increase of 1d. Their demand will be discussed shortly at a joint conference.—*Glasgow Evening Citizen.*

LEGAL.

THE CLAIM AGAINST THE ST. PANCRAS GUARDIANS.

MR. EDWARD RIDLEY, Q.C., the Official Referee, on the 1st inst. resumed the hearing of this claim. The plaintiffs, who are builders' merchants, sue (as trustees of creditors of Mr. Wm. Brooks, builder of Folkestone), the Guardians of the Poor of St. Pancras and their architects, Messrs. A. & C. Harston, for a balance of 24,262*l.*, or, alternatively, 24,262*l.*, alleged to be due on a contract for the completion of the St. Pancras workhouse. The plaintiffs' case is that some years ago the Guardians resolved to reconstruct the workhouse in King's-road, and appointed Messrs. Harston as their architects. The contract for the work was first taken by Messrs. Kirk & Randall, of Woolwich, but disputes arose, and, in 1892, that firm requested to be relieved of further work under the contract. Fresh tenders were invited for the unfinished work, and that of Mr. Wm. Brooks was accepted for 50,861*l.* The work was to occupy fifteen months from May, 1892, but delays arose, and in November, 1894, the work was stopped. Messrs. Drew-Bear, Perks, & Co., of Queen Victoria-street, who supplied the ironwork; Mr. H. Tolput, of Folkestone, who supplied the timber; and Mr. J. Brown, of Cannon-street, who supplied bricks, sued on behalf of creditors for the balance alleged to be due to Mr. Brooks. The net cost of the work executed was stated to be on the first claim 65,479*l.*, plus 10 per cent. profit, 6,547*l.*, making 72,026*l.*. The plaintiffs alleged that Brooks was hindered in what they paid for. He had known of building out of their own pockets to remedy the defect, for the sake of their own reputations. Witness, examined as to the slates, said that those which came up to the job were of very fair quality. It was not true that he made objection to them, but he did complain about some of them being damaged by careless handling. The ridge rolls he found to be very inferior and bad; in fact, they were not "rolls" at all. That was in March, 1893. The rolls should be rounded, but the ones he objected to were more hexagonal in shape. The screw rolls were wrong, there not being sufficient of them. When he objected to those rolls he did so in the exercise of his skill and judgment as an architect. In May, 1893, he saw another lot of rolls on the job, but they were the same as the last. It was not true that he required a better class of goods than was specified. His attention was first called to the galvanised tanks in March, 1893. In April, 1893, he wrote saying that they had better see that the tanks were water-tight before they were hoisted. The tanks were taken backwards and forwards, and then ultimately regalvanised, passed, and used. The tanks were only galvanized once. Four tanks out of seven were objected to. It was perfectly obvious that if the tanks were oxidised or rusty they ought not to go up. In that class of goods rust would extend. He objected to the contractor who ran short of boarding using some of the boarding stuff on the coach-house roof. As the boards had been in use for boarding for three years they were in a very dirty condition. In January, 1893, Poole made a communication to him about twenty-seven sashes and frames. He went and saw them in the stores. They were not, in his opinion, in accordance with the specification, but he passed them, and told Poole to say nothing more about them. At the time he saw them in the stores there were some men there, and

Randall in the stack before making the contract with Brooks. They had, however, neither passed it or rejected it. Witness knew it was sappy, hence his caution in putting the provision relating to sappy boards in the bills of quantities. He had no knowledge of the condemnation by Poole during the time it was in Kirk & Randall's possession. It was part of Brooks' contract to take out the sappy boards which Kirk & Randall had laid. On June 15, 1893, he examined some flooring. Prior to that, he had discovered from Mr. Poole's reports that some objection was being made to the flooring. He examined the flooring on the top floor of "C" Block, when he found a number of boards marked by Poole as being sappy, and they were sappy. He found that the floor was not properly laid or cleaned off properly. He told Fearon that he must take up some of the flooring marked, and that it must be cleaned off and laid properly. Some of the boards were taken up. He had seen the flooring since two or three times. It was in very fair condition now; but still there were a few sappy boards in it, some with as much as an inch of sap in them. That was Kirk & Randall's boarding. It was not true, as Fearon suggested, that he (witness) said that all the boards that Poole had marked should be taken up. He told Fearon that some of them must be. He never told Fearon that he would have to submit to Poole in every detail, and that he would support Poole in everything he did. The objection to sappy timber was that it would not wear, and soon got rotten. Further, it was prohibited in the specification. The witness was next examined as to the old cast iron tank in "K" Block, which had to be taken down and made smaller by removing a tier of plates and putting it up again. The witness said that he examined the plates to see if they were sound, because the specification stipulated that any defective plates had to be replaced by new. He had one of the plates broken to see how far the metal was sound. He came to the conclusion that they were fairly sound, so that he did not ask them to provide any new plates for the tank, and the old plates were used. He did not know that Poole had objected to the plates or tank. Fearon never made any complaint to him about the clipped tank or the way in which the tank had been treated. With reference to the question of the plaster arches in the committee room and the steward's clerk's office, the witness stated that the brickwork was satisfactory, the only complaint being as to a defect in the plastering. That was in October, 1893. Fearon admitted they were defective, and said he would put them right. Fearon made no complaint whatever of the drawing. The defect was that on one side of each arch the curve was broken; there was not a true curve. After the arches were executed by the tinner they were not again condemned. So far as he could he assisted Fearon to get the things right. It was a very simple matter, and Fearon ought not to have required any assistance at all. He had never in thirty years' experience given assistance in such a matter. Examined as to the concrete foundation the witness said that his attention was called to some brick rubbish being used in the trenches. This he considered a very serious thing, as the concrete foundation had to carry the weight of the building. The foundation ought to become a hard, solid mass, but if brick rubbish was put in they were not getting what they paid for. He had known of building out of their own pockets to remedy the defect, for the sake of their own reputations. Witness, examined as to the slates, said that those which came up to the job were of very fair quality. It was not true that he made objection to them, but he did complain about some of them being damaged by careless handling. The ridge rolls he found to be very inferior and bad; in fact, they were not "rolls" at all. That was in March, 1893. The rolls should be rounded, but the ones he objected to were more hexagonal in shape. The screw rolls were wrong, there not being sufficient of them. When he objected to those rolls he did so in the exercise of his skill and judgment as an architect. In May, 1893, he saw another lot of rolls on the job, but they were the same as the last. It was not true that he required a better class of goods than was specified. His attention was first called to the galvanised tanks in March, 1893. In April, 1893, he wrote saying that they had better see that the tanks were water-tight before they were hoisted. The tanks were taken backwards and forwards, and then ultimately regalvanised, passed, and used. The tanks were only galvanized once. Four tanks out of seven were objected to. It was perfectly obvious that if the tanks were oxidised or rusty they ought not to go up. In that class of goods rust would extend. He objected to the contractor who ran short of boarding using some of the boarding stuff on the coach-house roof. As the boards had been in use for boarding for three years they were in a very dirty condition. In January, 1893, Poole made a communication to him about twenty-seven sashes and frames. He went and saw them in the stores. They were not, in his opinion, in accordance with the specification, but he passed them, and told Poole to say nothing more about them. At the time he saw them in the stores there were some men there, and

he was told they were putting right some of the defects. He did make objection to bats being used improperly. He remembered one instance on "H" Block; he found bats, and bats only, being carried up on the scaffold, heaps being on the scaffold, and a number hanging in the work where they ought not to have been. Very few bats were required in an 18-in. wall. He never made any objection to old bricks being used if they were sound old bricks.

The witness produced specimens of old bricks which he had condemned, and specimens of those which he would have passed, and which were taken from a cart as they were being carted away from the works.

As to the lintels, the witness said that some were fixed too high, and he told Fearon that they must be lowered at once. In such a building he never allowed lath and plaster work, nothing but solid walls, and he, therefore, insisted on solid brickwork all through.

Cross-examined by Mr. Bray: He did not admit that he had erected the case; if he had done so it was not from want of experience or care. He generally got Poole's reports at the end of each week, and carefully perused them, and went on the works himself about once a fortnight. Witness knew from Poole's reports that a large quantity of materials was objected to. Some of the materials objected to were afterwards used, but witness had a right to allow inferior material to be used after he had expressed his objections, in the hope that next time the contractors would do better. Witness never told Poole not to make so many objections; they were, indeed, proper so far as he (witness) could see. It was quite probable that exactly the same objections were made to the same materials in Kirk & Randall's time as in Brooks's, and very naturally so. There were a great many disputes in every job where Kirk & Randall were employed, but witness only remembered coming in contact with them on one previous occasion. In this case Kirk & Randall asked to be released from the contract, and witness advised the Guardians to do so. He did not know why they objected to go on, but he did know that at the time prices both of material and labour had gone up.

The witness, further cross-examined by Mr. Bray, said he thought it very unlikely that the reasons put forward by Kirk & Randall for claiming rescission of their contract was the conduct of himself and Poole. It was a common thing to complain about the clerk of the works. Poole was clerk of the works in Kirk & Randall's time. He nominated Poole, but he did not press for his appointment. He had no recollection that the Guardians wished to get some outside person and advertise for him. He might have probably told the Guardians that he knew Poole, and that he (Poole) had been with them for some time. As witness was arbitrator under the contract, the contractors were, no doubt, to some extent in his hands. Poole would see that the builder did not use materials not up to specification, and the work would be stopped until he (witness) adjudicated upon it. If the building were to come on one occasion at any time, witness would have come on one occasion.

Mr. Bray: Fearon states that on several occasions you told him that he must obey Mr. Poole or you would have the work taken down—That I deny; I never told him anything of the kind.

Cross-examination continued: If there were salt in the sand it would show itself on the brickwork as a white fur for some months, but witness could not point to any place in the building where the brickwork showed such marks, nor had he seen any. If the sand were salty the walls would be damp in certain conditions of the weather. Witness could not refer to any place where too fine a quality of sand was used; the fact was the fine sand was mixed with coarser stuff and so did not do much harm.

Mr. Bray asked the witness whether he knew that the Guardians were to give possession of the whole of the site at once.

Mr. English Harrison said that that was a question of construction of the contract.

Mr. Bray: No, it is something to do with the fairness of Mr. Harston.

Mr. Harrison: My contention is that the architect is not responsible for an error of judgment, however grievous the mistakes might be resulting therefrom.

Mr. Bray said that he did not contend that he would be. He wished to show that the contractor could not gain possession of a sufficient portion of the site.

Mr. Harrison said that the architect's conduct could only be impugned on an allegation of fraud.

Mr. Bray said that fraud was not alleged in the case.

The learned Referee said that doubtless the architect, as arbitrator, had to exercise his discretion to the best of his judgment, but if his conduct had been such as to render it impossible for the work under the contract to be continued—he did not say it was so in this case—it would support the plaintiff's contention that the contract had been set aside and a readjustment must be made on *quantum meruit*.

Cross-examination continued: Witness did not consider that any unnecessary delay, so far as he was concerned, took place in giving possession to the contractor. He urged the Guardians from time to time to clear the holdings as speedily as possible,

to allow Brooks to get on. Asked as to the iron work, the witness stated that all the iron merchants when asked to supply a girder an exact weight according to the lists, replied asking for time, as they had not that particular make in stock; witness therefore specified for certain sizes and weights "net"—that was actual, not reputed weights. Witness's objections to the rejected columns and "B" girders were, he maintained, reasonable. He objected to screwing the lugs on the columns instead of them being cast in one piece, because they were not so strong, nor did they look as well. Passing on to the question of brickwork, the witness said he considered the bricks as a whole fair, but he could point out some bad specimens. He did not think the sample of brickwork produced in Court as quite up to the average; it was from the wall of the yard of "H" Block. The stock facing brickwork was as a whole good, although it contained work rejected by Poole. Brickwork might, as a whole, be very good, and yet contain some poor work. Witness heard what Holland and his foreman, George Smith, had said about coming from the Stepney Asylum job in 1893 to St. Pancras to see the brickwork. He would not have sent them over if the brickwork was bad, and, as a matter of fact, witness did not believe he did send them to look at the St. Pancras job. Holland failed soon afterwards, but witness could not say the Holland attributed that to witness. It was very likely that there were similar complaints about bricks, timber, flooring, &c., against Holland as occurred with Brooks. Witness always refused to pass bricks by inspecting them in the barges, as he had often been imposed upon, the bricks under the batches being of a different quality from those that were visible on deck. As to the plastering, the witness said that he claimed the right to have the order and in the particular way he required. Coming to the flooring, the witness said that he knew that many of the boards were sappy, but he allowed the Guardians to take them over and pay for them, for they could be utilised for some other purposes. The flooring had to be stacked before being used, but that did not prevent Brooks from bringing on to the job that he did not know that they were to be stacked for two years. If Poole had said so, it was not in the specification. Brooks gave credit for about a 500*l.* for old bricks, but witness would not allow them to be used except in foundations; he did allow bats to be used for certain purposes, although it was prohibited in the specifications. The nine lintels objected to were 4*in.* to 5*in.* too high; this would be hidden by the lining, but when the plasters were set it would crack at that point. Witness had heard in Court that two of the lintels were left at the high level, but he had not seen them. Witness was pressed as to his objection to the gutters when Poole did not allow them to be used, because Messrs. Macfarlane had by mistake made the sockets inside instead of outside. Witness was asked what difference this would make? He replied that it was not according to the drawings, and the makers admitted it was wrong; after this he should be inclined to think that nothing did matter at all in building matters. The only difference would have been in appearance. Witness did write to the Guardians that the delay in the laundry and other buildings was due to the delay of Messrs. Benham. There were many complaints in Poole's diary as to delay by Messrs. Benham, and Fearon also complained. There was a penalty clause in the contract, and the makers admitted it was claimed. The salt glazed bricks were generally poor, and many were too dark. The ironwork was generally bad, and the timber was one of the weak points.

Re-examined by Mr. English Harrison:—
So far as witness was concerned he had nothing to do with the failure of Holland. He failed in the middle of a contract. The Guardians purchased everything left by Kirk & Randall, except a few broken drain-pipes, and witness put the cautionary clause, as to sappy timbers and facing bricks, to warn any future contractor, knowing, as he did, of the condition of these materials.

Mr. Alfred Arthur Millward examined, said that he was Clerk to the St. Pancras Guardians. He remembered Fearon calling upon him on May 31, 1892, just as the contract was signed. It was not true that he told Fearon that he could not begin the work as nothing was ready, and that nothing had been arranged as to shifting the inmates. As a matter of fact, the Guardians had made arrangements for boarding out the inmates, and arrangements had been made by which the Master of the Workhouse could make vacant the main block in front, or the main portion of it, within twelve hours' notice, so as to allow the builders to proceed. That was now the "B" Block. Witness told Fearon to see the Master of the Workhouse—Captain Miller, and Messrs. Harston who would make the necessary arrangements. He frequently saw Mr. Fearon on the works and was always accessible if required. Until the case was launched, and during the whole of the operations, he never heard a suggestion, either from Brooks or Fearon, that the architects or clerk of the works were acting unfairly or dishonestly.

Mr. Bray: Unfairly. I never used the word dishonestly.
Mr. Moyses remarked that the whole of his

learned friend's cross-examination was directed with a view to show that Mr. Harston had been unfair to such an extent as to amount to dishonesty.

The learned Referee: I think we had better not discuss this subject now. I say there has been no charge against Mr. Harston of dishonesty in this case from beginning to end.

Mr. MacIntyre: It is made in the statement of claim.

The learned Referee: If it is used there it is certainly not used in the sense of fraud or collusion.

Mr. Moyses remarked that in the statement of claim fraud was mentioned no less than seventeen times.

Cross-examined by Mr. Bray.

It was not his business to interfere with the builders. Brooks was not delayed on "K" Block owing to the engineers' work in the laundry—at least the Guardians were assured that they were not. Captain Thomas Miller, the Master of St. Pancras Workhouse, examined by Mr. Moyses, said that he recollects seeing Fearon on the day the contract was signed. Fearon said that he wished to commence operations as soon as possible, and witness told him that he should be ready in two days, and that he would clear the part of the building Fearon wanted to go on with within that time. Arrangements had been made to put the inmates out to other unions. Witness did not say that nothing was ready or arranged. Nor did he hear Mr. Millward say so. It was not true that Fearon was constantly asking him for possession of the old Insane Block. He did not recollect referring Fearon to the architects on any of those matters.

Cross-examined: He had had very few conversations with Fearon, as he had nothing whatever to do with the building or the building operations. Mr. Frederick Purchase, a member of the Board of Guardians, and a member of the Building Committee gave evidence as to never hearing any complaints either at the Board or Committee Meetings that Mr. Harston was acting either unfairly or dishonestly. The witness said that there was no suggestion, to his knowledge, that the contract was being departed from. The Guardians always adhered strictly to the contract.

Cross-examined: It was the duty of the architects representing the Board to watch over the interests of the ratepayers, and to see that the work was carried out according to specification.

Mr. Charles Challen, a member of the Board of Guardians and of the Building Committee, corroborated the evidence of the last witness.

Cross-examined: He may have heard Fearon say that the clerk of the works was obstructing him, but he knew that it was untrue. He left everything to the architects, who were the arbitrators under the contract.

Mr. Boden, a retired builder, the Chairman of the Building Committee, gave evidence as to speaking to Fearon on several occasions. Fearon made the usual contractor's complaints as to the architects and clerk of the works. Witness's reply would be that if a complaint in writing were sent to the Clerk of the Board the matter would be inquired into by the Committee. He did not remember any official complaint being brought before the Board. There was never any complaint which imputed unjust or dishonest dealing on the part of the architects or Poole.

Cross-examined: He knew that Poole was a difficult man to get on with. He believed that Poole thoroughly understood his business and would take a specification and have it carried out to the letter. He might have told Fearon that Mr. Harston would have every line of the specification carried out as it ought to be. Mr. Tilley (Thomas Tilley & Sons, well engineers), who did some work at the workhouse in 1893, denied that his men interfered with or prevented Brooks's men going on with their work.

Mr. Thomas Wm. Youan, foreman to Messrs. Benham, who did the engineering work to the laundry, was called, and said that he had no complaint to find with Poole or Mr. Harston. Mr. Harston required the specification carried out, but if work was properly executed there was never any trouble.

Mr. A. H. Woolley, secretary to Nash & Co., machinists, of Slough, gave evidence as to machine paviers being in October, 1892, 5*s.* dearer than pick stock facings on the field.

Joseph Liveock, who superintended the fixing of lifts at the workhouse, said that whenever his men interfered with any joinery work at the building his firm's carpenters made it good.

Mr. Stephen Dobson, a works manager of the St. Pancras Ironwork Company, who did some ironwork at the workhouse, denied that there was any delay on his company's part in fitting-up, nor was there any interference with any part of the work carried on by Mr. Brooks.

Mr. G. R. Crickmay, architect, of Victoria-street, Westminster, the arbitrator to the Local Government Board, gave evidence as to accompanying Mr. Harston to the workhouse on January 13th last, to examine the work which had been done by Brooks, having with him extracts from the specifications and some of the drawings. The witness said that the bright picked stock bricks were irregular in shape and chipped very much. The labour was fairly good, but the material unsatisfactory. The

red brick facings in C Block were very much knocked about, and the bricks in A Block were knocked about, and had fire cracks in a number of them. The blue bricks were very sandy on the side, and the salt-glazed bricks varied very much in colour. The York stone step in the entrance-hall was very much laminated, and should not have been put there. The flooring-boards he found to be of a very inferior quality, and the sash-frames were not sarked in accordance with the drawings. The joinery work had shrunk very much, which showed that the wood was unseasoned. From what he saw of the work and material there, he thought the architects had been fairly lenient with the builder.

Cross-examined: He considered the specification an ordinary one. Witness was very careful in drawing out a specification. All brickmakers made bad bricks as well as good.

The learned Referee, during the course of Mr. Crickmay's evidence, asked the learned counsel engaged whether the case could be finished by Saturday, and remarked that if it could not it would have to stand over till May.

Mr. English Harrison and Mr. MacIntyre intimated that in all probability the case could be finished by Saturday. Mr. MacIntyre remarked that in certain circumstances he should have to call, on behalf of the architects, three witnesses—Mr. Currey, Mr. Davis, and Mr. McCormick.

The learned Referee said that, subject to what might be said to the contrary by Mr. Bray, he did not see how the architects could be made defendants to the action.

It was arranged that the learned Referee should visit the workhouse before the case terminated to view the work which had been done, he being accompanied by two persons to be nominated by each side to point out what had been done.

Mr. Crickmay, cross-examined by Mr. Hudson, said that although he could not point to any workhouse which was better built than the one in question, he had seen buildings of a similar character which were better built.

At the conclusion of the evidence called on behalf of the Guardians, the learned Referee, on the submission of Mr. MacIntyre, decided that the plaintiffs had made out no case against Messrs. Harston, the architects, there being no evidence that they had been guilty of fraud, dishonesty, or collusion. The learned Referee accordingly entered judgment for Messrs. Harston, but reserved the question of costs.

The case against the Guardians was proceeding when we went to press.

MEETINGS.

FRIDAY, MARCH 5.

The Architectural Association.—Dr. F. S. Granger on "Greek Sculpture and Greek Legend," with lantern illustrations. 7.30 p.m.

SATURDAY, MARCH 6.

The Architectural Association.—Spring Visit to Her Majesty's Theatre, Haymarket. 2.30 p.m.

Sanitary Inspectors' Association.—Annual Dinner, Holborn Restaurant. 6 p.m.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at the Marylebone Stoneyard, Richmond-street, Edgware-road, W. 3 p.m.

Institution of Junior Engineers.—Conversation at the Westminster Palace Hotel. Reception at 7.30 p.m. by the President, Mr. A. R. Binnie, M.Inst.C.E., and Mrs. Binnie.

MONDAY, MARCH 8.

Surveyors' Institution.—The Right Hon. Horace C. Plunkett, M.P., on "Agricultural Co-operation." 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Professor A. Bostock Hill on "Factories, Workshops, and Offensive Trades." 8 p.m.

TUESDAY, MARCH 9.

Institution of Civil Engineers.—Further Discussion on (1) "The Main Drainage of London," by Messrs. J. E. Worth and W. Sauto Crimp; (2) "The Purification of the Thames," by Mr. W. J. Dildin; and (3) paper to be read, time permitting, "The Mond Gas-Producer Plant and its Application," by Mr. H. A. Humphrey. 8 p.m.

Carlisle Architectural, Engineering, and Surveying Society.—Mr. W. Pogson on "Stresses in Ironwork."

WEDNESDAY, MARCH 10.

Carpenters' Hall, London Wall.—Paper by Professor Banister Fletcher, entitled "Is a National Twentieth Century Style of Architecture Probable?" Illustrated. 8 p.m.

Society of Arts.—Mr. Frederick Bathurst on "The Prevention of Fires Due to the Leakage of Electricity." 8 p.m.

Sanitary Institute.—Mr. Baldwin Latham on "Indian Sanitation." 8 p.m.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection of Disinfecting Apparatus and Model Steam Laundry at St. John's Wharf, Fulham. 3.30 p.m.

Architects' Benevolent Society.—Annual General Meeting of Donors and Subscribers. 3 p.m.

St. Paul's Ecological Society.—Mr. J. N. Comper, on "The Reasonableness of the Ornaments Rubric, illustrated by a comparison of the German and English Altars." 7.30 p.m.

THURSDAY, MARCH 11.

Royal Institution.—Professor Percy Gardner, F.S.A., on "Greek History and Extant Monuments." II. 3 p.m.

Society of Antiquaries.—(1) Professor Windle on "Neolithic Implements found in Worcestershire;" (2) Mr. A. Bullard on "Discoveries at the Glastonbury Lake Villages." 8.30 p.m.

CONTRACTS AND PUBLIC APPOINTMENTS.

CONTRACTS.

Table with columns: Nature of Work or Materials, By whom Required, Forms of Tender, &c. Supplied by, and Tenders to be delivered. Includes entries for Bridge Work, Sewage Works, Cottages, and various public buildings.

CONTRACTS—Continued.

Continuation of the Contracts table, listing items like Limestone and Gravelts, Sewage Farm Works, and various engineering and construction projects.

PUBLIC APPOINTMENTS.

Table listing public appointments with columns: Nature of Appointment, By whom Advertised, Salary, and Applications to be in.

Those marked with an asterisk (*) are advertised in this Number. Contracts, pp. iv. vi. & vii. Public Appointments, pp. xvii. & xxi.

Institution of Electrical Engineers.—Mr. H. Benest on "Some Repairs to the South American Company's Cable off Cape Verde 1895 and 1895." 8 p.m.

Royal Institution.—Professor A. Smithells on "The Source of Light in Flames." 9 p.m.

Institution of Civil Engineers (Students' Meetings).—Mr. H. F. Brand on "The Inverness Section of the Inverness and Aviemore Railway." 8 p.m.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at Aylebury Dairy Company's Premises, Bayswater, 3 p.m.

Edinburgh Architectural Association.—Visit to Hutton House, West Calder.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS. 2,724.—CIRCULAR SAWS: J. Benton.—The invention consists in the application, in a circular saw bench, of two small horizontal saws to operate upon and take the wood, in whatever breadth may be required, by means of a mechanical attachment to small discs with collars, which slide up and down, as required, on spindles; and also the application of a feed roller, by means of which the wood is fed continuously, and held tight to fence in combination with endless chains and mitre cogs to drive the spindles and automatic feed.

top layer, binding medium, and ground mass. Top layer consists of asphalt powder, brought to a glowing temperature before being introduced into the stone mould. Binding medium consists of Portland cement, pulverised unslaked lime, and ground strass. Ground material consists of a stone of rocky hardness of porous nature, as porous basalt lava, found in the neighbourhood of Laucher Lake and elsewhere, which is used in three degrees of size of particles. These materials, slightly wetted, being introduced into the mould and while the top material is put in very hot, all are subjected to a pressure of about 300 atmospheres. 24,081.—FLUSHING APPARATUS FOR TROUGH CLOSETS, LATRINES, &c.: H. Clay.—To flush basins and troughs and latrine pipes, inventor employs a tank provided with an auxiliary syphon to give an after flow, which tank contains flushing water. Above the tank is a smaller one fed with the large tank by means of a syphon, whereby when the larger tank is full the next discharge from the smaller tank sets up the main syphonic action of the larger one. The said stand-pipe dips into a well below the larger tank and into this are led the flushing pipes. This form of tank is particularly applicable where a periodical flushing is required. 3,354.—CISTERN SYPHONS: H. A. McCornick.—Invention consists in a chamber connected with the discharge pipes, having a plunger, bellows, &c. adjustable so that by a movement a vacuum is caused into which the air from the discharge pipe is drawn, the liquid in the cistern following it, thus causing the discharge. A dip, or valve, &c. prevents air being drawn in through outlet, and the gurgling is prevented by a trumpet mouth to end of syphon. 4,594.—APPARATUS FOR STARTING FLUSHING TANK SYPHONS: J. Jobbins.—In this invention as applied to water closets, the syphon in the flushing tank is put into action through the medium of a piston which fits a cylindrical chamber provided in the flushing pipe and a converted piston-rod, carried through a stuffing-box is extended through the wall into the closet. Other arrangements are also specified.

neys and Flues.—4,048, W. Robinson and S. Brookfield, Cement and Concretes—4,067, H. Harrison, Cutter Heads for Wood-working Machinery.—4,075, C. Tully, Chimney Draught Shield.—4,076, C. Olyphant and A. Cunneen, Stoves or Grates. FEBRUARY 15.—4,441, T. Horn, Window Glass.—4,446, H. Fitzpatrick, Sash Locks or Fasteners.—4,459, H. Brown, Automatically-Locking Sash Holders.—4,492, G. McKinnis, Floors.—4,499, H. Barnett, Casement Windows.—4,505, W. Bailey, Water Heating Apparatus for Kitchen Grates, &c. FEBRUARY 17.—4,264, T. Robb, Machinery for Sawing or Cutting Wood, &c.—4,299, J. Jeffrey, Ventilating Fans.—4,295, A. Muirhead, Firegrates. FEBRUARY 18.—4,378, W. Cockburn, Securing Door Knobs to their Spindles.—4,583, A. Bucknall, Constructing Portable and other Wooden Buildings, also applicable to floors and other parts of buildings.—4,599, G. Pitt, Brick Kilns.—4,459, R. Dillon, Saw Sets. FEBRUARY 19.—4,571, L. Wells, Ladders. FEBRUARY 20.—4,589, E. Settle, Draught and Dust Excluder for Doors.—4,666, S. Adams, Flushing Chamber, &c.—4,648, G. Beck, Attaching Door Knobs to Spindles.—4,647, W. Brothers, Firegrates.—4,652, J. Cox, Laying of Drainpipes.—4,658, J. Hussey, Plumbers' Pots, &c.

PROVISIONAL SPECIFICATIONS ACCEPTED. 14,401, A. Cripps, Lever-bolting Lock.—940, D. Taylor, Door Hanks, &c.—1,881, A. H. Lavery and Greenway, Clive, Vale, & Co., Limited, Lock Furniture.—2,052, G. Thompson, Window-sash Fasteners.—2,425, W. Vickery, Mitre Windows, &c.—2,517, F. Bond, Facilitating the Correct Laying of Sewer and Drain Pipes.—2,849, H. D. Keith, Windows and Doors.—2,869, W. Holt, Screens for the Use of Builders, Contractors, and others.—2,876, A. Hall, Conn. Neighbour, Drain Plug and Hopper for Testing Drains in Sections.—2,946, G. St. John, Firegrates.

COMPLETE SPECIFICATIONS ACCEPTED. Open to opposition for two months. 4,105, D. Doyle and T. Ferrell, Pug-mills for making Bricks, Tiles, &c.—3,310, J. Hule, Lavatory and Water-closet Apparatus.—8,531, H. Swain, Chimney-top or Ventilator.—10,077, J. Richards, Gully Traps.—26,331, W. Neighbour, Drain Plug and Hopper for Testing Drains in Sections.—2,946, G. St. John, Firegrates.

NEW APPLICATIONS FOR LETTERS PATENT.

FEBRUARY 13.—4,003, A. Doman, Brackets for supporting Rain-water Gutters and Spouting.—4,035, W. Griffiths, Automatically Fixing Windows and any desired height.—4,042, F. Dittmar, Draught-Indicator for Chim-

RECENT SALES OF PROPERTY:

Table listing property sales with columns for location, date, and price. Includes entries like 'ESTATE EXCHANGE REPORT', 'January 28—By BOWEN & PEGRAM', and 'February 1—By NOKES & NOKES'.

Table listing property sales with columns for location, date, and price. Includes entries like '86 to 96 (even), St. Mark's-rd., f. 1, r. 156l.', '2, 11, and 13, Stannary-st., f. 1, r. 75l.', and 'South Lambeth—2, Devonshire-rd., f. 1, r. 45l.'.

PRICES CURRENT OF MATERIALS.

Table listing materials and their prices. Includes sections for 'TIMBER', 'METALS', and 'OILS'. Lists items like 'Greenheart', 'Teak', 'Iron—Pig in Scon', and 'Lime'.

TENDERS.

Table listing tenders for various construction projects. Includes entries like 'BARNET—For the erection of detached residence at New Barnet', 'BEDFORD—For the construction of an underground convenience', and 'BRIGHTON—For the erection of the Roedean School'.

Table listing tenders for various construction projects. Includes entries like 'BRISTOL—For making Fitzroy-street, and four other roads', 'CARDIFF—For paving, sewerage, &c., Romilly, Radnor, and Llanelly', and 'DEVONPORT—Accepted for the erection of branch banking premises'.

LONDON—For erecting a wheelwright's shop and smithy, Times Wharf, Hoxton, for Messrs. Rickett Smith & Co. Limited, Messrs. Fotts, Son, & Hennings, architects, 9, Ely-place, Holborn—
W. Gladding £364 | E. Green* £300
Mattock Bros. 315 Accepted.

LONDON—For rebuilding eight houses, Pollard-street, Bethnal Green. Mr. William Stone, architect, 2, Great Winchester-street, E.C.—
Jarvis & Sons £2,940 | Higgins £2,240
Siele 2,583 | Elkington 2,225
Wise & Forrest 2,460

LONDON—Accepted for the erection of additional bedrooms at St. Peter's Home, Marlborough-crescent, Kilburn—
R. A. Verbury & Sons £1,082

LONDON—For alterations and additions to three shops, Salmon's Lane, Limehouse, E. Mr. Herbert Riches, architect, 3, Crooked-lane, King William-street, E.C.—
Heatie & Farry £4,570 | N. Calnan & Co. £1,445
S. J. Scott 2,516 | A. Webb (accepted) 2,288

LONDON—Accepted for the erection of a warehouse, Stoke Newington. Mr. A. H. Atwater, architect, of London and Brighton—
David G. Laing & Son, 2, Duke-street, Adelphi £2,100

MIDDLETON (Ireland).—For the erection of dispensary and caretaker's residence, Castlemary, for the Union Guardians. Mr. Richard Evans, C.E., 53, South Mark Court—
Coffey £383 | Hegarty £300
O'Brien 350 | Scutley, Mulleton* 285
Accepted.

MIDDLESBROUGH—For the construction of roads, &c., at Asylum, Burton-road, for the Visiting Committee. Quantities by Mr. A. J. Wood, 3, Lancaster-place, W.C.—
Bastiman Bros., Middlesbrough £3,222

RETFORD—For converting buildings into two houses, for Mr. F. Bannister, Messrs. Eyre & Southall, architects, Retford and Gainsborough—
C. Hopkinson £210 | A. Richmond £26
C. Jones 275 | F. Fenton (accepted) 246

RETFORD—For building house, Victoria-road, for Mr. G. Skipworth, Messrs. Eyre & Southall, architects, Retford and Gainsborough—
C. Feuthon £680 | T. Hopkinson £123
F. Fenton 495 | J. Wilson* 410
C. Jones 455 Accepted.

RIPON—For the construction of sewers, &c. (contract No. 7), for the City Council. Mr. H. A. Johnson, engineer, 14, The Exchange, Bradford—
F. N. Simpson £1,775 12 7 | Chas. Walker & Co. £1,562 6 3
A. Bradshaw & Co. 150 Accepted.
15, Park-square, Leeds* 1,567 8 9

ROWLEY REGIS—Accepted, at a schedule of prices, for the execution of drainage works, for the Urban District Council. Mr. E. B. Martin, C.E., Church-street-chambers, Shourbridge—
John Mackay, Hereford.

SELISIDE—For the erection of new schools at Seliside, near Kendal. Mr. John Hurton, architect, Kendal. Quantities by architect:—
Building—John Thompson, Seliside
Joinery—Anthony Nelson, Old Hatton, Kendal
Plumbing, Painting and Glazing—Lawrence Airey, Kendal £500
Plastering—Steele & Co., Kendal
Siding Partitions—John Stones, Ulverston

SOUTHAMPTON—For rebuilding factory premises at Shirley, for Messrs. George Ings & Co., Limited. Mr. William Butterworth Hill, architect, Southampton—
C. Barnes £1,577 | Playfair & Toole £1,530
H. Cawte 1,567 | H. Stevens & Co.* 1,440
Jenkins & Son 1,568 Accepted.
[All of Southampton.]

STOCKPORT—For the erection of a boundary wall, Castle-yard for the Corporation. Mr. J. Atkinson, C.E., Borough Surveyor, St. J. Bridge £145 | W. C. Bradhurst & Co., D. Mullaney 127 | Stockport (accepted) £155

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STOCKPORT—For additions to Turkish baths, St. Petergate, for the Corporation. Mr. J. Atkinson, C.E., Borough Surveyor, St. Petergate, Stockport—
W. C. Bradhurst & Co. £140 | T. Ho, Hanger-street, Stockport (accepted) £109 1

STOCKPORT (East).—For building Board schools for 256 children, for the School Board. Messrs. Eyre & Southall, architects, Retford and Gainsborough. Quantities by the architects:—
J. R. Herritt £2,243 3 9 | F. Beastall £1,100 0 0
W. Colley 1,233 10 0 | J. Woods* 1,076 0 0
T. Hopkinson 1,276 0 0
* Accepted subject to Department's approval.

STANLEY (Durham).—For the execution of road works, Mary-street, &c., for the Urban District Council. Mr. J. Routledge, surveyor, Council Offices, Stanley. Quantities by the Surveyor:
Geo. T. Manners £1,576 2 10 | J. Wardlow £1,197 1 1
Wm. Johnson 1,432 7 0 | Jos. Goldborough, A. Goldborough 1,228 12 1 | Chester & Street* 1,183 8 0
Accepted.
[Surveyor's estimate, £2,432 8s. 3d.]

TADCASTER—For the supply of broken granite road metal, &c., for the Rural District Council. Mr. Thomas Scott, surveyor, Aberford, near Leeds—

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Bradley Bros.	11 1	" "
Geo. Haslam	11 1	" "
Geo. Delaney	10 6	" "
Shap Granite Company, Ltd.	10 8	" "
Sunderford & Mead	9 6	" 900
<i>Wain.</i>		
Chas. Horsley	10 3	" 502
G. F. J. Botchisse	10 11	" 2,520
<i>Slag.</i>		
Geo. Hodsman	7 3	" 1,000
Leeds Steel Company, Ltd.	5 9	" "
John Green & Co.	7 5	" "
<i>Limestone.</i>		
John Green & Co., Ltd.	7 1	" 3,000
Skipton Rock Company, Ltd.	6 8	" 2,000
Total		14,500

TO CORRESPONDENTS.
J. A. W., C. C. H. (Amounts should have been stated).—G. G. (Below our link).
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VOL LXXII. NO. 2893.

MARCH 13 1897.

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Cardiff Architecture:—		
Part of Cardiff Castle		Single-Page Tone-Block.
The Exchange. Mr. E. Seward, F.R.I.B.A., Architect		Single-Page Tone-Block.
St. James's Church, Newport-road. Mr. Bruce Vaughan, Architect; The Town Hall, the late Sir Horace Jones, Architect; Municipal Buildings, Messrs. Seward & Thomas, Architects; Police Court, Messrs. Seward & Thomas, Architects		Double Page Ink-Photo.
Messrs. Cory's Offices, Bute Docks. Mr. E. H. Bruton, F.R.I.B.A., Architect		Single-Page Ink-Photo.
The New Synagogue. Mr. Delissa Joseph, F.R.I.B.A., Architect		Single-Page Ink-Photo.
Aberdare Hall. Mr. H. W. Wills, A.R.I.B.A., Architect		Single-Page Photo-Litho.
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The Architecture of Our Large Provincial Towns.

V.—CARDIFF.



OMEBODY who was not very well posted in his subject once termed Cardiff "a Welsh Chicago," meaning thereby that within a very few years it had sprung from nothingness, and was, in fact, a great town without a past. This certainly is not the case, for there can be no doubt that the gravelly plain lying between the rivers Taff and Rhymney has been occupied by man for at least eighteen centuries, probably much longer.

The Romans had a castrum, or permanent camp, on this plateau (in which a hypocaust, with coins of Trajan, was found). The fortress was quadrangular, defended on three sides by a foss and vallum, and covered on the fourth by the river Taff. The bank or vallum was cased in stone on the outside much in the same fashion as the city wall at Silchester. Such was the beginning of "Cardiff Castle," an edifice whose existence has been interwoven with the history of England. The Marquis of Bute excavated a portion of the Roman work on the Eastern side of the castrum, and there may be seen a rubble wall of from 12 to 15 ft. in height, cased at the bottom with squared stone, which looks as fresh as though it had been built the other day.

When the Romans quitted this fortress the Britons, who took their place, must have lead a stormy life in their bootless endeavour to repel predatory hordes of Irish Gaels, Scandinavians, and Saxons. Some one, we know not whom, seems to have broken down the Roman wall during this period, and so let the soil of the bank slip down and cover the base of the wall, which remained hidden until it was revealed by the recent excavations.

During their tenure of Cardiff the Welsh chieftains, as was their wont, carried on an intestine war. We hear that Cardiff was restored by Morgan, Prince of Glamorgan, some time in the tenth century, but destroyed again. Then a strong fortification was erected by Jestyn, the last native ruler of Glamorgan. Robert Fitz Hamon, Jestyn's conqueror (1090) made this place the *caput* of his barony.

We may feel pretty certain that from the outgoing of the Roman to the incoming of the Norman no building operations of importance were undertaken; the Welshman was not a mason.

Robert Consul, the bastard of King Henry I., married Mabel, daughter and heiress to Fitz Hamon. The Norman portions of Cardiff Castle have always been ascribed to him. We may pretty safely look on the White Tower as his creation.

Nearly ten acres are enclosed by the old Roman bank. In the north-west corner is a mound more than 30 ft. high, with a diameter of 60 yards. On the summit Robert Consul erected his donjon, a polygon of twelve equal sides, 80 ft. in diameter, with pebble walls. In a building attached to this keep, but long since destroyed, Robert Curthose, eldest son of the Conqueror, is said to have been blinded and imprisoned for twenty-eight years. Robert Consul is also believed to have built the mediæval curtain on the summit of the Roman bank, unaware that the original wall still remained buried in the soil. Lord Bute has built upon the Roman wall, leaving open recesses at intervals to show the rubble backing (where the facing is gone), until he reached the level of the foundation of the mediæval curtain on the summit of the bank; as the Norman work is some 10 ft. behind the Roman work, Lord Bute is making a covered way to connect them, and underpinning the Norman wall, so that when the work is finished a visitor can inspect the Roman work from the bottom, or walking on the top of the covered way examine the Norman wall.

Robert Consul's building propensities were no doubt stimulated by the capture of his wife, his son, and himself by Ivor ab Cadivor, who unexpectedly raided Cardiff, stormed the castle, carrying off the Earl and his family prisoners, only releasing them on condition that the Glamorganshire Welsh were allowed unmolested enjoyment of their ancient privileges. This occurred in 1158.

After Consul's time the De Clares became seized of Cardiff Castle, and during their ownership the Black Tower was erected. As it has been excessively restored, it is rather difficult to say whether the architecture is Early English or Decorated.

When Gilbert de Clare fell at Bannockburn, 1314, King Edward II. bestowed the Castle on his favourite, Despenser. After his death it fell to the Beauchamp family, and Richard, Earl of Warwick, is said to have built the tower on the south-western side of "The Lodgings," or habitable portion of the Castle, 1425. There is no doubt it resembles (though on a smaller scale) Guy's Tower at Warwick. To the Beauchamps succeeded the Herberts, Earls of Pembroke, who owned the Castle for many generations. They demolished a great deal of their predecessor's work, and substituted late Perpendicular and Elizabethan for the earlier forms, but the ancients were fully avenged, for the Stuart family have pulled down every stone of the Herbert buildings and erected a modern mansion in place of the mediæval "Lodgings." Within the grounds of Cardiff Castle stood a convent of Grey Friars, founded by Gilbert de Clare, 1280, which was a cell to Bristol, and a convent of Black Friars, founded by Richard de Clare in 1250. The Marquis of Bute has carefully traced out the foundations of these religious houses.

The modern portion of the castle, which constitutes by far the greater part of it, is really the most important architectural work in Cardiff, and is too well known to need any special description here, but a word as to the impression it produces from the present day point of view may not be amiss. It was Burges's pet work; no more con-



Part of Cardiff Castle.

genial task could have been set him than that of erecting a mediæval castle which should be as mediæval as it was possible to make it, and he and most other people who were interested in architecture believed that he was doing a splendid thing. The mediæval revival has gone the way of all revivals; and how does the work look now? Well, if Lord Bute does not regret the money sunk in a dwelling which is only a curiosity, we do not see that any one else need regret it. It is a very interesting and picturesque curiosity. The long lofty blank rampart facing the high road, with only a row of hanging doors in it for reconnoitring foes from, and with nothing behind it but a covered gallery, is an absurdity from a practical point of view, but it is at all events something out of the

common; on the west face, towards the gardens, the square low-roofed towers, looking as if they came out of Viollet-le-Duc, and the bold lead flèche in the centre, make a charming group to see from your hotel window in the morning; it is a sham, in a sense, no doubt, but after all it is a more interesting object, architecturally, than half the large mansions in the country, and certainly its absence would make a great difference in one's impression of Cardiff; standing close on the town, and only a few yards from one of the main roads, it gives a touch of architectural poetry which the neighbourhood does not otherwise supply. Internally it must be confessed, the castle is *passé* altogether; with its narrow corridors and stairs, its doors scarcely more than two feet wide, and its small rooms, it seems a place that no

man of wealth would live in except for a joke. The details of workmanship, however, in doors, windows, &c., are admirable, and are still worthy of study; and it is odd that an architect who could be so practical in small things should have been so unpractical in the design of the principal staircase from the entrance door, where the stairs, very wide from side to side and much too steep in rake, are formed of polished granite steps with very narrow treads and sharp angles, and are positively dangerous, and on this account remain to this day unfinished, the client having recognised that his architect had made a serious mistake in this point at all events. In an artistic sense perhaps the very best things in connexion with the building are the figures of animals on the exterior boundary wall, modelled by Mr.



County of Gloucester Bank, St. Mary-street. (Mr. Pickwell.)



County of Gloucester Bank, Mount Stuart-square. (Mr. Pickwell.)

icholls, and which are remarkable for truthfulness and vigour of execution.

Cardiff itself is a town of very straggling and irregular plan, on a very flat site, and may be said to consist of two portions, Cardiff proper and the Bute Docks. Of the Bute Docks, which, though commercially an outshoot of Cardiff, are quite away from the town, we have given a special account some time since.* The principal buildings are concentrated about High-street and St. Mary-street, which are in a line running nearly north and south, and Westgate-street, which runs north-west at an acute angle with them. St. Mary-street is a fine wide street, and the vista up this and High-street, with the trees and turrets of the castle seen at the top, is a good piece of city scenery. South of the town are the Bute Docks; westward of this the wide and rapid stream of the Taff flows into the harbour, and westward of this again is the modern artisan suburb of Grange-town, reached by crossing the Clarence Bridge, a fine iron bridge on massive stone piers, the centre portion a swing bridge, the two end portions fixed girders; the design of Mr. Harpur, the Borough Engineer. Grange-town, to which we need not return, is built on land which has almost the appearance of being reclaimed marsh land, a good deal of which is still unbuilt on, the roads being raised on it in the form of dykes. The development of the best residential portion of Cardiff has been on the east side, contrary to the almost invariable rule by which towns develop their best neighbourhoods westward; and Newport-road, running out eastwards, with the squares and streets abutting on it, is the upper class neighbourhood, though it has lately been superseded to some extent by the more recently formed suburb of Penarth, a good

way south of the town and on high land overlooking the Bristol Channel and the entrance to the harbour, and connected with the town by a good railway service. Between Penarth and the town is a good deal of open and very low land, in part of which there is some talk of forming a new dock, for which the site is perhaps better suited than for any other purpose.

As Cardiff is a town distinctly in a state of progression, it is not surprising to find in it a good many waste, unfinished, or dilapidated quarters, though these latter are but in a small proportion to the whole area. Generally speaking, it is a clean-looking town, and the fact that stone is cheap and plentiful leads to the extensive employment of this material even in the long streets of small houses in various quarters, so that these houses, monotonous in their long rows of bow-windows, have not the mean appearance that we find in places where brick or cement is mainly used for the humbler class of dwellings. One of the saddest-looking quarters of the town is in the series of small streets abutting on Wood-street, near the Great Western Railway Station, dingy dilapidated cemented houses on either side of dirty streets where the scavenger seems to be unknown; a quarter of the town which urgently calls for rebuilding. One unusual feature is found in the narrow canal which traverses the Castle Gardens and re-appears here and there at the side of a street, running in front of the small houses in Pembroke-terrace, with a grass bank and a row of small trees parallel with it; it is a pleasant surprise to find that this straight artificial water is no stagnant canal, but a swiftly running stream,*

* This canal is fed from the Taff, and makes in fact an artificially-formed branch of it. It is said to follow the line of part of the ancient town moat.

a delightful incident in the middle of a town. In any future improvements or laying out of new streets in this portion of the town, something more ought to be made of this canal, in a more prominent manner; it is not every town that has the good fortune to have such a source of effect at its disposal in the very centre of the houses.

Turning to separate buildings the most important is the Free Library and Museum by Mr. Edwin Seward, which unfortunately stands in rather a back situation near St. Mary-street, flanked only by narrow streets on each side, though the south end fronts on an open space, The Hayes, a kind of minor open-air market with some very dilapidated property on each side of it, where it is to be hoped some new buildings worthy of the situation will be put up presently. The building itself we illustrated at the time of its opening last year,* and therefore do not repeat any illustration of it here; but we may say that it looks much better than the photographs sent to us gave any idea of. The first portion was built some little time since; in adding the more recent portion the whole scheme was aggrandised, and the problem was to give it a rather more stately appearance while conforming the new portion to the design of the other. This has been very successfully done by concentrating the new treatment on the south front facing the open space; at this point alone a columnar order on a large scale has been introduced, giving dignity to this front, but we wish that the window plane on the lower story had been kept back to that of the upper story, giving more depth to the pilasters; the whole would have gained considerably in power of effect. There is some pretty sculpture and carved ornament on the building, and the whole architectural treatment is moreover decidedly

* See Builder of June 27, 1896.

* Builder, December 9, 1893.



Cardiff County Club. (Mr. E. W. M. Corbett.)



"Western Mail" Offices, St. Mary-street, Cardiff. (Messrs. Jones, Richards, & Budgen.)

original and unusual. There is one peculiarity in it which we meet with so often that it seems almost a characteristic of modern Cardiff architecture, viz.: the employment of massive stone transoms binding the two sides of the windows together. It is characteristic generally of Mr. Seward's buildings, which are numerous; and he seems to have impressed his style on the town somewhat as Mr. Waterhouse impressed his on Manchester a good many years ago. It is carried a little too far in some portions of the building, giving the idea of cabinet work on large scale rather than masonry design, but in other cases it serves to give a very solid appearance and expression, though perhaps at the cost of some little interference with light. This cannot be said of the library and reading-rooms, however, which are admirably lighted, fitted, and arranged in every respect.

In High-street and St. Mary-street, which are practically one street, the majority of the noticeable buildings are on the west side. The first to notice in descending the street is Lloyd's Bank by Mr. Chatwin (of Birmingham), of which a sketch is given (p. 241), a Classic front in good taste, though with no very marked character about it; as we may also say of the National Provincial Bank lower down, an Italian front of very agreeable proportions but deficient in originality. The present Post Office building next to it (and grouping rather well with it) is a building in the severe Classic manner, with large rusticated pilasters running through two stories, and rusticated angle columns to the ground-floor windows; simple as it is, this is a more effective kind of building for its purpose than the florid but weak and showy structures which the Post Office is now erecting in so many provincial towns, including Cardiff itself. The Town Hall, of which we give a lithograph, is an old-fashioned piece of Classic architecture designed by Sir Horace Jones; it looks a great deal older than the days of the late respected London City Architect, having apparently suffered a good

deal from weather, but we are assured that it was his design. As will be seen, it is a front not without character in an academical way, and it boasts internally of a well-treated staircase. The entrance to the more recent Municipal Buildings, by Messrs. Seward & Thomas, is in a courtyard between the old Town Hall and the Post-office; the main portion of the Municipal Buildings, as shown in our lithograph, is only seen from Westgate-street, and, as will be gathered, they are so inadequate in every sense (were so from the first, indeed) that the erection of new Municipal Buildings at an early date is inevitable.

The London and Provincial Bank, by Mr. Blessley, is a building of Classic type with some interesting detail, the flank elevation being the best; it shows very strongly marked that Cardiffian tendency to run massive transoms across the windows, to which we have already referred. Mr. Waterhouse's Prudential Assurance next door is one of the smaller offices of the company, a narrow slip of red terra-cotta building with a polished granite basement up to the springing of the ground floor arches, where the terra-cotta is simply set on the granite with no division but the joint.

Lower down the street the small front of the Gloucester Banking Company, by Mr. Pickwell, is one of the best things in the town; there is a good deal of picturesque originality in its treatment of Classic details with Gothic feeling, and the decorative work is good and refined. The "Royal Hotel," by Messrs. Jones, Richards, & Budgen, is in what may be called the usual hotel style, though it is much better than the "Queen's" (the other large hotel in the street), and the south front, with its ground floor arched entrance and the semicircular oriel rising above, is not ineffective; moreover there is less of mere florid show about the building than is usual in hotel architecture. The same architects designed, lower down the street, the offices of the *Western Mail*, of which we give a small sketch; there is a

certain boldness about the effect of the lofty and massive piers going up to a great height on each side, polished granite in the basement and hammer-dressed above, and there is some good metal work in the name-plates. Unfortunately it is a good deal spoiled by the obtrusion of buff brick in the top story; a material which in other instances has been rather an enemy to Cardiff architecture. The large block called the Imperial Offices, partly occupied by the Royal Insurance Company, is a rather imposing piece of "business architecture"; the two end cupolas, with the phoenixes with outstretched wings on the parapet, are effective; the elevation is of course spoiled to some extent by the shop-windows on the ground story, and the coupled granite columns between them do not seem quite to belong to the rest of the design. Mr. Seward is the architect. At the lower angle of the street the Great Western Hotel offers a touching reminiscence of the early days of the Gothic revival.

On the east side of St. Mary-street the buildings are mostly of a more ordinary type. Mr. Seward has a pretty little front of a small hotel, with half-timber work above and white glazed brick below, and higher up the new front of the Central Arcade, by the same architect, is in progress (see lithograph illustration). This is a more important point in the local architecture than might be supposed, as one of the peculiarities of Cardiff is the number of its covered shop arcades, many of them of great length, and the fronts to these are among the architectural features of the streets. In Working-street, a small street not far off, is another arcade front by Mr. Seward, in which half-timber work is employed in bringing a little picturesque effect into a secondary street.

The Bute Docks are reached by the long, dreary, and mean street called Bute-street, in the course of which a dip in the road is made to get under the railway-bridge. This diving of the road under the various branches of railway is one of the incidents of tram-



Unitarian Church, West Grove. (Mr. E. H. Bruton.)



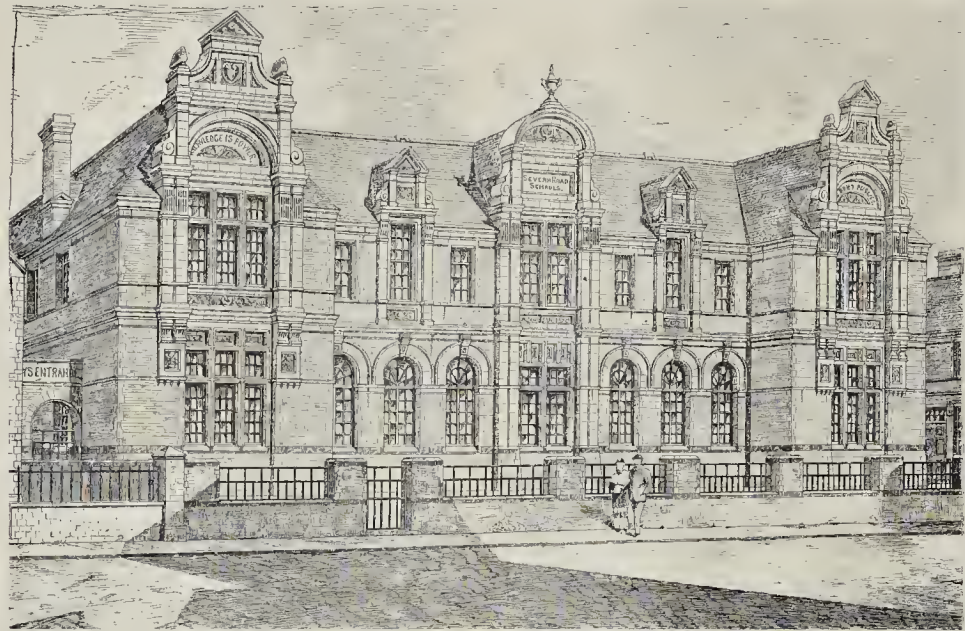
Lloyds Bank. (Mr. Chatwin.)

travelling in Cardiff, where the railway seems to have fixed its levels and the streets have had to make a dip under the bridges, fitting the headway so close that every-thing on the seats of the tram-cars, on the fronts of the bridges, on the wall at each side of each bridge, one reads in large letters the order "Keep your seats while passing under the railway-bridge;" and in fact the limit of head-room is so small that a tall man with a tall hat would have little chance of passing under them with his head-ear at all events uninjured; but tall hats are not apparently much worn in Cardiff, and at all events the inhabitants seem used to the diversion. In connexion with the Bute Docks are to be found two or three of the most important modern buildings in Cardiff. A little before reaching the docks we pass the large block of Messrs. Cory's offices, of which we give a lithograph illustration. The building, designed by Mr. Bruton, shows a large Classic front in stone, of very free treatment, with an order of columns on each side of the centre, with lofty carved bases of Venetian type. There is a certain picturesque character in this front, which has however the defect which we notice in sundry others of the more important buildings in Cardiff, of a want of homogeneous character, of a leading idea in the design; in particular the bay windows on the first floor, between the columns, have little relation in style to the rest of the front, and have besides the defect of looking too much like wooden construction petrified. Facing the harbour—a very good though

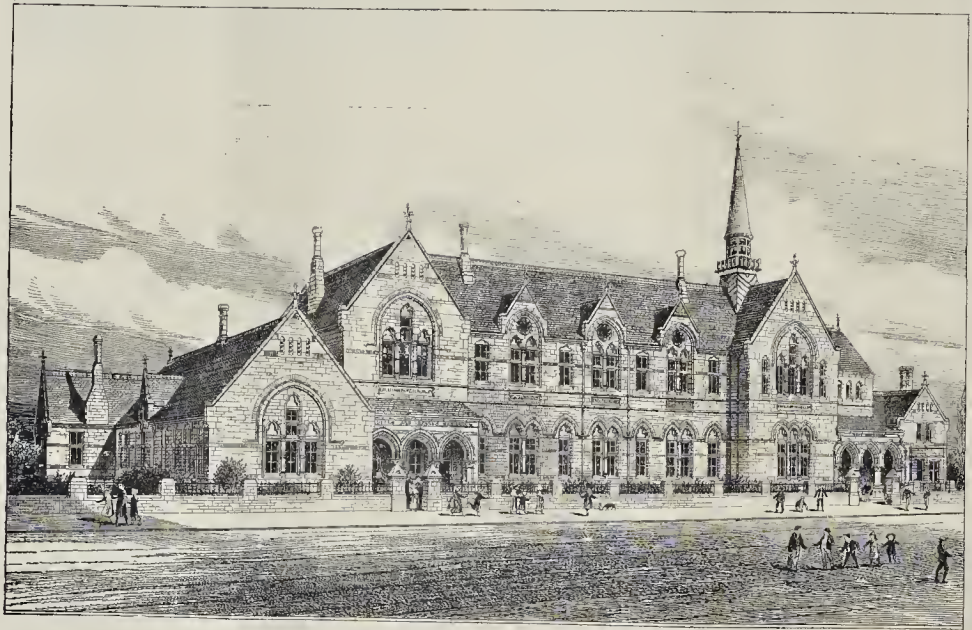
not very large natural harbour formed by an inlet from the Bristol Channel, are the new pier-head offices, a large block of brick and terra-cotta buildings designed by Mr. Corbett, and let out in offices to various companies or firms. In the front towards Bute-street the ground story is built of stone in a series of elliptical arches forming large office or shop windows. The opposite side faces towards the large "basin" which forms one portion of the Bute Docks system. Towards the harbour and towards the basin the offices are diversified in outline by three large gables with picturesque curved and stepped outlines in a rather Dutch manner; and as the basin is ordinarily kept with the water only a foot or two below the quay level, the appearance of this building as seen across the expanse of water, looking from the east side of the basin, reminds one still more of a bit of some Dutch town, and has a very picturesque effect; if the detail were better it would be a very satisfactory group for its position; unfortunately in that respect it is somewhat commonplace, and it is injured especially by the number of very large and prominent base terminals on the parapet and at the bases of the gables, which are too large for the situation and injure the scale of the building. Above this some ordinary office buildings of no special architectural type are reflected in the waters of the basin, beyond them is seen a rather characteristic building in brick and random stone facing, with buttresses at the sides, which has all the appearance of a chapel, but turns out to be the Seamen's

Mission, the principal part of the height of which is occupied by a large hall used as a news-room and smoking-room by the sea-faring population of the place. The ecclesiastical aspect of the structure however is justified by the fact that the upper storey is actually a small church, divided into three aisles by wooden story posts rising to the slope of the roof. The building is of an exceedingly simple Gothic design, the main portion being brick, but it is unpretending and suitable to its purpose. Unfortunately the attempts at stained glass in the church portion are very bad.

On the east side of the "basin" entry is one of the most important new buildings in Cardiff, the new Bute Docks Offices by Mr. W. Frame, the harbour front of which is still nearly hidden in scaffolding. This is a red brick and terra-cotta building with a good deal of individuality of style; the harbour front has an important looking entrance doorway with a tower rising above it finished with battlements and a short timber spire or conical roof; at the sides the building has a semi-ecclesiastical appearance, showing a series of buttresses semi-octagon on plan, with ogee finials at the top and large mullioned windows between them; above this the ecclesiastical appearance is confirmed by the addition of an apparent clearstory (really no doubt lights to upper rooms) of coupled lancet windows grouped under segmental arches. On the west side a small subordinate tower, oblong on plan, forms an effective feature; the building as a whole is picturesque, refined and original, and will



Board Schools, Severn road. (Messrs. Jones, Richards, & Budgen.)



Board Schools, Grange Town. (Mr. Bruce Vaughan.)

form an important addition to the harbour architecture.

The general effect of the docks and shipping is striking and picturesque owing to the system which seems to prevail here of keeping the water level of the docks very high, the water being for the most part only about eighteen inches below the quay level, so

that the whole hull of the ship towers above the spectator on shore, with a rather imposing effect. Generally speaking, ships in dock have the appearance of being in a hole. The real object of this high water-level has no doubt been that of economy in construction—saving a certain amount of excavating and lining in making the docks; we should

doubt if it was so convenient for general working; but it certainly has the advantage in picturesque effect, both in regard to the water and shipping.

The Exchange is in the Docks region, in Mount Stuart-square, west of Bute-street, and forms on one side a front with return wings partly enclosing the square. Mr.

Seward is the architect, and the building, of part of which we give a lithograph, is in somewhat similar style to the Library and Museum, though not equal to it; what it wants is a more decisive grouping in subordination to a leading *motif*; the design is somewhat scattered and broken. The side of the square facing the Exchange is very mean, and it is to be hoped will be rebuilt before long. At one angle, however, is the other County of Gloucester Bank, not so good as the one in St. Mary-street by the same architect, but a pleasing building, also however wanting in cohesion of style; the upper story (of buff brick again) does not seem to belong to the lower, the three Classic-looking windows on the flank have no relation to the rest of the design.

Returning to the centre of the town, we go up Westgate-street, branching off from the foot of St. Mary-street, and find on the west side the new Post-office in course of completion, a surprisingly large building for the size of the town (but Cardiff is we believe rather a postal centre), in the showy commonplace phase of Renaissance architecture which has been adopted for the new post-offices generally, and adorned with second-rate sculpture. The seated figures on each side of the central *fronton*, which cannot be seen from a point further off than the other side of the street, are consequently completely distorted by foreshortening. On the same side is Cardiff County Club, a fine-looking red brick house of spacious proportion, of which we give a sketch (p. 240) supplied by the architect (Mr. Corbett) and next to it the rather piquant little Gothic front (or end) of the tennis-court, designed we believe by Mr. Pritchard. The Grand Hotel, higher up the street (not so large a house as its name would imply), by the late G. B. Jones, has a certain style about it, and is perhaps the best piece of hotel architecture in the town. At the corner, in an admirable situation overlooking Cardiff Arms Park on one side and the Castle Gardens on the other, is the large Angel Hotel, for the plain and severe brick exterior of which we believe Mr. Frame is responsible. Hotels are generally far too florid in their architecture; the "Angel" has certainly escaped this fault, but a little more might have been made of a building enjoying such an exceptional situation. It is a pity that the ugly and characterless brick warehouses, too, lower down Westgate-street, were ever allowed to be erected in what is apparently intended to develop into a high-class street.

The few other secular buildings calling for notice are in scattered positions. Westward, on the road leading to Canton Park, we find Mr. Seward's very pleasing Union Workhouse building, which in one sense hardly fulfils its end, for it has such an attractive expression of home-like repose as to suggest that to "end one's days in the workhouse" were desirable rather than the contrary. To make the workhouse unattractive is, we fear, the better though the harsher moral. Like the road to Canton, the road northward to the still more attractive-sounding name of "Cathay" is nearly barren of anything but small houses, with the exception of a rather picturesque Board School not far from the cemetery, which leads us to remark that the size and architectural variety of the Board Schools is another characteristic of Cardiff; they are not built



The Infirmary: End View. (Mr. Edwin Seward.)



Wesleyan Chapel, Charles-street. (Messrs. Jones, Richards, & Budgen.)

by an official architect on one model, but vary very much in style and appearance; we give views of two of them, from drawings lent by the respective architects. The Cardiff cemetery is out in the Cathay direction, where the best thing one notices is neither the chapel nor the monuments, but the large sections of drain pipe set on end with a notice that they are receptacles for paper, waste flowers, &c. The North Road properly so called, running past the east boundary of the Castle grounds, brings us at a corner to Aberdare Hall (see lithograph), by Mr. Wills, of Swansea, an educational establishment of which only one half is now built, but which when completed will be, as the illustration shows, a very pleasing and picturesque building, sufficiently combining the domestic and the college character. It is built of red Bracknell brick with Ruabon terra-cotta dressings. The principal street eastward from High-street, Queen-street, brings us to Park-place, skirting Cathay's Park on one side, and containing on the other side some good houses of a superior class; in this road also the South Wales Institute of Engineers have built unto themselves a satisfactory-looking home in somewhat the same kind of red-brick architecture as Aberdare Hall. Newport-

road, which runs approximately in a line eastward from Queen's-road, and constitutes the principal suburban road, brings us to what is perhaps the best of Mr. Seward's buildings, the Infirmary, a building in a domestic Gothic style which has a character of its own; the small central tower is very graceful in design, and the treatment of the projecting wings, each with a semi-octagonal bay at each side, forms a very pretty and unusual piece of architectural grouping. We regret that we have only a photograph of the end view available, which hardly does justice to the building. Nearly opposite is the best modern church in Cardiff, Mr. Bruce Vaughan's St. James the Great, of which an illustration will be found on one of the lithograph plates. This is a fine solid church with little ornament, the tower and spire forming a fine pyramidal composition; the side of the church shows a clearstory with a single lancet window in each bay, under a wall arch abutting against the buttresses, the aisle windows have geometrical tracery, the north-west porch is effectively treated with a half-timber gable and sculptured angels in the spandrels of the arch. The only point for question is that the wide buttresses of the aisles show the only wide surfaces of ashlar masonry in the design, and hardly appear to belong to the rest; but in the main this is a fine and satisfactory church. In Howard-gardens, not far off, we have the Higher Grade Schools, a rather dull-looking building in buff brick with stone dressings and decorative features, and the School Board Offices, which are not equal to the occasion, and produce the effect (whether correctly or not) of having been two ordinary semi-detached houses with some new windows and other features added to the centre portion.

The parish church of St. John's, near High-street, is a late church with a tower strongly resembling that of St. Stephen's, Bristol, with the same over-sailing angle buttress ornaments projected from the pinnacles; it looks as if it were the work of the same hand. There is not much of interest in the church internally; the Bute Chapel includes a good piece of Renaissance carving, and the modern reredos shows some good sculpture rather too much overshadowed by the arcade overhanging it. The church is undergoing repair and a large new south aisle has been added, Mr. Fowler, we believe, being the architect. The Unitarian church by Mr. Bruton has some originality of character. We give a small illustration of this, as well as of the Wesleyan chapel in Charles-street, by Messrs. Jones, Richards, & Budgen. In the same street is a rather grim-looking Gothic R.C. church by Mr. Pugin, built in a very dark-tinted stone with red terra-cotta dressings, a combination which has a very heavy appearance, and the tracery on the other hand is rather too thin and light for the character of the rest of the building, which however is not one to be passed by without attention. With the exception of St. James the Great, however, church architecture is not so far very well represented in Cardiff.

We look, however, to see a great deal more done before long in the architectural development and advancement of Cardiff. It is obviously a town which is in a state of movement, and there is every probability that a large piece of ground on the west

side of Park-place, part of Castle Gardens, and at present partially occupied by the buildings for last year's exhibition, will before long be available for some important new public buildings, and that we shall see there a Town Hall and Municipal Buildings erected worthy of the growing scale and enterprise of the town, which is now practically the capital of Wales, though not yet, we believe, formally promoted to that position. In an architectural sense the site, which has already been much discussed, is a splendid one for a large group of public buildings, the only defect is that it is not quite near enough to the business centre of the town to seem quite appropriate for the Municipal head quarters. On this point we might offer a suggestion. The old post-office, which will soon be no longer wanted, the old Town Hall, the court between these two buildings, and the space occupied by the present Municipal buildings and the court-yard abutting on Westgate-street, form altogether a pretty large area, and might, if the municipal business could be temporarily accommodated elsewhere, be a sufficient site for a Town Hall which would then occupy the rightful place of a Town Hall, in the main street. The site might perhaps not be thought quite large enough—we have no plan of it to scale, but the idea may be worth considering. On whichever site the new Town Hall is ultimately built, we have little doubt that an effort will be made to render it a really worthy addition to Cardiff architecture.

The suburb of Penarth, to which allusion has been made, contains some good dwelling houses, a church by Messrs. Seddon & Carter, and an interesting little institution known as the Turner Gallery, a private gallery built by a wealthy resident (the late Mr. Pyke Thompson, who died only a few days ago) at the entrance of his grounds, mainly with the object of providing a small Art Museum for the public on Sundays and holidays, the Cardiff Corporation having refused to open the town Museum on Sunday. The small building, designed by Mr. Seward, is decorated externally with some sgraffito figures, and internally contains a most interesting collection of water-colours, etchings, &c., all by good names, and well worth a visit.

One little compliment we may pay to the Municipal authorities in conclusion. We have complained in more than one town of the bad and inefficient naming of the streets. In Cardiff there is no such complaint to be made; the names of streets are systematically and legibly posted up everywhere. This is a small detail in itself, but it is significant. Where one finds obvious small duties of that kind properly attended to by local authorities, one is led to credit them with paying the same attention to the more important matters of municipal regulation.*

NOTES.

The Society for the Protection of Ancient Buildings has now been endeavouring to interfere with the Dean and Chapter of Exeter Cathedral in regard to some repairs that are being carried out on the west front and has been told that the cathedral authorities "do not wish to be brought into relation with them"; a snub which the Secretary immediately communicates to the

* The next of this series of articles on the architecture of Northampton will appear in our issue of April 24.

Times, according to the practice which the Society has of always giving publicity every rebuff it receives. We presume the theory of this is that the S.P.A.B. is a sacred body that any affront offered to must necessarily redound to the discredit of the affronters. The case of Exeter is quite different from that of Peterborough, as it is not a case of structural failure but only of superficial decay; and if the Society had not made itself so obnoxious and absurd in regard to the necessary proceeding at Peterborough, it might have got a standpoint for giving some useful advice at Exeter. It is the totally unreasoning attitude of the S.P.A.B. that stands in its way, and prevents it being listened to on occasions when it might do some good. What is really being done at Exeter is this: the west front is, at its core, the old Norman wall, and the fourteenth century facing of Beer stone is in some places only 3 in. thick and is in such a state that in many places it goes to powder between the fingers. Thus the tracery of some of the windows, and minor details of the arcading, are shredding away; and as far as the tracery is concerned repair is absolutely necessary, unless the windows are to be allowed to fall to pieces. The decayed portions are being renewed externally in Douling stone, doweled into the interior face. It is also proposed to renew the work in the arcade on the north side of the front, and the embattled cornice of the screen. Whether it is necessary or desirable to renew decayed portions which are on a solid wall is a very doubtful matter, on which however we should not like to express a decided opinion without a detailed inspection of the work. This is a point on which the S.P.A.B. might have given useful advice and might have been listened to, but for their unreasonable conduct in other cases. They have made themselves impossible, in fact, and it is entirely their own fault.

WE may congratulate Messrs. Messrs. Harston and the St. Pancras Case. Harston, the architects concerned for the St. Pancras

Guardians, in being exonerated from blame in regard to their treatment of the contractors, a result which was only what we expected. Messrs. Harston are architects possessed of rather exceptional practical knowledge and ability, coupled with a determination to have their work properly carried out in every detail; and architects of that stamp are frequently unpopular with contractors. That their clerk of works was a very exasperating kind of man to work under appears pretty evident, but it does not appear that the architects supported him in an unreasoning or unreasonable manner. At the same time it seems possible that Messrs. Harston, in their aspirations after perfection of materials and workmanship, have occasionally, no doubt with the best intentions, demanded more than, in this imperfect world, they were likely to obtain. The letter from the head of a large brickmaking firm, which we print in another column, seems to point to this conclusion. Our correspondent speaks with the highest respect of Messrs. Harston, but says that his firm have refused for some time back to supply any bricks for their buildings, and he gives the reasons for this. There must evidently be a pretty strong feeling as to the difficulty of satisfying

Messrs. Harston, to induce a large and enterprising firm to refuse business with them.

Excavations at Athens.
 AFTER long delay, owing to the difficulty of buying land in this thickly-populated part of the city, Dr. Dörpfeld has resumed his excavations near the "Theseion." Another house in the Poseidon-street has been bought and pulled down, and beneath it the south wall of the building he conjectures to be the Stoa Basileios has been laid bare. This building is now seen to consist of a hall nearly square in shape, nine metres in breadth. Its cast side has a portico, and from the dowel marks in the stylobate of this portico it is clear that it had six columns. The plan is obviously such as we are accustomed to associate with a small temple, but against this view and in favour of the Stoa Basileios identification are two main arguments. First, the square-shaped hall has in its north wall a small door, a thing unprecedented so far in a Greek temple, and secondly, though this argument is, of course, less strong, topographical considerations are against it. Dr. Dörpfeld himself still clings to the view that the building is the Stoa. The masonry points to the end of the sixth or beginning of the fifth century, and for this date the size of the building is adequate for the official seat of the Archon Basileus. Further there is a basis set against the back wall that would serve well as the foundation of the altar, which must have stood in the Stoa. South of the building a broad stairway leads up to the "Theseion." We hope some more decisive evidence may come to light, as the identification is of great topographical importance.

A Russian Cathedral Competition.
 At St. Petersburg an international competition is being held for a design of a new cathedral at Kronstadt. On the Board of Assessors the Royal Academy, the Official Technical Commission, and the leading architectural and engineering societies are represented, as also the clergy. The competition is instituted by the Government. The cost of the proposed building is limited to 700,000 roubles, and the premiums are 5,000, 2,500, 1,500, and 1,000 roubles respectively. The conditions are very fully drawn up, and specify the materials to be used, the space to be allotted to each pew, the method of heating and ventilating, the difficulties to be contended with in the foundations, &c. There is also a general instruction as to the grouping of the building, the number of bells that are to be placed in the tower, &c. We, however, fail to understand, if the competition is to partake of an international character and the Board of Assessors is so carefully chosen, why there should be no representative from other countries on this body. It is the common mistake in international competitions arranged abroad, and tends to make architects doubtful as to the sincerity of the promoters and their intention to do impartial justice to all competitors. Considering that the competition is an international one, it might be expected that the jury of assessors should also have included at least one or two foreign representatives. This is a frequent weakness in regard to "international" competitions abroad—the jury are all "national"; hence foreign competitors are put at a great disadvantage.

The Institute Prize Subjects.
 THE subjects proposed for the next Soane medallion and the next Essay prize are such as ought to attract a great many competitors from their unusual suggestiveness and interest. The Soane medallion is to be given for the best design for a concert-hall to seat 3,000 persons, with a small chamber concert hall for 300. The Essay is to be a "Review of English Architecture of the Nineteenth Century." Both subjects are of unusual interest; it may be added, perhaps, of unusual difficulty.

German and Russian Technical Colleges.
 THE *Deutsche Bau-zeitung* calls attention to the great increase in the number of students visiting the Technical Colleges throughout Germany. There are at present no less than 10,128 students attending classes, of whom 7,727 are fully matriculated. Ten years ago there was not a third of this number, and five years ago the total was 4,900. The number of visitors from other countries working at German institutions has also been on the increase, particularly the number of Russian students. We find, too, that Russia is following the example set by the German Government in affording a liberal and high-class technical education at a small outlay, the training here referred to being distinct from what is known as "technical education" in this country, for the latter is not given at the Royal Technical Colleges, but in the "Gewerbe-Schulen" and minor "Bau-Schulen." At Kieff the Russian Governor-General has started a movement for erecting a college on the German system, and subscriptions are invited to the extent of a million roubles, more than half of which was at once subscribed by the Municipality, the Exchange, and the neighbouring landowners.

Machinery on the Hire and Purchase System.
 A CASE of much practical interest, though involving somewhat technical legal doctrines, will be found in the decision of the Court of Appeal in *Hobson v. Gorringe*, which was recently reported in the official Law Reports. It has been settled by a long series of judicial decisions that, if machinery is affixed by bolts and nuts to the ground or to brickwork, it becomes part of the freehold, and so if the land is mortgaged it passes with it to the mortgagee. In the present instance a gas-engine to work a sawmill was affixed by bolts and screws to the ground so as to prevent it from rocking. Here, of course, was an instance of machinery, which, being fastened to the freehold, passed with it under a mortgage. But it was contended that there were special circumstances in this case which made it an exception to the general principle. These were that this machine was let out on the hire and purchase system and under one of the usual agreements by which, if the hirer failed to pay the instalments, the lender was entitled to retake possession of the engine. Therefore, it was argued, this machine was excluded from the security which passed to the mortgagee. The Court of Appeal, however, decided that though, as between the lender and the hirer, the former could take back the engine, yet he could not do so as against a mortgagee. In law the engine became a fixture subject to a right in the lender to retake it, but this right was only a personal one acting between the hirer and

the lender, and did not—as the phrase is—run with the land so as to bind a purchaser or mortgagee. This decision, it is obvious, has important consequences for those who hire out machinery, since in many instances heavy machinery must be firmly affixed to the ground in order to work it, while at the same time if it is so fixed the security of the lender or hirer out has gone in case of a mortgage of the freehold, if the freeholder gets into difficulties so as to cause the mortgagee to foreclose and realise his security.

Workmen's Dwellings.
 THE Marquis of Londonderry has again introduced into the House of Lords a Bill to enable Local Authorities to advance money to working men to enable them to buy the freehold or leasehold of their dwellings. The Bill was read a second time on Tuesday last. It will doubtless pass through the Lords, but unless it is made a Government measure in the Commons it is not likely to become law during the present session. We have often expressed our opinion in regard to similar measures. It is impossible to see why the artisan more than the clerk should receive assistance from public funds, and it has been over and over again pointed out that innumerable building societies are doing the work which under this Bill would be done by Local Authorities. If the advance of public funds is properly safeguarded there can be little harm in the proposed legislation, which is, however, very experimental, and very doubtful in principle.

Improved Stage Appliances at Drury Lane.
 SOME years have elapsed since we referred to the installation of improved appliances for the working of our larger stages. Our last remarks were in connection with the Vienna Theatrical Exhibition of 1893. Drury Lane Theatre has now led the way with an installation worked by hydraulic power, and used nightly for transformation purposes in the pantomime "Aladdin." There have been varied minor attempts on earlier occasions by Messrs. Brown, of Edinburgh, and again by Messrs. Clark, Bunnet, & Co., of London, in the Lyric Theatre. In the first instance the theatre in which the appliances were installed unfortunately came to grief, whilst in the Lyric Theatre but little use seems to be made of them. If we are rightly informed, it had frequently been the intention of the late Sir Augustus Harris to improve the appliances of Drury Lane, but their actual installation was postponed owing to the great outlay and the time required for so considerable a change. The appliances which are now in use can only be considered part of the extensive system he finally decided upon installing in sections, but though there is much that requires modification in these new appliances, they should be welcomed as marking material progress in the arrangements of our stage. The installation in this instance comprises two large "bridges" worked by hydraulic rams, and allowing for a see-saw movement. With their assistance it is possible to raise very large weights and to change scenery rapidly. They are at present used for raising a bevy of stage angels in the final scene.

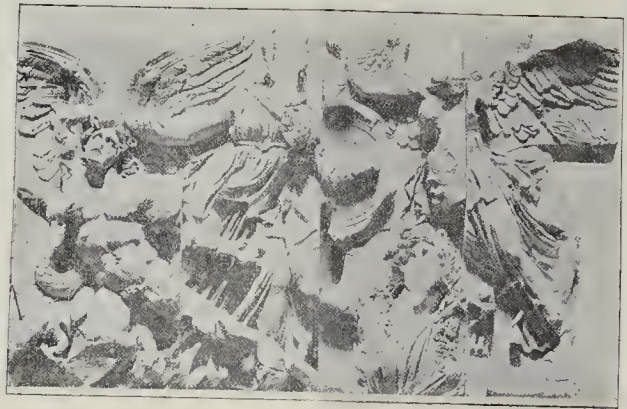
Society of Painter Etchers.
 THE Society has perhaps had better exhibitions than the one of this season, though there are a good many things well worth attention.

The proportion of works which are not true line etchings seems to be decreasing. On the other hand there is a kind of defiant roughness and coarseness of line in some of the works, as in those of Mr. Legros and in Mr. Holroyd's "Storm Cloud" (84), which we do not regard as in the best artistic spirit of etching. Over-refinement in etching is a fault, as losing freedom and character and making it like engraving; gratuitous coarseness of execution is no less a fault of the opposite kind. Other artists exaggerate the contrasts of light and dark, and scrawl over the plate the most portentous skies, as in Mr. Goff's "Destruction of the Old Chain Pier, Brighton" (4), which suggests rather the Destruction of Sodom and Gomorrah, or some equally tremendous incident. Among the best works are M. Hellen's beautiful dry-point portraits and figure-studies; Mr. Goff's etchings (except the one mentioned); Mr. Robertson's "At the Foot of the Cliffs" (32); Mr. Haig's "Cathedral of Palencia" (as an architectural drawing—it is not in the true style of etching); Mr. Nichols's "Looking West" (209); some of Mr. Siocombe's dry-point figure-studies; Mr. R. Bryden's sketches in Spain; and some (but not all) of Mr. Strang's powerful but rather grotesque illustrations to the "Ancient Mariner."

THE result of a competition instituted by the *Magazine of Art*—the subject being a poster

for the *Quiver Magazine*—is an exhibition of picture posters now being held at the hall of the Stationers' Company at Stationers' Hall-court, Ludgate-hill. Upwards of 200 designs were sent in, and are mostly, if not all of them, hung round the walls of the hall, and on screens. Among a great many designs that are obviously unsuitable, both in colour and in want of decorative treatment, there are many excellent examples of an art that has advanced much within the last few years. Three prizes were awarded, the first being to a design signed "Sagittarius," a large quiver of arrows, supported on either side by a female figure. The design is clever in arrangement, but seems to lack breadth as seen from a distance, and if placed at any height above the eye the lettering would hardly tell sufficiently. In this respect the design submitted by "Thide" is, we think, preferable, and deserves a more prominent place than that assigned to it in a somewhat dark corner. Others worth noting are signed "Pandora," "Chancery" — with some well designed figures—"Hearts," "Daffodil," "Kipper," and "Mars." We suppose that the decision to exhibit everything sent in accounts for many being included that are obviously not serious attempts to deal with the subject—we noticed a few that might with advantage have been excluded. The judges were Messrs. John Sparkes, Edwin Bale, R.I., and M. H. Spielmann.

We are asked to make it clear to our readers that this exhibition is only to be open for one week, from the 20th to the 27th inst. inclusive. In our Note last week we referred to its "first week of existence" under the impression that, as before, it would be open for a fortnight at least, but it appears this is not to be the case this year. It is, we presume, supposed that more interest will be shown in visiting it if the time is shortened;



Athene Group from the Pergamon Frieze.

but if such an exhibition is really a good one, we should have said that a week was too short a period. However, the result may show that the management were in the right. We may add that on Saturday, the 27th, Sir Arthur Arnold will distribute the prizes to craftsmen.

THE ARCHITECTURAL ASSOCIATION. GREEK SCULPTURE AND GREEK LEGEND.

An ordinary fortnightly meeting of this Association was held in the Meeting-room of the Royal Institute of British Architects on the 5th instant, Mr. W. H. Seth-Smith, Vice-President in the chair.

The minutes of the last meeting having been read and confirmed, the following gentlemen were elected members of the Association, viz., Messrs. H. W. Currey, S. Holderness, and A. Williamson. Mr. J. G. Sankey, it was also announced, had been reinstated a member.

Mr. H. Howley Sim, junior hon. sec., proposed a vote of thanks to Mr. Owen Fleming for conducting members over the London County Council Working Class Dwellings, Boundary-street, on the occasion of the Spring Visit on the 20th ultimo.

Dr. F. S. Granger then read the following paper on "Greek Sculpture and Greek Legend":—

When I was asked to read a paper before this Association I purposely chose a title of some vagueness, in order that freedom of selection might be left me. Let me begin, then, by marking off beforehand the precise subject of the remarks which, with your indulgence, I am about to offer. The sculpture is that of the Acropolis of Athens; the legend is that of Athena, the divine protector of the Athenians; and both legend and sculpture are so intimately connected with the architecture of the Acropolis that I trust you, as architects, will not regard the time wasted which we shall devote to them.

The Greek temple as a whole—taking the building along with its ornaments—has never been surpassed for excellence of design, perhaps has never been equalled. This does not prevent us from agreeing that, as architecture only—building apart from sculpture—some of the cathedrals and abbeys of the thirteenth century are nobler works than even the Parthenon. But if you take the two together—architecture and sculpture—you must assign the palm to Greece. Interesting and beautiful as medieval sculpture often is, it falls short of the knowledge and technical skill of Greek sculpture. No one can seriously maintain that medieval sculpture, at any rate on this side of the Alps, is comparable to Greek work of the first or even of the second order. And this consideration will affect our estimate of Greek art as a whole. The excellence of the Parthenon, for instance, rests upon a certain balance of subordinate excellences. It is a perfection depending upon harmony. I shall try to show how various the elements were that entered into this harmony; how architecture, sculpture, both applied to a building and standing free, and colour decoration, united together

to express certain religious beliefs, and to answer certain religious ends.

We need not be surprised, therefore, that the work of Stuart and Revett should have led, at the end of last century, to a revival of Greek architecture, and that Vitruvius and Palladio had to yield to the architects of the temples upon the Acropolis. This revival, however, suffered from the defects of most revivals. The architecture of Greek temples was applied to purposes for which it was unadapted. Moreover, the spirit of the style was misunderstood in a most important particular. Colour decoration was left almost out of account. Greek buildings, on the other hand, showed a brilliant scheme of colour in which the white marble surfaces contrasted with the gold, and blue, and vermilion of the sculpture and the mouldings. Hanover Chapel, therefore, of which Mr. Paul Waterhouse has given an interesting account in the "Journal" of the Institute, was not a building in a truly Greek style. Architects have tried to convince themselves that certain rules of proportion are enough to ensure impressiveness of design. But the public takes little interest in the geometrical recipes of which we have heard so much, and here for once the public instinct is correct.

Greek architecture in England has suffered still more seriously from being used without the sculpture, for which the pediments and friezes offer the frame. Reference is sometimes made to the fact that the entrance to the Athenian Acropolis, the Propylæa, had no sculpture in its pediments. There is reason to believe, however, that the original plan included the sculpture. Greek architecture stands, then, in the most intimate relation with the allied arts, and some of its apparent defects arise from the necessities imposed upon it by this relation. A building in the Greek manner, without plastic ornament and without colour, falls as far short of the true spirit of the style as the pale shadows of the Greek after-world over against breathing men and women.

The very fitness of Greek architecture, therefore, for its special purposes, led to its being found unsuitable, under the changed conditions of English life. It furnished very obvious handles for attack to those who admired the medieval styles, and much was said about its imperfections. After these two stages, first of indiscriminate imitation, and then of equally indiscriminate rejection, there is come the third stage, that of the temper that judges, the critical stage. We are ceasing now to take sides, and are trying to understand. There is a very large public—I speak comparatively—which is interested in the development of ancient Greek art, and the studies of several generations of archaeologists are converging upon fairly certain results. I am attempting this evening to focus some of these results upon a familiar field of architectural study, in order that it may appear in its true light. I should be glad to think that we carried away a somewhat clearer idea of the actual achievement of Ictinus and his fellow architects. We owe to Mr. Penrose a more correct idea of the exact structure of the Parthenon. There remain the further and secondary considerations on which I have touched.



Roman copy of the Athene Statue by Pheidias, in the Athens Museum.
(From Gardner's "Handbook of Greek Sculpture.")



The "Mourning Athene": Athens Museum.
(From Gardner's "Handbook of Greek Sculpture.")

fitting tunic, and a mantle is thrown round his shoulders. He holds the lightning in his right hand, and gesticulates with the left, while from his head Athene springs up equipped with shield and spear. Ilithyia, the goddess of childbirth, stands before Zeus, and moves her hand in a characteristic manner. Still further to the right is Ares, the war-god, armed with lance and helmet and with the Medusa shield. Behind the throne Apollo celebrates the joyful event by music on his lyre, and Hermes, the messenger of heaven, with his winged shoes, traveller's cloak, and broad-brimmed hat, is ready to carry the news to Athens.

There is no reason to doubt that the ordinary Athenian believed sincerely in these legends. So strong was their belief that the tyrant Pisistratus took advantage of it, and by a curious device secured his return from exile. He dressed up a tall woman in the attire so familiar to the city, and the people seem to have been deceived into thinking that their divine patroness was recommending them to receive back Pisistratus when he rode to Athens with the pretended Athena by his side. In the height of the glory of the city the same sincere simplicity of belief was still shown. During the building of the Parthenon a wonderful piece of fortune befel, which, says Plutarch, showed that Athene did not hold aloof, but was helping to accomplish the work. A very active and zealous workman slipped and fell from the scaffolding, and was in a condition so dangerous that he was despaired of by the physicians. Pericles was affected painfully by the accident, but was visited by Athene in a dream, and was informed of the remedy. Of this he made use, and the man was healed. In order to record the event, the great statesman erected a statue to the goddess as the giver of health, Athene Hygieia, and the pedestal of this statue, with the inscription, is still to be seen at the entrance to the Acropolis. I do not know why we should accuse Pericles of hypocrisy here; other Athenians of the most brilliant intellectual endowments were characterised by the same devout temper as that which in their descendants struck the Apostle Paul 500 years later. Athens was not only the centre of the profoundest culture; it was also one of the most religious cities in Greece. The conclusion to be drawn is a very important one. It was first and foremost through the religious emotion that the masterpieces of Phidias and his contemporaries affected the average Athenian. Only in the second place was note taken of their perfect workmanship. The rude wooden image in the Erechtheion that fell from Heaven, before which the famous lamp of Callimachus forever burned, was doubtless more revered than the great statue of the neighbouring Parthenon. The artist was not the

It has sometimes seemed to me that when we go back to antiquity, whether of the Greek world or of the Middle Ages, we ought also to carry with us the method and temper of the ancient critics. Matthew Arnold, in his essay upon the "Study of Poetry," has formulated a method which is strikingly in accordance with their precepts. He suggests that the student of poetry should carry in his memory a few fine lines of poetry and apply them as touchstones; not, indeed, because all fine poetry is alike, but because our judgment becomes more acute when it has before it the materials for a comparison. Let us apply this to the criticism of architecture. If we become thoroughly familiar with the design and detail of one or two fine examples in each kind we shall have with us a standard by which we can measure the quality of any work that may be set before us. We shall not, indeed, ask that the details of the building that we are judging shall be like those of the test example. We shall find, however, that the faults of a building of second or third-rate design will be more apparent in the presence of really good work. Such a method, it seems to me, is also the right one for those who are themselves engaged upon design. If the mind is continually refreshed by the study of fine examples, it will become better able to criticise its own work. This is the ancient method of imitation as opposed to the modern. Let us turn back for a moment to Hanover Chapel. We are referred to the temple of Athena at Priene for the details of the external order, and to the Erechtheum for the general proportions of the front. St. Pancras Church goes much further than this. The building is like a composite photograph in which half the buildings of Athens are struggling for the first place. "It is a poor temper," says an ancient critic, "that is content to follow closely that which is being imitated." Hence it may be said of most of the buildings of our Greek revival that they are not in the Greek manner. It may seem a somewhat barren conclusion to this part of my paper, but I

do not know how to express it better than by saying that the distinguishing feature of Greek art is a disinterested love of beauty. In contrast with our modern effort to be striking, or to be edifying, the Greek was content to be confined within the limits of his own art and to seek the beautiful. The pursuit of truth for its own sake, and apart from technical purposes, finds little encouragement in the present; the pursuit of the beautiful finds even less. It is the imperishable glory of the Greek mind that it devoted itself with an enthusiasm that has never been surpassed to these two great ends.

Let us now see how the Greek love of the beautiful found expression in the works of art upon the Athenian Acropolis. This oblong eminence was the centre from which the city spread and contained the sites of the greatest sanctity. It was the Mount Zion of Attica. Long before the Persian invasions, long before the building of the Parthenon and the Erechtheum in the shapes in which we know them, Athene was worshipped upon the sacred spot to the north of the Parthenon. Several legends grew up round the place. According to the belief of the Athenians, Athene had originally to contend with Poseidon, the god of the sea, for the worship of the Athenian state, and the visitors to the Acropolis could see the olive tree which Athene made to spring up as a proof of her power. Her rival Poseidon, to show his power, cleft the rock with his trident and a spring of salt water gushed forth from the place. The King of Athens, who acted as arbitrator, awarded the palm to Athene. The contest was represented in the sculptures of the western pediment of the Parthenon.

The eastern pediment of the same building portrayed the birth of the goddess. According to a quaint old legend, she was born from the head of Zeus. A black figured vase shows us how the event was imagined by the Athenians of the sixth century. Zeus is sitting upon a throne with a lion's head at the back, and a winged sphinx underneath as a support. He is robed in a tight-

master, but the minister of the religious feeling, and ran great risks if he turned aside from his appointed task. Phidias was imprisoned upon a charge of impiety because he had portrayed himself and Pericles upon the reliefs of the great shield of Athens.

As the character of the Athenian State changed, so also did the character of her goddess. When the Athenians were a people of farmers, she was thought to give rains and abundant crops. Hence, in the eastern pediment of the Parthenon she is accompanied by the Hours who bring the harvest season, and by the Sisters of the Dew. As the goddess of the sailor, she contrived the magical vessel in which the Argonauts sailed to find the golden fleece, and her temple on the promontory of Sunium brought comfort to the ships that beat round that dangerous coast. As the patroness of victory she was called Athena Nike, and in order that she might never desert her people she was represented without wings. But the goddess was more than the patroness of the farmer, the merchant, and the soldier; she was the embodiment of wisdom. It was her inspiration that guided Odysseus on his wanderings, and Heracles throughout his labours. This ideal figure which reflected so closely the interests and aspirations of the Athenian state was boldly identified with the democracy, and worship was paid to her as Athene Democratia, the personification of the people. There is a beautiful little relief in the Acropolis Museum: it represents the goddess leaning pensively upon her spear, her eyes fixed upon the memorial stele before her, which may be supposed to contain the names of deceased warriors. This charming design shows that she could sympathise as well as inspire.

We may enter now, perhaps, into the spirit with which the Athenians celebrated every year the birthday of the goddess at the great festival of the Panathenaea, July 28. This began in the early morning with a procession to the Acropolis, in order to offer a new robe, or *peplos*, to the goddess—a piece of saffron cloth embroidered elaborately with the conflict between the gods and the giants. This robe was conveyed in state along the streets to the Acropolis, and there was hung round the great statue, or perhaps before it, as a curtain. Let us take the ideal figure of Athene as a clue, and let us join, so to speak, in the procession of the citizens of Athens. We shall find that the great masterpieces of plastic art are all, as it were, set to the key of this religious ceremony; the main idea of it—the birth, the power, and the honour of Athene—being like a pervading diapason. The sculptures of the Parthenon are not exercises in which merely the skill of the artist is displayed: they are the vehicles of living religious ideas.

As we approach the Acropolis, let us suppose that the magic of fancy has restored to their former splendour the ruins of the entrance and of the temples which lie beyond. By the careful comparison of the actual remains and of the literary evidence, the archaeologists of this century have gradually restored the arrangement of the works of art upon the Acropolis, and we are enabled by their aid to substitute for the existing ruins a picture in which the buildings and the sculpture are united into an harmonious whole. The view is taken from the restoration of Thiersch. One of the most prominent objects was the colossal bronze statue of Athene the Defender, which rose to a height of 25 ft. The point of the spear was visible from a great distance, and the sailors, as they were tacking up the Saronic Gulf from Sunium, kept a look out for the moment at which the familiar landmark should appear across the low hills of the coast. This work has perished, without leaving any visible trace, except a rough representation upon certain coins.

As you pass between the columns of the Propylæa on to the rocky plateau, the eye is caught by the rich colour of the crystalline limestone rock. It is of a heavy red or maroon passing into dark purple or indigo. But in some lights the effect is changed. My first view was gained one evening as the sun was nearing the horizon, and the rays of light, which were almost level, so struck the surface of the limestone that it seemed of a light rose colour. Against this the white columns of the Parthenon stood out with great streaks of dull gold where they were stained by the weather, while, behind the rock and the white marble and the weather stains, the clear evening sky formed a background. In a well-known passage of the *Seven Lamps*, Mr. Ruskin compares to their disadvantage the Greek temples with the coloured architecture of Venice. But nothing can be more

wonderful than the strange flickering of the white marble columns as they seem to flame out against the blue. Over this brilliant foundation, coloured ornament was applied, like a delicate embroidery, to the chief architectural features. As you pace the summit of the Acropolis you can see many a marble moulding still carrying the traces of this.

Colour was applied to sculpture by the Greeks not less systematically than to their buildings. It is curious that the notion of coloured statuary should be so repugnant to the prevailing taste, and yet there is scarcely a museum of classical antiquities in which traces of colour are not to be found. We saw that, for want of colour, Mr. Cockerell's Hanover Chapel, with all its elegance, was not in sympathy with the true spirit of Greek architecture. Let us proceed to note that the modern schools of sculpture, which professedly derive from the antique, were separated from their originals by a similar interval. I do not mean to assert, of course, that such buildings and such sculpture cannot be of the first order without the use of colour, but I venture to maintain that they are parodies rather than imitations, if we view them with respect to their originals. We have no less an authority than that of Praxiteles, the sculptor of the Herms of Olympia, for saying that sculpture is benefited by the application of colour. The recent discovery of the beautiful sarcophagi at Sidon, with their beautiful colouring, has furnished us with a standard by which we may appreciate other works of art that have been less fortunate. "The colour thus applied," says Professor Gardner, "does not obscure the texture of the marble nor the delicacy of the moulding; on the contrary, it makes both more visible by giving a variety to the monotonous whiteness of the surface; it relieves the fatigue otherwise caused by the study of colourless form, and assists the eye to observe many subtleties of modelling which it might otherwise be unable to appreciate." I am quoting from the excellent handbook of Greek sculpture recently published by Macmillan. The author was, until recently, the director of the British School of Archaeology at Athens, and in that capacity has laid many English travellers at Athens under very deep obligations. I had the advantage of Mr. Gardner's company during one or two visits to the Acropolis, and I gladly avail myself of this opportunity of acknowledging my indebtedness. Mr. Gardner has succeeded to the Chair of Archaeology in University College, London. I hope my paper this evening may lead some of the members of the Architectural Association to follow the subject further, and to take advantage of Professor Gardner's courses.

I am supposing that we have now passed by the great bronze statue of Athene, and that we have the Erechtheum on our left. While the modern architect is struck by the irregular disposition of the building, and the refined delicacy of its detail, the Athenian would think of the venerable image of the goddess, of her sacred olive tree, and of the salt water spring of the sea god. The beautiful figures of the southern porch have also a sacred office; they are really representative of the young girls who carried certain sacred baskets in the triumphal procession. Does it not seem as if they, too, were about to fall in with the company, as they stand there with one foot moving forward? If the maidens of the Erechtheum seem to be moving towards us, the figures on the frieze of the Parthenon are keeping pace with us. For between the columns of the Parthenon we catch continually fresh glimpses of a band of sculpture, the marble counterpart of the procession of the Athenian people for ever travelling towards the eastern door. The example is taken from the western frieze, and represents some of the Athenian cavalry. It is specially interesting for the beauty of one of the heads. This type seems to have been imitated widely upon contemporary coinage. But we must not stray very far into the bypaths that open on either side; the procession is still moving on towards the eastern entrance. In the centre of the eastern frieze the chief person in the Athenian hierarchy, the Archon Basileus, receives from a boy the new guardian of the city. When the spectator reached the eastern end of the temple he found overhanging him the great cavernous pediment in which the more than life-size statue stood out from the background with almost oppressive reality. Surely there, on the annual festival, as the horizontal rays lit up the sculpture in the early morning, it would seem as if the mysterious birth of Athene were happening. The crude realism of the vase painting which we studied a short time since could not satisfy the

great artists who worked upon the Parthenon. Fortunately there is a relief, now in Madrid, which enables us to imagine with some likelihood what the central portion of the group must have been. We may suppose the sculptor to have dwelt rather upon the mystical significance of the old legend; the coming forth of a spirit of wisdom from the mind of the supreme god, wisdom strong in the possession of spear and helmet and buckler—with the spirit of victory reaching forth the olive crown in the sure confidence that it would be earned. It would be difficult to exaggerate the influence which this vivid presentation of their patroness exercised upon the Athenian mind; even the most foolish of the Athenian orators must have been sohered, and the most stupid have had some glimmering of intellect, when from the assemblies of the citizens in the plain below they looked up to the Acropolis and thought of all that it meant. When Constantine in his new capital dedicated his great church to the Holy Wisdom—Santa Sophia—the dedication was in striking harmony with the ideal embodied in Athene. If the influence of the goddess floated down from the Acropolis upon the city below, it found its concentrated expression in the great statue of Phidias. Of the statue itself every trace has perished, and we must seek a substitute in the copies that have survived the wreck of the classical civilisation. Of these the most useful is the little statuette found near the Varvakion Gymnasium in Athens, and named from the place of its discovery. "The statue," says Pausanias, who saw it in the second century of the Christian era, "is made of ivory and gold. In the middle of the helmet is a sphinx and on either side there are griffins. The goddess stands erect, clad in a robe which reaches to her feet. On her breast is the head of Medusa wrought in ivory. With one hand she supports a victory of about four cubits in height, and in the other she holds a spear. A shield is placed against her feet, and near the spear is a dragon. On the pedestal the birth of Pandora is represented." The little statuette is concordant enough with the description of Pausanias to make us think it to be a fairly accurate representation of the general composition of Phidias' great work. There are still remaining traces of colour, of red and blue upon the sphinx, and of red upon the eggs. But the statuette falls far short of the style of the original. Let us correct it by reference to a head found near the Acropolis. It is supposed to be copied from the work of Phidias. The eyes have been represented by a bony material inserted in the sockets, and the hollows of the pupils were once filled in with some gem or enamel. The hair was gilt as we may see from some traces, and the head was covered with a helmet. I know scarcely any other object which enables the modern hatter to realise the vivid effect of Greek sculpture; its power "to bring the living features out of marble," a power so poetically figured in the legend of Pygmalion.

With these introductions, let us enter the presence of the great statue as Fergusson, I think, has restored it. The details of the restoration are more or less open to question, and although I trust the drawing fails to do justice to our conception of the goddess, it may serve to concentrate the ideas with which we have been occupied.

Let us sum up our conclusions. We began by observing that the architectural surroundings of Greek sculpture were rendered much more vivid by the help of colour than modern architecture designed in Greek styles would lead us to expect. We noticed, further, that the use of colour in sculpture must have produced an effect somewhat unfamiliar to our modern taste. These two considerations warned us against supposing that we have really fathomed all the meaning of Greek art. We noticed, also, that the real source of the artistic unity of the works of art upon the Acropolis was to be found in certain beliefs of a religious character; beliefs which offer some striking points of resemblance to the medieval beliefs which in their turn found a similar expression in sculpture.

Let us contrast these conditions with the conditions of the present. There now in England is no general and vivid imagination of sacred personages and events to which the artist can appeal, or to which he can minister. I am not concerned to discuss whether such an imagination does or does not deserve cultivation. I am merely stating a fact which is of transcendent importance for the public interest in sculpture. Secondly and lastly, by foregoing the use of colour, the architect and

the sculptor resign the most powerful charm at their disposal. I will ask you to think of the drab stonework, and the dull sculpture of the British Museum façade, and when you have done so, to agree with me that Greek architecture and Greek sculpture have never been really revived in England.

Professor Gardner, in proposing a vote of thanks to the lecturer, said that he was expressing the opinion of the meeting, he was quite sure, in saying that the paper had proved of very great interest indeed. In a paper so full of interest it was difficult to select any one subject to speak about, but perhaps he might devote some remarks to a matter of extreme interest to all of them, and in regard to which Dr. Granger had quoted a few words from his (the speaker's) recent book—viz., as to the application of colour to sculpture and to architecture. Dr. Granger had dealt with this more than once and he agreed with every word that that gentleman had said, though he wished to emphasize more than the lecturer did the loss which had been suffered in sculpture and architecture in England from the absence of colour. Of course, they must remember that conditions in England were very different from those of Greece, and if a Parthenon were to be built in the middle of London exactly like that in Athens it would look very different from that building at the end of ten years, to say nothing of ten centuries, for the soot and dirt of London would soon obscure it. At the same time it must be remembered that the very brilliant light, the dazzling sunlight, of Athens, which many people could not face in summer, necessitated some treatment of the marble. That made a difference between the conditions in London and in Athens. But in a partially white building like those which had recently been built in Athens, if they stood in front of them on a bright, sunny day, nothing could be seen of their form: they saw a dazzling mass of white, from which they were compelled to turn away, and that suggested one of the advantages of colour. When all the details were picked out in colour, then it was possible to look at the Athenian buildings, and appreciate the exquisite surface of the pentelic marble from the contrast with the coloured surfaces around. There was one thing in common between both sculpture and architecture in the application of colour, and he thought that this would explain to some extent the prejudice which some people had against the application of colour. He believed that they were of the opinion that when a material was coloured the colour was applied to obscure an inferior substance—one "gingerbread," or something of the sort. If an opaque colour was laid over the building, that, of course, was the case. In the case of Greek temples, colour was applied in the utmost moderation, and never to a broad surface to any great extent. It was applied to smaller surfaces, and a great surface, such as an architrave, was never covered with colour. In the same way he believed, although the point was disputed, the main surface of a statue was never covered with pigment; only the details were picked out. For instance, the eyes and hair were picked out with colour, and thus enabled one to see the texture between. They were able to speak with confidence as to this, because on the Acropolis a large number of surfaces were found, and in some cases the colour was almost as fresh, apparently, as on the day when it was applied. In the case of a statue it was never the case that the whole of the garment would be painted. Colour was distinctly used simply to throw up by contrast the beauty of the tint. Any one looking at this would not feel the prejudice he had before, because he would see that the colour helped one to appreciate the texture of the marble, and by having small portions of the coloured surface to contrast it with. As to the wonderful sarcophagi at Sidon, at Constantinople, one felt the same about them, and in regard to them it could be seen what an immense amount of expression in the sculpture was owing to the colour. We had a prejudice against painting on sculpture, and we did not like to see the eye painted, but any one who had seen at Sidon these sarcophagi, and the condition of the paintings, would have his prejudice to a great extent removed. The texture of the marble was not at all obscured; one felt that the figures were living in a way in which no white marble could be said to be living. They could say in the words of Æschylus: "In the blankness of the eye all the charm is lost." He, the speaker, felt that very strongly, and he thought it was one of the reasons why sculpture did not appeal to them, for a judicious application of colour was not applied to it. The same remarks applied to Classical

architecture. To erect a Classical building, and to make it purely white, without the addition of colour, was to do a thing which no Greek would have dreamt of doing. They were parodying the Greeks when they left out the colour, which was used in order to make comprehensible the form they gave to their architecture as well as to their sculpture, and a great deal, in short, was lost by the absence of colour. The Greeks also were not averse to using colour on inferior materials as well. They built temples of marble, but also of coarse stone, covered with stucco, coloured freely. The effect was not exactly the same; the colour was not used to throw up by contrast the exquisite effect of the material, but rather to cover it up. He could not help thinking that stucco, used as it was in many of the Greek temples, not left in a dead white, but painted judiciously, and the details picked out in bright brilliant colours (for the Greeks did not use half-tints, but principally red and blue), seemed to be more living, just as the same Classical forms would be more living if we could use the colour decoration which was given by the artist. In conclusion, he desired to say that if any of his hearers who had not time to come to a regular course of lectures at University College would care to call and see his library and apparatus, or to speak about any matter in connexion with Greek art, he would be very glad to see him.

The Chairman asked Professor Gardner why the Greeks used pure colour, rather than secondary colour?

Professor Gardner replied that the question was a very difficult one. He thought himself that it was probably due to the extremely brilliant lighting in Greece. He did not think that any half-tint would gain its effect in the extraordinary brilliantly lighted atmosphere of Greece. It seemed to him that to contrast the white marble and the brilliant blue sky, nothing but the brilliant blue and red seemed to be satisfactory. He was not sure whether the same theory would apply in a Classical building in England. He had seen similar attempts in colour in Athens, where there had been imitations of ancient work carried out by Munich architects, where more half-tints had been used, a duller red and blue, for instance, and he had felt that the duller colours were very unsatisfactory in that brilliant light. Another reason was, perhaps, that the simplicity of the forms required more simple colours; at any rate, the brilliant colours were far more satisfactory.

Mr. Grey Skipwith said that granting that colour was to be used in architecture, and considering the difference between the climates of Athens and London, he should like to hear some expression of opinion from architects as to what modification in colour should be made in London architecture. Coming to London after a long absence, he was very much struck with the gloom and fog and dirt of London. What could architects do under the circumstances? Could they not use some material like glazed tiles or bricks? Or, taking the façade of the British Museum, which really showed under varying lights most wonderful effects, what could architects do with that building by applying colour? Might not the façade be improved by gilding the sculpture and colouring the field of the pediment, by inlaying the frieze of the order with mosaic, or veneering it with polished granite? He did think that the problem had not been properly faced. Even ordinary brick buildings in London might be made to present a warmer surface if the material available were more suitably used. He thought that the Germans as well as ourselves were somewhat deficient in the sense of colour as well as in the knowledge of how to use it. He supposed that no more difficult problem could be found, with the exception perhaps of Sheffield, than how to apply colour to architecture in London.

Mr. G. H. Fellowes-Pryne, in seconding the vote of thanks, said the paper brought before them a new line of thought as regards one of the details of beautiful Grecian art. One of the remarks which appealed to him very strongly was that the sculptures of the Parthenon were not exercises in which merely the skill of the artist was displayed; they were the vehicles of living religious ideals, and that was the kernel, he thought, of the fineness and beauty of Grecian art. It was the religious feeling which they threw into their work; and in Medieval work, although the sculpture work was inferior, yet the same feeling was to be found, for there it existed in a way it had not yet been brought back amongst us. In our sculpture we had been deplorably deficient. He thought the whole motive power of the Greeks consisted in the great religious feeling which they threw into everything they did. [Wherever that

feeling was, there was the motive power, which made the artist work for the great end he had in view. As to Phidias, the praise bestowed on the beauty of his work was quite a secondary consideration; it was something higher than that—viz., the high purpose for which the work was intended. Another thing we might learn was that the artificer and the architect must be more in touch with the work—that the craftsman and architect must feel that the work was not merely carried out for the sake of money and self-glorification. A nobler spirit was at the bottom of the success of the ancient workers. Then as to colour, one of the greatest difficulties in treating sculpture in the present day was to know how far to apply colour. Professor Gardner said that it was never applied to flesh, but to the drapery, the eyes, and the hair. And perhaps that was the best way to treat it, though he thought we had a right sometimes to carry colour a little farther. But the difficulty was to know where to stop, though in London we did not go far enough. As regards materials for use in London, that was a great difficulty. The right material was mosaic, but its use was prohibited by its cost. Most of the glazed brickwork in the market was very unsatisfactory. If a suitable material could be invented, architects would not be slow to avail themselves of it.

Mr. Banister F. Fletcher, in supporting the vote of thanks, said that Dr. Granger had put before them in a few words the whole system which governed the Greeks in the production of some of their finest monuments. The appearance of the Parthenon had most impressed him by moonlight, when the building looked most effective. In regard to Dr. Granger's remarks on architectural criticism, the lecturer had struck out a very proper line, which must appeal to every architect who studied the history of his art, or the notions which evidently guided its production; and he emphasised the importance of studying one building properly and thoroughly from beginning to end rather than gaining a smattering of the styles from several buildings. There was no doubt that any one who had measured up a building from beginning to end would find that the most satisfactory way of working. In regard to the question of studying historical architecture for our own information in regard to modern design, it seemed to him that the study of ancient architecture was really worse than useless, unless they studied it, not as a matter of forms, but as a matter of principles. If they did that, they would not have revivals at all. It was because archaeologists had studied the forms which past civilisation had produced, and had thought they were very beautiful without thinking whether they were bound up with the social conditions of the people who produced them, that revivals had taken place. The question of applying colour to sculpture was not likely to call for much consideration in England, and he did not think that there was much necessity for its application. As Professor Gardner observed, colour on a Greek building was almost necessary if blindness was to be prevented. The Academy at Athens, a modern building, built by a German architect, was of the same marble as the Parthenon, and on a bright day, even in January, the building could scarcely be looked at; and if it were not coloured it would be impossible to do so. But in that respect there was no doubt that the restorations of the Parthenon by the students of the École des Beaux Arts, who went to Rome, were much too laboured: they did not merely colour the metopes, but everything else, and there was no marble left to be seen; whereas the principles which Mr. Penrose had enunciated, of colouring some decorated parts of the building, seemed to be more appropriate. As to the colouring of sculpture in England, one could not help thinking that in the majority of cases it had been a drawback. If they took the coloured architecture of the Gothic period, it never seemed to go well with the sculpture, one reason for which was that with the coarse stone that was used the colour was not effectual, and in internal work it should not be used. But as to external work there was no doubt that with suitable material colour might be employed. But, so far, no one had produced a material which in London could withstand the atmosphere, and the only way to keep a colour was to paint it every year, and that was expensive. There was one material, however, which was used a little, viz., glazed faience, but architects did not seem to care much about it. As to the sarcophagi from Sidon—in the Constantinople Museum, he believed—they were the most wonderful examples of Grecian carving that it was

possible to imagine. Dr. Granger's remarks as to the religion of the Greeks were extremely valuable, and should help them to look at Grecian sculpture from the rational point of view. In regard to the Greek temple, its *raison d'être* seemed to be that it was not only a building for worship, but the museum, the library, &c., and that people went to it, not only for purposes of religion, but in order to enjoy and make use of the museum, &c. In reference to Mr. Prynne's remarks in reference to architects and craftsmen, he did not agree with him. The building of the Parthenon was largely effected by the employment of slaves, and they could not, he thought, have taken much interest in the architecture. As to the question of religion, and the ideal that Dr. Granger touched upon, he remembered reading a book by the late J. A. Symonds on the Italian Renaissance, in which there was a remarkable passage referring to the fact that sculpture and painting, as they were used in the best periods, were practically dead, and that music, the art which the people understood something about, was the art which was going to govern the modern world. There was a great deal in that, especially when one considered that the public generally, while they did not care very much for art, were very sensibly affected by music.

The Chairman, in putting the vote of thanks, said the references to colour were particularly interesting and valuable, and Professor Gardner's remarks on that head would be appreciated by all. The general drift of the paper was not to encourage them to imitate Greek architecture again in England, but to work on much broader principles, and it pointed out that to attempt to import into such a climate as ours a style of architecture indigenous to a sunny country like Greece, was a total mistake. Viewed in that light they would all heartily sympathise with Dr. Granger's remarks. They felt that it was perfectly impossible for them to conform to the condition which the lecturer had laid down, viz., that if Greek architecture was to be imported, it must be imported with its sculpture and its colour. It was clear that it was impossible to do that. First of all there was the difficulty that the sun, the creator of colour, was practically absent from us, and much of that beauty of colour which was seen in the East was the result not only of local colour but of reflected colours, which in such intense sunlight must be seen in the shadow. All that made it quite impossible to produce the same effect in London, even if they put the colour on; and they had better abandon the hope of doing so. The question then arose, if they were to abandon Greek art, which they all admitted was the ideal of refinement, what were they then to do? He thought the only common sense view was to work out our own indigenous styles, and to trust to form rather than colour. Inigo Jones did not realise this at all; he was a classical architect, entirely carried away by his studies in Rome, whereas Wren, who had true genius, seized the idea that variety of outline was all-important, and, although he was actuated by the architectural feelings of his time, he produced most satisfactory results entirely suited to our climate and conditions. He was glad that was the direction in which the architects of the present day were trending, and in this connexion he might mention the New Scotland Yard, which he thought was one of the most perfect examples of what an English public building should be of that type. In that building was to be found the most beautiful sky line, with true classical reserve, and the main lines of the structure appealing to us from whatever point of view we looked at it. Other examples were to be found in the Birmingham Law Courts, and Sheffield Municipal Buildings. The religious inspiration of the Greek work was an extremely interesting question. We had no religious inspiration which could lead us to do work of that kind nor to concentrate our national efforts upon great monuments. As far as our ecclesiastical architecture went we had to recognise that we had to look to variety instead of unity, and we must hope, in seeking to carry out the same principles on which the Greeks worked, the love of beauty and of truth, to try in our individual efforts to produce a large variety of good work where we, as a people, could not get a grand result. As to architectural sculpture, the only really good work which seemed to be done now was carried out in our town halls and public buildings, in regard to which we had municipal inspiration. We had great faith in our municipal institutions, and he looked forward to the time when in every town of England there would be a public building in which the history of the town would be illustrated

in sculpture. That was one end to which legend could inspire them in sculpture, and, as architects, they would rejoice in designing the setting for that sculpture. Of course, there were great ideas which ought to sway us as well as did religious ideas: the gigantic progress of science and the almost miraculous development of scientific research, and that of our national institutions, such as our Navy.

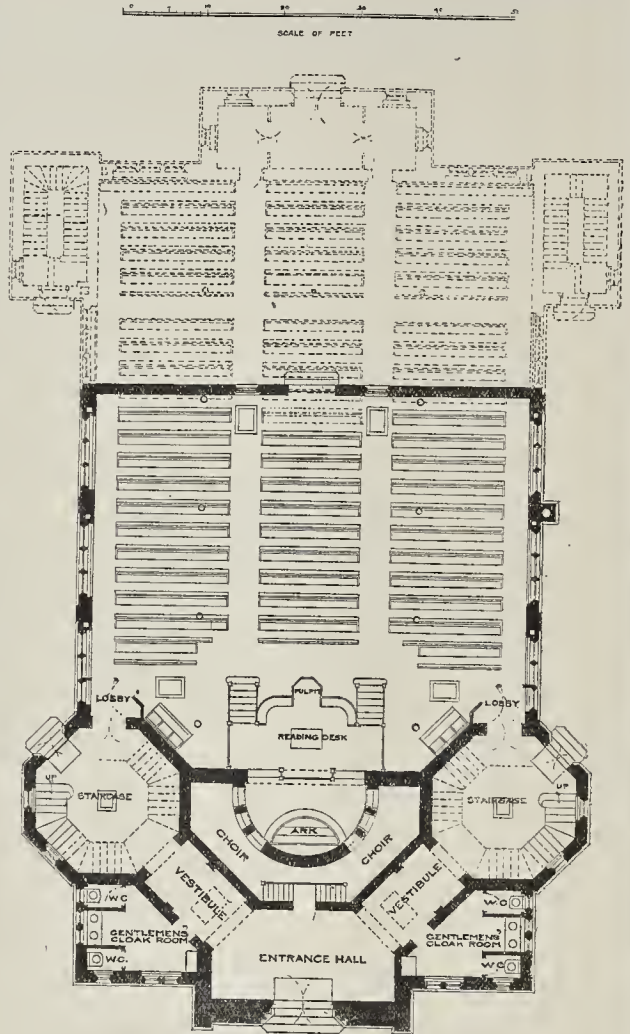
The vote of thanks was then put and carried unanimously.

Dr. Granger, in the course of a brief reply, expressed his thanks to the gentleman who had worked the lantern on that occasion. He no longer spoke as a practising architect, and he, therefore, could not satisfy the desire for more colour in London; we had made our atmosphere and we must sleep under it.

The Chairman announced that the next meeting would be held on the 19th inst., when Mr. J. A. Goch would read a paper entitled "Eighteenth Century Architecture."

The meeting then terminated.

RENOVATION OF ST. MARK'S CHURCH, SOUTH SHIELDS.—After undergoing repairs and renovation, St. Mark's Church, South Shields, was reopened recently. The alterations and improvements have been carried out under the superintendence of Mr. J. H. Morton, architect.



New Synagogue, Cardiff. Plan.

Illustrations.

ARCHITECTURE OF CARDIFF.

THE illustrations in the lithograph plates of this week all represent examples of modern architecture in Cardiff, and are referred to in the leading article in the present issue. Two of these, however, being entirely new buildings just in course of erection, viz., the Central Arcade and the new Synagogue, we append the usual more detailed description, which we generally give to an illustration of a new building.

CENTRAL ARCADE, CARDIFF: ST. MARY-STREET ENTRANCE.

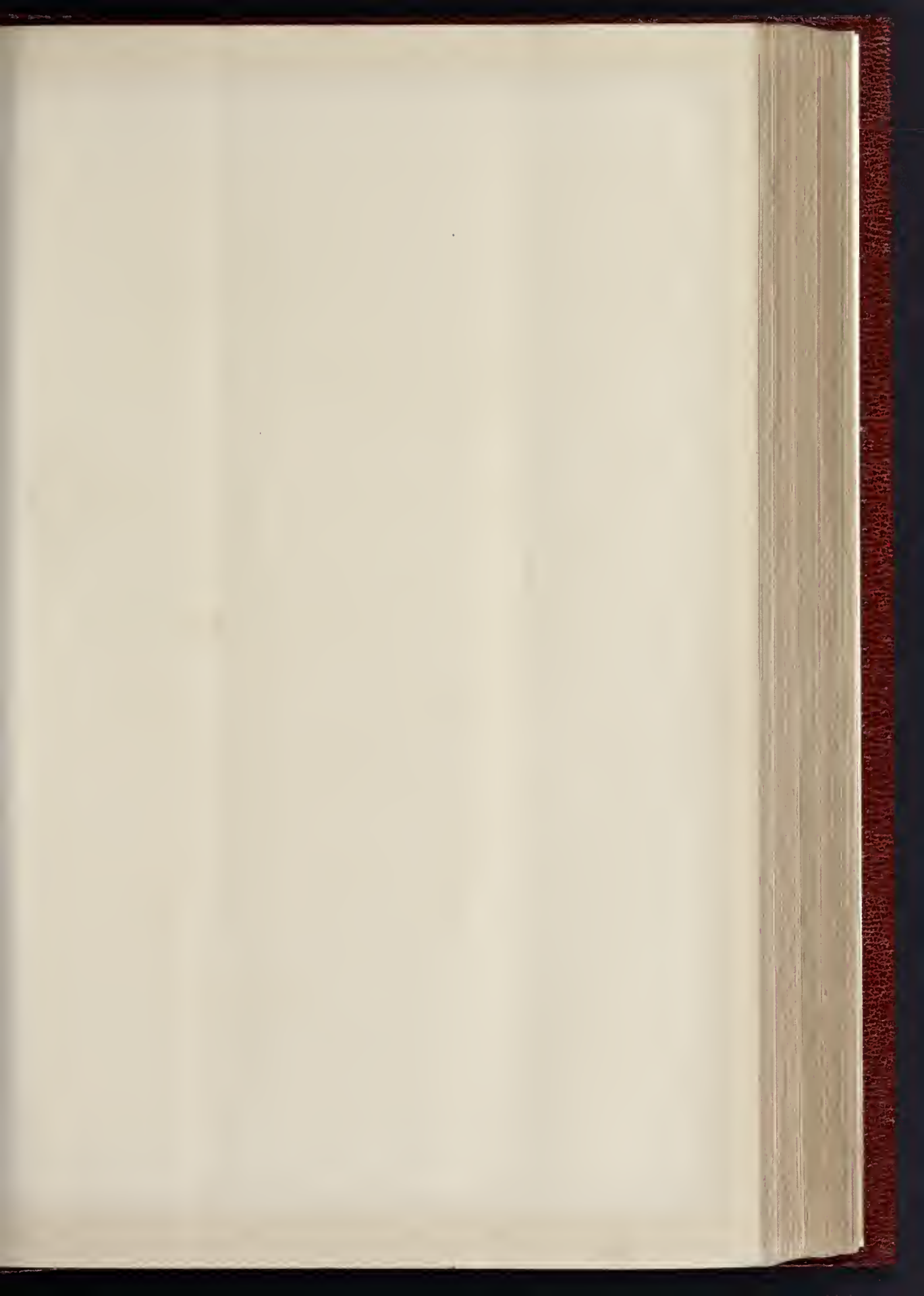
These buildings, now approaching completion, will form another connexion between St. Mary-street and the Hayes, and are all arranged for shops of two stories and basement, with the exception of the entrance block shown, which is to be utilised as offices. The St. Mary-street front illustrated is principally in blue and red. The central gable and spandrels over arches are in Guiting stone of an orange tint, the banded work to upper story being in Blue Forest and Guiting stone alternately. The strapwork panels are of



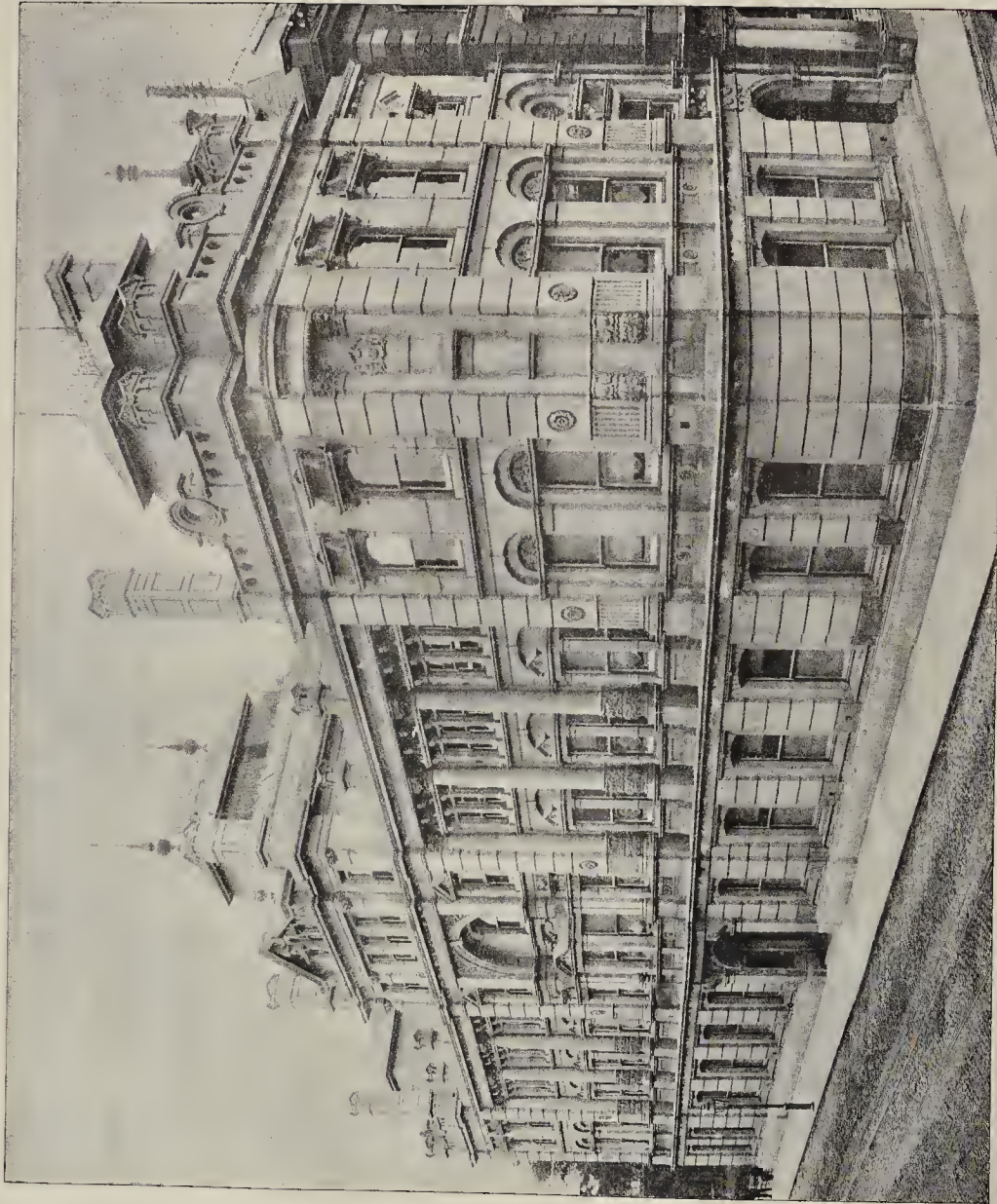
THE BUILDER. MARCH 13. 1897



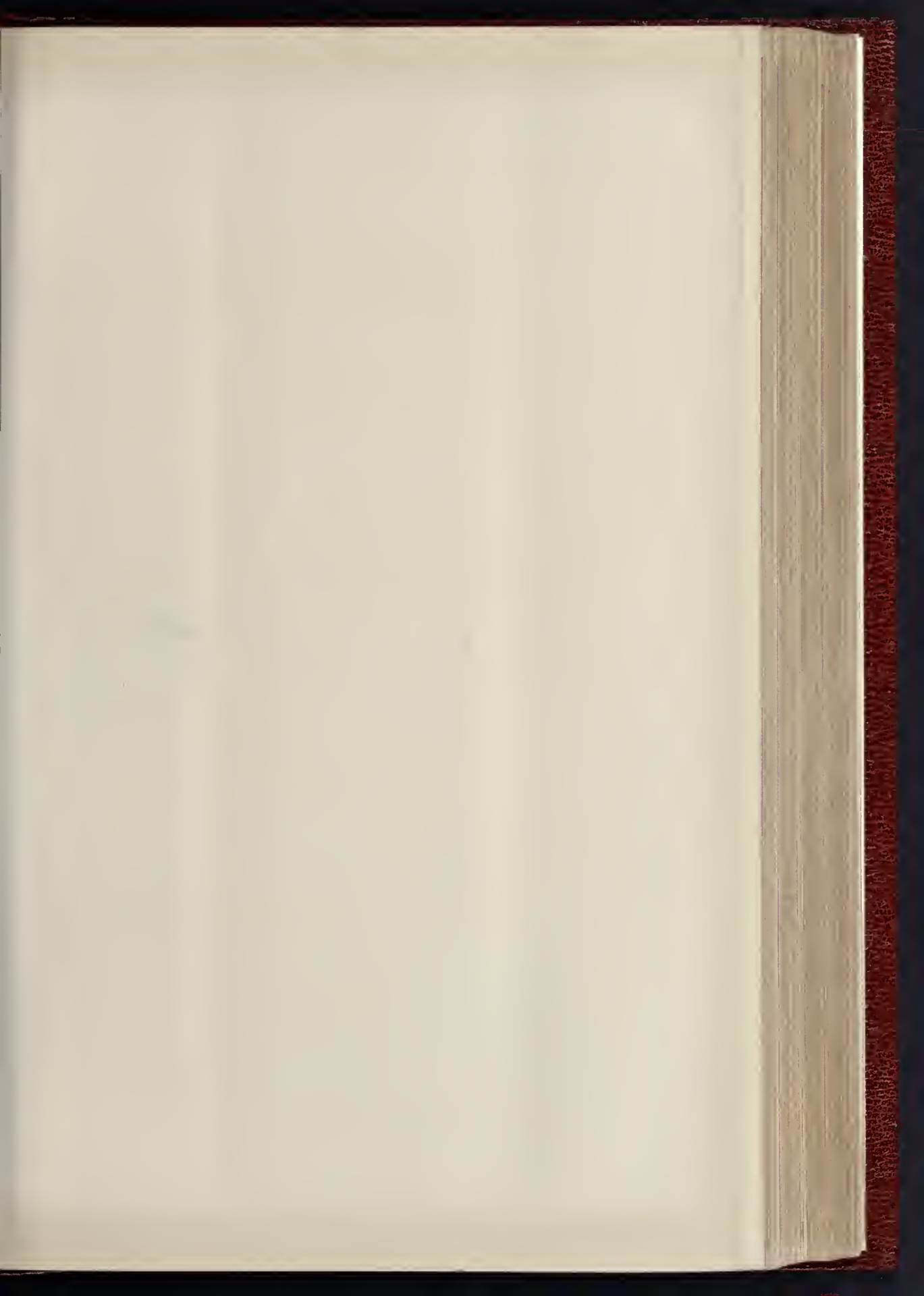
Berclare Hall



THE BUILDER. MARCH 13. 1897.



W. PHOTO. SPRAGUE & CO. 44 EAST HANING. SHELL, PETER LANE, E.C.

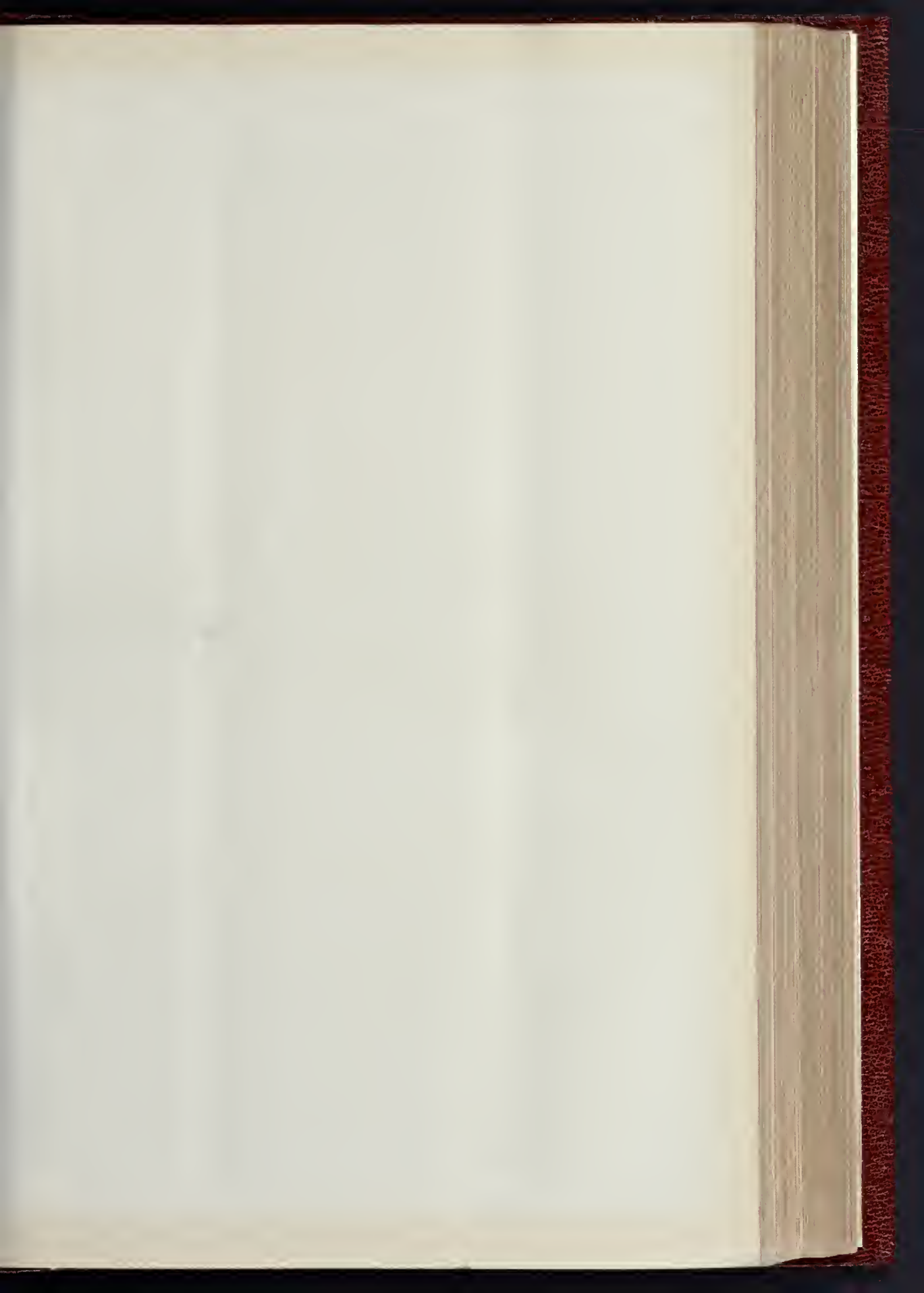




ST. JAMES'S CHURCH, NEWPORT ROAD.—MR. BRUCE VAUGHAN, ARCHITECT.



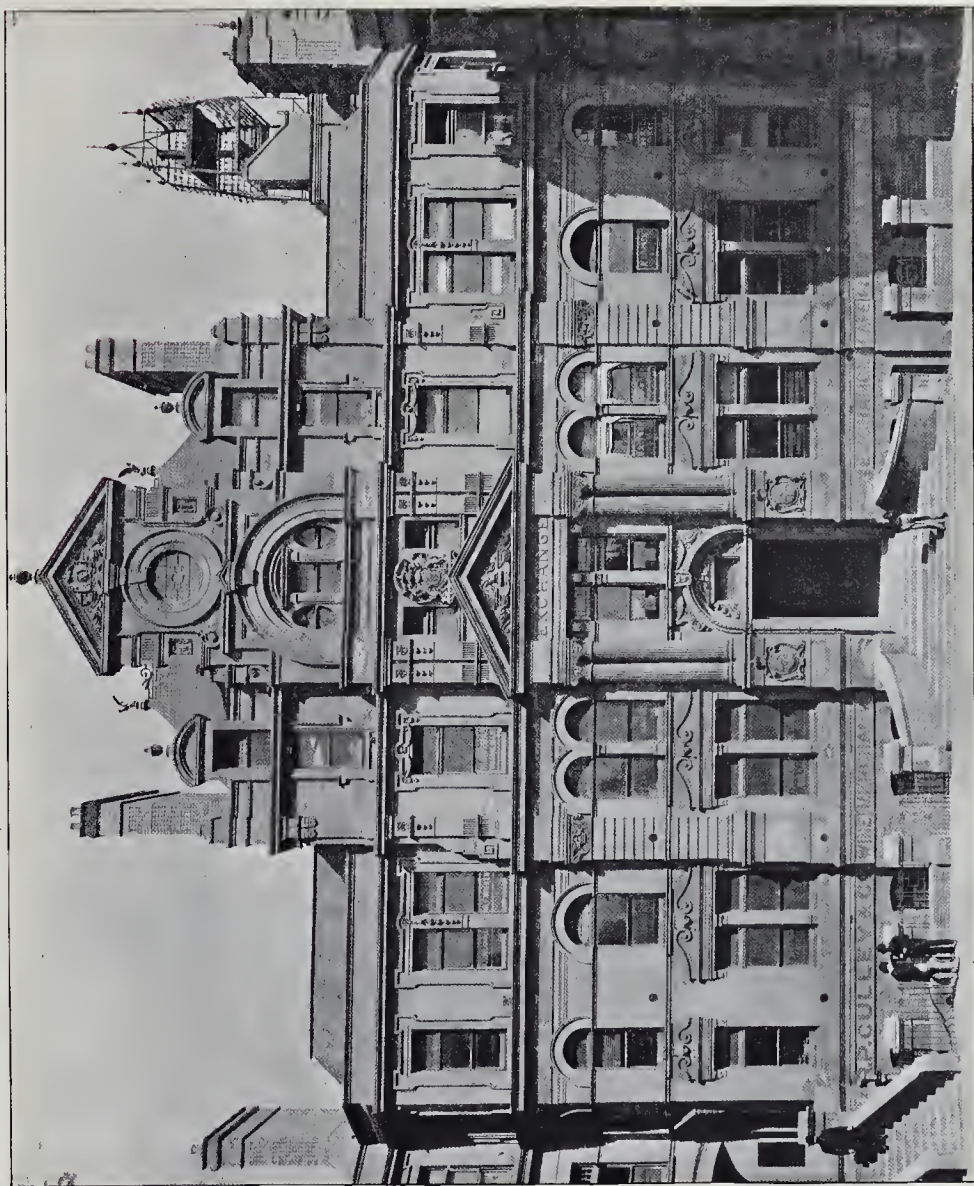
TOWN HALL.—THE LATE SIR HORACE JONES, ARCHITECT.



THE BUILDER, MARCH 13, 1897.



CARDIFF ARCHITECTURE. PART OF CARDIFF CASTLE.



CARDIFF ARCHITECTURE: THE EXCHANGE. MR. E. SEWARD, F.R.I.B.A., ARCHITECT.

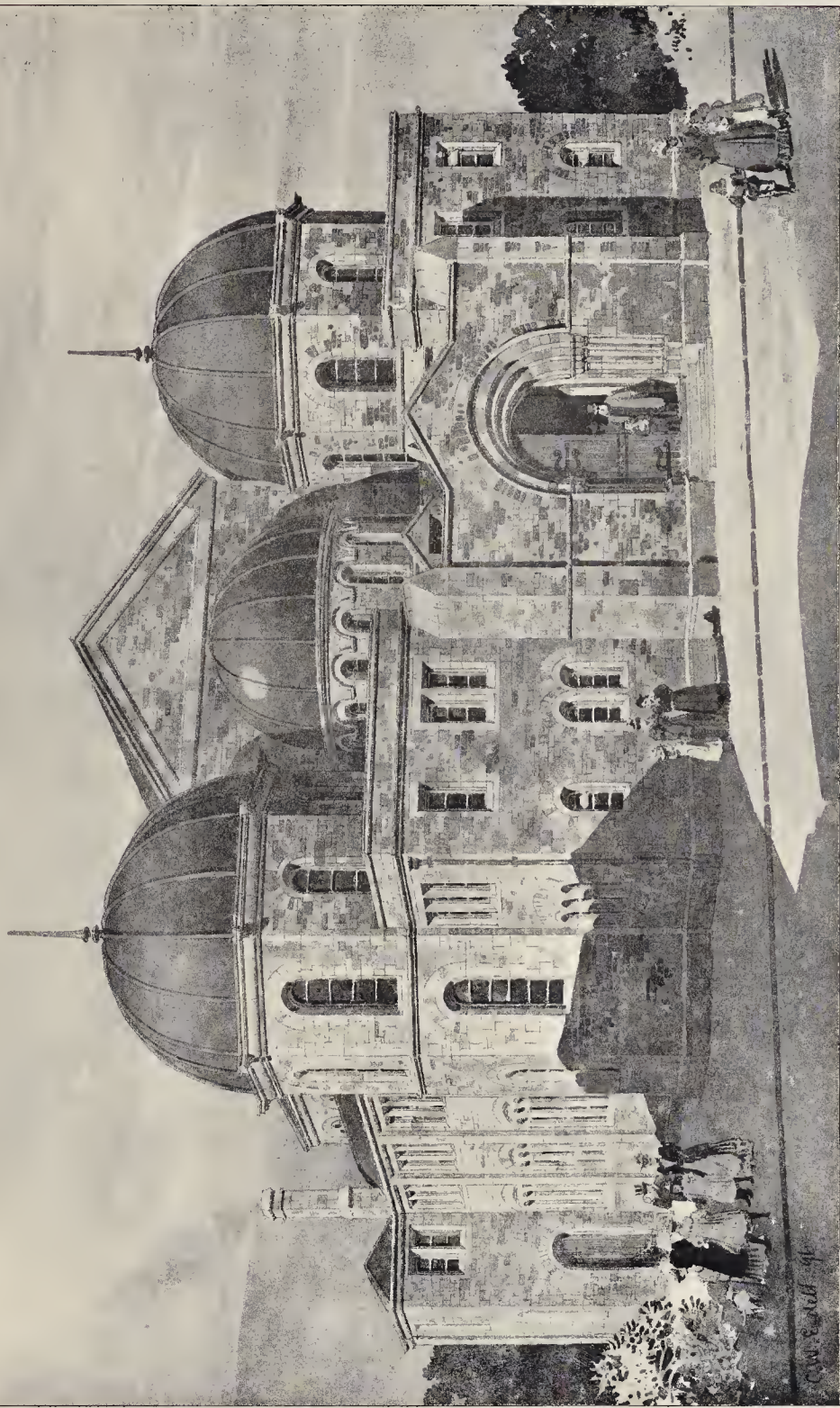


MUNICIPAL BUILDINGS.—MESSRS. SEWARD & THOMAS, ARCHITECTS.



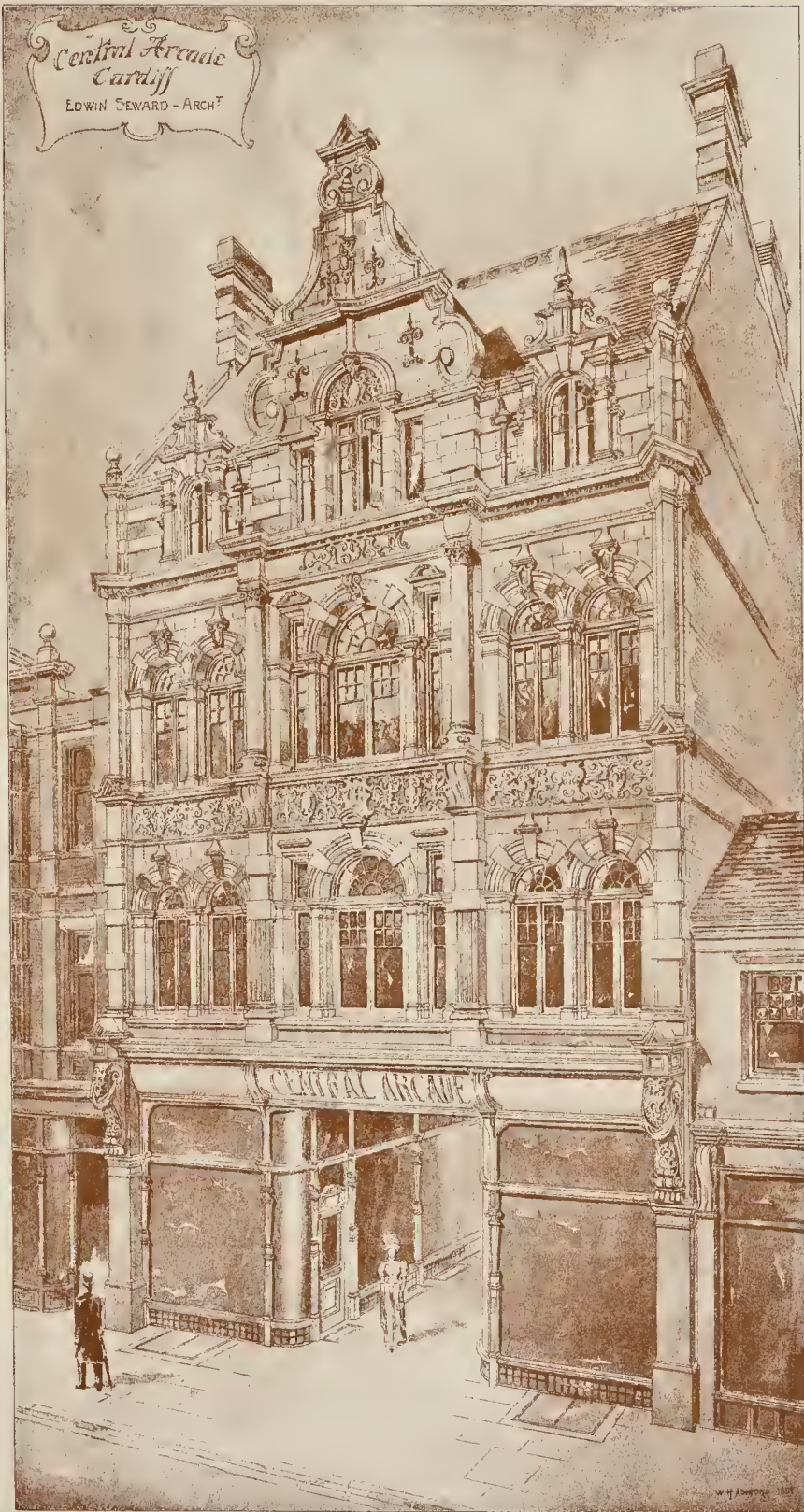
LYN PHOTO SPRAGUE & CO. 42 S. EAST WARDING STREET BETTER LYN.

POLICE COURT.—MESSRS. SEWARD & THOMAS, ARCHITECTS.



IN PHOTO: SPRAQUE & CO. 48, FLEET-HARDING STREET, LONDON, E.C.

CARDIFF ARCHITECTURE: THE NEW SYNAGOGUE — MR. DELISSA JOSEPH, F.R.I.B.A., ARCHITECT



INN PHOTO SPITAL LC & CO. 4 & 5 EAST HARDIN STREET, YESTER LANE, E.

CARDIFF ARCHITECTURE: THE NEW ARCADE FRONT

Cattybrook terra-cotta of a warm buff tint, whilst red Aberdeen granite is used for the pilasters flanking the shop fronts. The roof is covered with Belgian green slates.

The buildings are being erected for Mr. David Morgan, who has large business interests in the immediate locality, from the designs of Mr. Edwin Seward, architect; the general contractors being Messrs. E. Turner & Sons.

THE CARDIFF NEW SYNAGOGUE.

The new Synagogue at Cardiff now approaching completion is in Cathedral-road, and takes the place of the old building in East-terrace, erected in 1858, and enlarged in 1874, and which the Jewish community in Cardiff has now outgrown.

The present structure accommodates 241 men on the ground floor and 158 women in the gallery; but provision has been made for extending the building when required at the western end so that it may accommodate a further 191 men on the ground floor and a further 166 women in the gallery, and space has also been reserved at the rear of the site for erecting in the future class-rooms and residences for the minister, reader, and headle. A novel feature of the plan is the arrangement whereby the apse containing the ark is placed at the same end of the building as the main street entrance, this being the only method of securing the necessary eastward aspect for the ark. Another detail of some novelty is the grouping of reading desk and uplift at the same end of the building as the ark. Behind the ark, and enclosed by brass grilles, is the choir; and behind the choir is the main vestibule leading to the ground-floor lobbies and to the two octagonal buildings containing the staircases. Both at ground-floor and at gallery levels accommodation is provided for ladies' and gentlemen's cloak-rooms. The staircases are of stone; the side galleries are carried by steel girders resting upon iron columns, which columns continue up to the level of and carry the clearstoreys.

The apse is covered by a pannelled half-dome. The ark is semi-circular on plan, and is superimposed by a half-domical roof, with a low-level clearstorey over. The reading platform is approached by two flights of stairs.

The whole of the exterior has been carried out in blue pennant stone with Bath stone dressings. The building is heated by Grundy's hot air system, and is lighted by electricity. The architect is Mr. Delissa Joseph, of London, and the contract has been carried out by Mr. William Lissaman, jun., of Cardiff, at 5,164*l.*, Mr. S. Owens being clerk of works.

THE ARCHITECTURAL ASSOCIATION SPRING VISITS:

VISIT TO HER MAJESTY'S THEATRE,
HAYMARKET.

The Third Spring Visit of the session was held at Her Majesty's Theatre, Haymarket, on Saturday, March 6, by the kind permission of Mr. C. J. Phipps, F.S.A., the architect of the building, who received the party numbering over a hundred members, and explained the construction of the building, besides giving much other interesting information. The site is a favourable one for a theatre, being placed at the angle of the Haymarket and Charles-street, and having the Arcade at the rear, the main front being towards the Haymarket where the entrance is situated.

The entrance hall gives direct access to the stalls, which are only slightly below the street level, and from the hall are wide staircases leading to the dress-circle and the large balcony above, the entrance to the pit being in Charles-street.

The main points in the planning of the access to the building are the two separate staircases and exits to each part of the house, and the arrangement of the box-office, which is so placed that it serves the whole of the entrances to the house, and so simplifies and economises the work of the staff.

The auditorium is remarkable for width in proportion to depth, the curve of the galleries on plan being designed as flat as possible; this promises good results, as the distance from the stage to the audience is appreciably diminished. The upper part of the auditorium is divided into dress-circle and balcony, the gallery being situated at the back of the latter, an arrangement which gives an open and spacious appearance as seen from below, owing to the considerable height between the balcony and the ceiling.

The balconies are constructed on the cantilever system, with iron cantilevers and joists, and filled in with concrete; and in these are built brick risers and the tiers formed of concrete. The roof over audi-

torium is of wood, with large queen-post trusses to the under side of which is secured the ceiling of fibrous plaster.

The proscenium opening has a width of 35 ft., which is large in proportion to the size of the theatre, being equal to that at Drury Lane. As a precaution against fire spreading through the roof, from the stage to the auditorium, or *vice versa*, a clear space has been arranged between the proscenium wall and the wall carrying the roof of auditorium, this has been contrived over the arched portion of ceiling, the roof over this being flat.

The proscenium opening is fitted with a fire-proof curtain constructed of light iron framing and covered both sides with asbestos and the space between filled with slag wool, the height is sufficient to allow this to rise clear above the opening, and it will be raised and lowered by hydraulic power, worked with a lever from the prompter's box, the whole weight of the curtain being under five tons.

The lintel over the opening is a solid baulk of fir with brick relieving arch turned over, it having been found by experience that this will stand a greater heat than iron girders in a similar position. The stage has a depth of 60 ft., and is a variation from the usual English method in that the rake has been omitted, the stage being absolutely level; this is the custom on the Continent, also in America. The original reason for the slope appears to have been the height of the "float" of the footlights, which was liable to hide the feet of the performers, but with the present system of electric lighting, when the lights are only some two or three inches above the level of stage, the rake seems to be unnecessary, and the omission of it will be a distinct advantage to the scenic effect, as the perspective effect of a rising stage is always unfortunate.

The floor of the stage is arranged to slide away in sections and to admit of the raising and lowering of scenes unrolled, platforms, &c., and the inspection of the construction enabling this to be accomplished was of considerable interest, the mass of beams, posts, struts, and framing under the stage being at first sight exceedingly complicated. Each so-called "cut" or section of the floor, ranging from 6 in. to 3 ft. wide, is formed of narrow widths of boarding resting in rebate on joist; on a wedge being removed, the end of the section drops down into a groove below, and it is drawn off by cords underneath the side of stage, the scenes or platforms then being hoisted through the space thus left by means of ropes wound on large drums. These "cuts" are known by various names, such as the "Carpet" cut, which is the one next to the footlights, and is used, as the name implies, for drawing the carpet through, thus avoiding the appearance of the old-fashioned red-coated attendants before the curtain. There is also the "Corsican Brothers" cut for the production of the ghost, besides numerous others.

The dressing-rooms are situated on the Charles-street front, and are numerous and well lighted. The fitting and decorating of the theatre had scarcely been commenced at the time of the visit, the only portion completed being the ceiling. The lighting throughout will be by electric light, the supply being from three separate companies, to avoid any chance of failure, and the ventilation will be provided for by mechanical means, fresh air being drawn in by fans worked from the engines in the basement, and filtered before entering the house, and foul air drawn out by similar fans through the cupola on roof. The outside of the building is in the style of the French Renaissance, with a large pavilion at the angle, but the scaffolding has not yet been removed; it is built in Portland stone. The building will seat about 1,500 persons, every one of whom will have a good view of the stage, and the total cost is estimated at between 50,000*l.* and 60,000*l.*

A vote of thanks to Mr. Phipps brought the proceedings of a most interesting visit to a close.

THE COST OF LONDON BOARD SCHOOLS. — The Works Committee of the School Board for London, at the meeting on Thursday last week, reported that in February they appointed a special Sub-Committee to inquire into the cost of the schools now being erected by the Board (see our last issue, page 231). General Moberly (the Chairman of the Works Committee) proposed that the Board should revert to the old specification in force in 1885-6 for the next six schools and enlargements, subject to such modifications as the architect might think it necessary to make, in order to bring the specification up to the present requirements of the Board and Education Department; and also subject to the further recommendations which were made by the Sub-Committee. The proposal was carried.

DRAWINGS FOR THE ROYAL ACADEMY.

As before, we shall be glad to take charge of and deliver at the Royal Academy any drawings sent to us in time to be photographed before the day of delivery, with a view to subsequent publication in this journal and in the "Builder's Album" of Royal Academy architecture.

We cannot accept any drawings sent to this office later than Saturday morning March 27, before 12 noon.

Architects sending drawings are asked to give special attention to the following requirements of the Royal Academy:

1. All frames must be gilt.
2. Every drawing must have a label on the back, giving legibly the title and the artist's name and address.
3. Every drawing must have a similar label attached to the frame by a card so as to hang over in front.
4. Every drawing must be accompanied by a letter addressed to the Secretary of the Royal Academy, and signed by the artist, containing the artist's name and address, and the title or titles of the drawings sent. If more than one drawing is sent they must be distinguished by numbers, and the corresponding number must be repeated in the labels fixed to each drawing.

N.B.—We cannot undertake to supply or affix labels when omitted by the oversight of the sender.

MAGAZINES AND REVIEWS.*

The *Art Journal* commences a series of illustrated articles on "Art in the Home" by Mr. W. Scott Morton, a subject which is getting a little worked out, or at least all such articles seem now to run in one line and present the same type of illustrations. A short article on "L'Art Nouveau" at Paris" gives two or three illustrations of recent work in interior decoration in Paris, from which it appears that there is something of a new and a superior feeling springing up in this class of French work, often bad enough. One could have welcomed a fuller illustration of this subject. The frontispiece is an engraving of Miss Dicksee's very charming picture of Angelica Kauffmann in Reynolds's studio.

The *Artist* contains a great variety of interesting illustrations of decorative work, and includes a useful technical article on "The evolution of half-tone engraving."

The House, a new monthly issued from the office of the *Queen*, deals with various forms of home art work, and has many illustrations of furniture, textiles, and various home objects treated in a decorative manner, but it does not rise beyond what may be called a popular view of the subjects treated of.

In the *Nineteenth Century* a very short article by Mr. G. A. T. Middleton, "On Deliberate Deception in Ancient Buildings," refers especially to Professor Goodyear's attempts to show a frequent effort at deception in Italian buildings, and recommends a study of French and English buildings in order to investigate the same question in regard to them. Mr. Middleton does not press the matter too hard, and seems to admit that Professor Goodyear has claimed too much in some of his Italian studies. It is interesting to ascertain the truth in such a matter, but where the employment of the deception is proved it is no credit to the architects who employed it. We do not see in what sense the vertical curves of the Parthenon could be regarded as giving an impression of greater length, nor do we for a moment believe that they were employed with that object.

Scribner includes an article by Mrs. Pennell, one of the worshippers of Whistler, on the "Master of the Lithograph," with the usual foolish adulation which is really becoming too absurd. "London as seen by C. D. Gibson" contains among its illustrations some very good studies of typical heads in London society of various grades. Under the heading "The Field of Art" are a few thoughts on the subject of "Size in Painting" which are worth attention, and contain we think some truth.

The *Century* contains an article on the new National or Congress Library at Washington, followed by one on the decorative paintings in the same building. Some of these, as illustrated, are very fine and interesting, both in idea and

* The object of these notes is to point out anything in the contents of the current magazines which is of special interest to our readers, with occasional brief criticisms on the views expressed in such articles. When a magazine which has been sent to us is not noticed, it is because that number contains nothing that it is within our province to comment upon.

design, though we cannot help regretting that Mr. Dodge, in his ceiling painting of "Ambition," should have followed the revived style of ceilings with flying figures painted as if seen from underneath, in realistic upward perspective—a vicious style of decorative painting. Mr. Maynard's ceiling, with its four figures painted flat amid a field of conventional decoration, is a much more truly artistic manner of treating a circular domical ceiling.

The *Monde Moderne* contains an article on the Palace of the Popes at Avignon, and one on the "Femmes-Artistes" of France, some of the illustrations to which make us acquainted with lady artists of considerable gifts whose names are not known in England.

The *Quarry*, besides its usual amount of practical information, includes an article on "Aestheticism and Building Stone," in which there is some good criticism as to the relation between the quality of the stone and the character of the work done in it.

In the *Contemporary Review* is an important paper by Mr. T. Ferguson Walker on the subject of "An Irish Channel Tunnel," a scheme often talked of though not heard much about lately. The proposed routes, of which a map is given, are of course between the north-east of Ireland and south-west of Scotland, where the sea distance is less than is perhaps generally realised; the difficulty consists in the existence of a deep depression in the middle, called Beaufort's Dyke, which would have either to be got under or bridged across under water. The existence of such a tunnel would shorten the time occupied in the getting to New York by allowing travellers to train (though by a rather circuitous route) from England to the West of Ireland, but we should doubt if it would be very much used by passengers. For cattle traffic, however, it would be invaluable; and it was worth while at all events to bring the subject forward again.

Longman's Magazine gives a curious account of the history and present customs of the Purbeck Quarries and their working, under the title "A Nineteenth-century Craft Guild."

In the *Pall Mall Magazine* is an article on "Old London Bridge," to say that it is written and illustrated by Mr. Brewer is to say that it is interesting both in an archaeological and artistic sense. There is also an interesting article on "Modern Express Passenger Engines" by Mr. Henry Russell.

The *Cornhill* publishes some "Notes on Lord Leighton" by Mr. Giovanni Cosla, the painter, who seems to have known Leighton well, and gives some interesting and very pleasing stories in illustration of his character, and also (which will interest artists still more) some information as to his manner of working.

In the *Gentleman's Magazine* Dr. N. E. Yerke-Davies, under cover of an article on "Bexhill," gives a good deal of sanitary advice in regard to seaside places and their laying-out, of which however we observe that the most practically valuable portion is a long quotation from another writer, whose name is not given.

The *Windor Magazine* includes an illustrated article on "Making and Laying an Atlantic Cable."

ARCHITECTS' BENEVOLENT SOCIETY.

The Annual General Meeting of this Society was held on Wednesday afternoon, in the Council-room of the Royal Institute of British Architects, the President, Professor Aitchison, A.R.A., occupying the chair.

The minutes of the last meeting having been read and confirmed, the following report of the Council was read and adopted:—

"The Council of the Architects' Benevolent Society in the Reports which they have submitted to the Annual General Meetings during the last few years have been able to comment favourably upon the growing appreciation amongst architects generally of the good work accomplished by its efforts, and of the larger measure of support which it has received. Last year they had to lament the death of some of its oldest and most liberal contributors, and it was to be feared that the income of the Society would suffer a serious diminution in consequence. It is, therefore, with considerable satisfaction that they are able to announce that the progress recently made by the Society has, during the past year, been maintained.

This is to be largely attributed to the appeal issued by Mr. Penrose, the late President, in the early part of last year, to every architect in practice in the United Kingdom. Besides many handsome donations, the appeal was successful in adding some forty new names to the list of annual subscribers, and in obtaining increased subscriptions from some who were already liberal contributors. The Council wish to record their great indebtedness to Mr.

Penrose for the trouble which he took in connexion with the issue of this appeal, penned as it was on the very evening of his departure for Athens.

Still, although the Council have considerable satisfaction in noting the increase of annual subscriptions in recent years, they feel that the sum received is yet inadequate, in view of the fact that applications for assistance are made from all parts of the country; and they would point out that against the sum received last year in annual subscriptions, 460*l.* 15*s.*, no less than 560*l.* 10*s.* was expended in grants, and to this sum should be added 35*l.* advanced by the Honorary Treasurer towards the close of the year, when it was impracticable to convene a Council meeting to relieve the urgent needs of worthy applicants; so that the actual sum expended in relief during the year was 604*l.* 15*s.* This sum, however, does not include the 70*l.* dispensed in pensions, which are paid out of the income derived from investments.

With regard to the capital account, there was a balance at the beginning of the year to its credit of 117*l.* 15*s.* 8*d.*, and during the year the sum of 333*l.* 12*s.* was received in donations. It was, therefore, thought well to increase the investments of the Society by the purchase of 230*l.* Caledonian Railway Four per Cent. Debenture stock, at a cost of 236*l.* 17*s.* 6*d.*, thus leaving a balance in the hands of the bankers on December 31 of 64*l.* 10*s.* 2*d.* This purchase increases the value of the Society's holdings of stock to (at cost) 9,893*l.* 0*s.* 4*d.*, which, with the balance at the bankers, leaves the total capital at 9,877*l.* 10*s.* 6*d.* Successive Councils who have administered the affairs of the Society have for many years made efforts to increase the capital of the Society to 10,000*l.*, and it is a matter of satisfaction that the investments have now practically attained this point of stability, their value, indeed, at market quotations being in excess of this sum.

The Council have to announce, with great regret, that they have received an intimation from Mr. Arthur Cates of his intention of resigning the honorary treasurership, a position which he has held for seven years, and which has enabled him to render invaluable services to the Society. Mr. Cates has not only been a liberal donor and subscriber to the funds of the Society, he has also promoted its usefulness by the exercise of his influence in its behalf, by the time and labour which he has always been willing to expend on its affairs, by the interest which he has taken in cases that have come before the Society for assistance, and by a just appreciation of the most advisable way of helping necessitous applicants. During Mr. Cates's term of office the affairs of the Society have year by year steadily progressed, and it will be no doubt a matter of satisfaction to him to know that he leaves it in a more prosperous condition than when he undertook office. The Council duly recognise that the present favourable position of the Society's affairs is largely due to his administrative qualities. At the same time, while this has been effected, it has not been attained by parsimony in affording relief to applicants, or by want of the proper exercise of beneficent usefulness for which the Society was inaugurated and for which it exists. When Mr. Cates undertook the treasurership the number of subscribers was 208; it is now 309. The amount received in annual subscriptions was 308*l.*; it is now 453*l.* The amount of invested capital was 7,426*l.* 2*s.* 4*d.*; it is now 9,893*l.* 0*s.* 4*d.* It remains to be added that in 1893 Mr. Cates made a personal appeal to the architectural profession for donations and subscriptions, with a gratifying result.

The Council have learned during the year, with deep regret, of the death of Mr. E. H. Dawson, Mr. F. J. Francis, Mr. Horton (of Messrs. Horton & Bridgford), and Mr. G. P. Raggett. They have also to record, with sincere regret, the death of an always helpful friend, and for thirteen years Honorary Secretary of the Society, Mr. William H. White, the late Secretary of the Royal Institute of British Architects.

The following gentlemen, being the five senior members, retire by rotation from the Council, namely: Mr. T. M. Rickman, Mr. R. St. Aubyn Rounieu, Mr. J. T. Wimperis, Mr. Thomas Harris, and Mr. H. C. Boyes. To fill the vacancies caused by these retirements and by the retirement of Mr. W. Hilton Nash, the Council have the pleasure to nominate Mr. Arthur Cates, Mr. Aston Webb, Mr. H. L. Florence, Mr. J. T. Christopher, Mr. Sydney Smirke, and Mr. William Grellier.

To fill the vacancy caused by the retirement of Mr. Arthur Cates, the Council beg to nominate Mr. W. Hilton Nash for the post of Honorary Treasurer.

The Council, in closing this report, desire to express the indebtedness of the Society to the Royal Institute of British Architects for the use of rooms in which to hold their meetings, to the acting secretary (Mr. Herbert G. Taylor), and to the officers for their always attentive courtesy.

Mr. Arthur Cates then read the statement of accounts and balance-sheet, the adoption of which was agreed to.

On the motion of Mr. W. Woodward, seconded by Mr. Collins, it was agreed that a vote of thanks be passed to the out-going members of the Council.

It was also agreed that the Council for the

year of office 1896-'97 be elected as follows:—The President, for the time being, of the R.I.B.A.; Messrs. Kidner, Scamell, King, Inskip, Col. R. W. Edis, Crow, Gruning, Hine, Cates, Aston Webb, Florence, Christopher, Smirke, and Grellier.

Mr. Collins, in seconding the motion, referred to the retirement of Mr. Cates from the office of Hon. Treasurer of the Society, which he regretted very much. It was a great misfortune that more members of the profession did not belong to the Society. Mr. Cates had done a great deal to convince architects of that. In regard to the capital of the Society, he hoped that an effort would be made to increase it by another £5,000, so as to put the Society in a sound position.

The Chairman then proposed that a cordial vote of thanks be passed to Mr. Arthur Cates for the services which he has rendered to the Society as Hon. Treasurer during the past year, and during the seven years that he has held office. The services of Mr. Cates had been of very great value to the Society.

Mr. King seconded the motion, which was unanimously agreed to, and Mr. Cates briefly replied.

Mr. Hilton Nash was then elected Hon. Treasurer. In thanking the meeting for electing him, he remarked that the profession ought to support the Society more than it did. It was suggested some years ago that a dinner should be held for the purpose of assisting the Society, but he was more in favour of a dramatic entertainment. As the Society was affiliated more or less to the Royal Institute of British Architects, was it not entitled to be called Royal also?

Mr. Woodward suggested that it should be made known that small subscriptions would be welcome. There were, no doubt, many young architects who would be willing and able to subscribe small sums.

It was then agreed, that a vote of thanks be passed to Mr. Percival Currey for his services as hon. secretary during the past year, and that he be re-elected to that office; that a vote of thanks be passed to Mr. Henry Hall and Mr. William Woodward for their services as auditors during the past year; and that Messrs. Rickman & Rounieu be elected auditors for the ensuing year. A vote of thanks was also passed to the Royal Institute of British Architects for the use of office accommodation.

A vote of thanks to the Chairman terminated the proceedings.

THE LONDON COUNTY COUNCIL.

The annual statutory meeting of the London County Council was held at the County Hall, Spring Gardens, on Tuesday, Mr. Beachcroft, Deputy-Chairman, presiding.

The *Election of Chairman*.—The first business was the election of a Chairman, and after a long discussion Dr. Collins was elected by a majority of two over Sir Arthur Arnold, the late Chairman. Mr. Beachcroft was then elected Vice-Chairman, and Mr. Torrance Deputy-Chairman.

Loans.—On the recommendation of the Finance Committee, it was agreed to lead the Bethnal Green Vestry 10,200*l.* for paving works, &c.; the Islington Vestry 8,000*l.* towards the purchase of the Cattle Market open space; the Deptford Baths Commissioners 10,000*l.* for the erection of baths and washhouses; and the Shore-ditch Vestry 10,000*l.* for a similar purpose.

Fleet-street Improvement.—On the adjourned Report of the Improvements Committee, which recommended that the estimate of 85,390*l.* submitted by the Finance Committee for the widening of Fleet-street between Bride-lane and Salisbury-court be approved, and that the Council should contribute on the usual conditions one-half of the net cost of widening.

Mr. Charles Harrison, M.P., objected to the recommendation, on the ground that the City was a separate authority, and not a Local Authority as understood in the sense of the Local Authorities who required contributions from the Council towards improvements.

Mr. Westcott pointed out that if Fleet-street had been in any other part of London the Council would have paid the whole of the cost; but the City not only paid half the whole of the cost, but actually paid one-eighth of the whole of the rates of London.

The recommendation was adopted, with only three or four dissentients.

Vauxhall Bridge.—The Bridges Committee recommended that the estimate of 12,800*l.*, submitted by the Finance Committee, of the cost of

* See our last issue, p. 221.

videning the central opening of the Vauxhall temporary bridge, and erecting staging and fixing floating booms be approved; that the work be carried out at an estimated cost of 12,800*l.* by the Council without the intervention of a contractor, and that the drawings, specification, and bill of quantities when completed be referred to the Works Committee for that purpose.

Mr. Boulnois, M.P., moved "that the matter be referred back to the Committee, with instructions to consult an eminent engineer of river-bridge building experience."

Mr. Thornton seconded, but the motion was lost, and the recommendation of the Committee was agreed to.

Additions to Cane Hill Asylum.—On the recommendation of the Asylums Committee, it was agreed that the estimate submitted by the Finance Committee for a stokers' mess-room, four coal bunkers, an additional floor and lavatory to the inspectors' and head attendants' quarters, and the completion of the decoration of the wards, &c., at Cane Hill Asylum, at a cost of 1,460*l.*, be approved.

The Council adjourned soon after seven o'clock.

ARCHITECTURAL SOCIETIES.

LIVERPOOL ARCHITECTURAL SOCIETY.—On the 1st inst., a paper was read before this Society by Mr. W. E. Willink, M.A., on the subject of Medieval Craft Guilds. The paper dealt historically with the subject in discussing the origin and early history of guilds in general, and their sub-division in the thirteenth and fourteenth centuries into Guilds, Merchant and Craft Guilds. The paper then described the regulations and aims of the Craft Guilds at the time of their highest development, and extracts from old records were read showing how they not only encouraged brotherly feeling between man and man, but, above all, served to protect the community by requiring a high standard of excellence in work, and a moderate remuneration. The paper proceeded, by a number of lime-light illustrations reproduced from the sketch-book of a thirteenth century architect, Villard de Honneourt, to show how, in the early middle ages, the Master of the Work took the whole of the branches of construction and design as his sphere of operations, and was able to give his instruction to all the crafts, and went on to relate how the degeneration of the earlier Guilds resulted from the wide introduction of capital, tending more and more to the creation of monopolies, and how the social and political power, which they attained, was accompanied in the building trades by a control of the whole of the processes of design and construction which finally left the architect no opportunity for unifying and harmonising the whole composition. With the introduction at the Renaissance of a new style, for which instruction, as apart from traditional knowledge, was essential, the architect regained his control on the designing of buildings. The paper pointed out, in conclusion, that architects are, at the present day, menaced with the same danger as that which wrecked the profession in the later middle ages. Craftsmen of all kinds were willing to undertake various branches of work from the design to the fixing. It behoved every architect to jealously protect his control over the work entrusted to him by an ability and a willingness to design every part himself.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—The monthly meeting of this Society was held, on Tuesday, at the School of Art, Arundel-street, the President, Mr. C. Hadfield, in the chair. A paper was read by Mr. J. B. Mitchell-Withers on "A Tour in Holland." He gave a general description of the main features which occur in the towns, especially in reference to the domestic architecture, which is the principal feature of the country, with a few historical notes, and notes on public buildings, and special objects in the different towns. The principal towns referred to were Rotterdam, Delft, The Hague, Scheveningen, Amsterdam, Dordrecht, Leyden, Haarlem, Hoorn, Alkmaar, and Amhem. The lecturer pointed out the advantages of Holland for a short trip, owing to the ease with which one can get there and the facilities for getting from one place to another. With reference to the domestic architecture, he drew special attention to the gables, with their picturesque outlines and graceful ornament, mentioning incidentally the old-fashioned beams and pulleys, with their quaint roofs projecting from the steep, old-fashioned gables. He gave a short historical account of Holland, showing at what periods activity in architectural design had existed, and

completed his lecture by showing a number of slides illustrating various scenes in the country. Two auditors were appointed—Mr. Edmund Windler, jun., and Mr. J. B. Mitchell-Withers.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—In connexion with this Society a lecture was given at the Leeds Institute, Cook-ridge-street, on the 1st inst., by Mr. T. Butler Wilson, of Leeds, on "Modern House Interiors." The lecturer spoke of the awakening interest on the part of the public in the decoration and furnishing of their houses, and deplored the fact that architects had allowed the direction of these matters to pass out of their hands. He suggested that the reason lay in the apathy of the profession with regard to decorative art, and that their interest had been absorbed almost wholly by structural design. He appealed to his co-workers to conquer this apathy, and recommended a closer study of colour and form, and pointed out that architects in days gone by had not only the control of the design and construction of the house, but also the sole direction of the decoration and furniture. The lecturer further maintained that the architect who made decoration his special study was the best authority to consult on decoration and furnishing, both with regard to their most artistic application and their economic execution, by reason of his power to specify and so obtain competitive tenders as he now did in the construction of the building. The lecturer then proceeded to the consideration of style, colour, and form, and offered some interesting suggestions as to the treatment of wall surfaces, floors, ceilings, and the general disposal of furniture.

GLASGOW ARCHITECTURAL ASSOCIATION.—On the 2nd inst. a meeting of this Association was held, Mr. George S. Hill in the chair, when Mr. D. Theodore Fyfe read a paper on "French Mediaeval Fortifications." In introducing his subject, the essayist pointed out that past work must be studied with respect to the conditions under which it was created. He proceeded to enlarge on the different types of the domain, a chief dwelling, showing how this building developed into the chateau of later times. The essayist gave a description of a number of the best examples, diagrams of which were ranged round the walls, and showed that every part of these fortifications had its origin in the laws of defence. We had the hartzian, which was primarily erected to strengthen the angles of the tower. Then there was the system of wooden hoardings, built out from the walls. The besieged by this means had an overhanging walk to enable them to defend every inch of their walls. To the development of these hoardings we owe the corbelled parapets which afterwards became so common. The essayist concluded by a reference to present-day architecture. If it is to be real, he said, it must be the outcome of an intelligent understanding of the wants of the age.—On the motion of Mr. Alex. M'Gibbon, a hearty vote of thanks was accorded to the essayist. Subsequently, the Chairman brought under the notice of members a question of public architectural interest. This was with regard to the proposal by the Lord Provost to commemorate the attainment of the sixtieth year of her Majesty's reign by altering the present front of the Royal Infirmary, and building a new modern façade, which would possibly project farther into the Square.—Mr. Hill intimated that the committee had already discussed this question, and were strongly of opinion that no such proposed defacement should be allowed to take place, unless the alteration was to be of real lasting benefit to the patients; then no reasonable objection could be urged. The infirmary was a notable piece of architecture, and as it stood was in perfect harmony with its surroundings. Were this proposed alteration to be carried through that would be the case no longer.

EDINBURGH ARCHITECTURAL SOCIETY.—At a meeting of this society on the 3rd inst., Mr. J. A. Williamson in the chair, Mr. R. S. Lorimer delivered a lecture entitled, "Some Notes on the Artistic Work and Influence of William Morris." Mr. Lorimer traced the history of the firm of Wm. Morris & Co. from its foundation, dealt with Mr. Morris as a craftsman, as a teacher and lecturer, as a founder of the Society for the Protection of Ancient Buildings, and as a publisher and printer, and showed some of the books produced at his Kelmscott Printing Press.

GLASGOW PHILOSOPHICAL SOCIETY: ARCHITECTURAL SECTION.—A meeting of the Architectural Section of the Glasgow Philosophical Society was held on the 1st inst., Mr. William M'Bean, vice-president, in the chair, when

Dr. Neil Carmichael read a paper on "House Sanitation." He began by referring to the soil on which houses were built, and said that that under most city houses was invariably charged more or less with coal gas. To prevent the entrance of ground air the whole basement should be laid with concrete or other comparatively impervious material. This should be done in all cases. As to drainage, he said that all appliances for the removal of waste should be placed in shafts or towers shut off by doors from the house proper. This might not be imperatively called for if the pipes and joints were quite sound, but it was so difficult to obtain these conditions that it was advisable the house should be saved from the risk of such defects. In addition to the advantage which there would be from a health point of view, the arrangement would be a good one, because the houses would be easily heated and pipes thus prevented from freezing. Earthenware and clay were porous materials, notwithstanding the surface enamel which there was upon them. What was required in this connexion, however, was a material non-porous in its substance and smooth on its surface. Such a material was glass. In localities and in places where special trades were carried on in impure air consumption was found to prevail. In Glasgow the prevalence of consumption was inversely as the cubic space occupied in the house per head. Cholera had proved one of the greatest blessings of the century, inasmuch as it had enforced the necessity for a pure water supply. It had saved by the general improvement of health vastly more lives than it had destroyed. Consumption should now teach the need for pure air, and so it might ultimately produce an improvement in health as a counterpart to its present ravages. Much, must be done by medical men spreading knowledge, and much by sanitary departments insisting on proper ventilation, but most could be done by architects, who to a very large extent had the solution of the question in their own hands. People talked about draughts, but this was because they were not sufficiently familiar with the presence of pure air. The fact was foul air was infinitely more injurious than the draught. No church, hall, school, or theatre should be allowed to be built unless it had some means of mechanical ventilation. More sunlight was required in cities, with more open spaces, wider streets, and houses so situated and constructed as to admit of a large amount of sunlighted air. In other words, what was wanted was more of the conditions of life and fewer of those which tended to death.—*Glasgow Herald.*

DEVON AND EXETER ARCHITECTURAL SOCIETY.—On Tuesday last week a lecture was given by Mr. C. J. Tait to the members of this society on "The Parthenon." Some very fine lantern slides of the building, as well as of the sculpture now in the British Museum, were shown.

GLASGOW TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—On Friday last week the usual monthly meeting of this Society was held in the College, George-street. Professor Gourlay presided. Mr. A. Lindsay Miller read a paper on the benefits of photography as an aid to the study of architecture, and gave his personal experience of many holidays usefully spent in studying old examples of good work with the aid of the camera. He by no means wished it to take the place of sketching, but where time was limited a combination of the sketch-hook with the camera and measuring would give immensely superior results and enable one to cover six times as much ground. He explained the mode of using the camera and went into the merits of the different lenses, &c., also the processes for finishing the prints, and more especially the making of lantern slides. A number of slides showing examples of the various class of work done by himself, principally relating to architecture, were thrown on the screen.

ARCHAEOLOGICAL SOCIETIES.

BRITISH ARCHAEOLOGICAL ASSOCIATION.—The seventh meeting of the session of this Association was held at the rooms in Sackville-street, Piccadilly, on the 3rd inst., Mr. Compton, V.P., in the chair. A paper was read by Mr. Thomas Blashill entitled "Some Certificates as to Recusants in Holderness," which was full of most interesting information upon a comparatively little known subject. The inconvenience and discomfort our forefathers in the early years of the seventeenth century were subjected to when

they refused to attend religious worship in the churches was curiously exemplified in the many original documents exhibited in illustration of the paper, all of which were about the same date, A.D. 1616. These certificates shed considerable light upon the operation of the law in the centre of Hilderness, which at that time, as the author remarked, "was by its remoteness and by the absence of good roads more than usually secluded from the outside world." The church services were held twice a day on the Sabbath, morning and afternoon usually, but sometimes in the evening, and all persons were expected to attend or to produce a valid excuse. Good excuses were recognised in old age, sickness, or the care of sick persons or young children. Absence from home also was admitted to be a good excuse. Failing such accepted excuses persons absent from church were certified by the churchwardens to the Justices of the Peace and were fined accordingly. Some of the certificates stated how the fines were disposed of.

THE SANITARY INSPECTORS' ASSOCIATION.

The Sanitary Inspectors' Association held its fourteenth annual dinner on Saturday last at the Hoborn Restaurant, when Sir John Hutton, I.C.C., the new President, occupied the chair. The company, which numbered about two hundred, included the Venerable Archdeacon Sinclair, Sir Arthur Arnold, Mr. J. Jacob (Master of the Carpenters' Company), Major-General Moberley, Professor Crookshank, Professor Atfield, Dr. Shirley Murphy, and others. The Paris Society of Hygiene had sent as delegates Dr. Brémont and Mr. C. Nicholson.

After the loyal and national toasts, the President gave the toast of the evening: "Success to the Sanitary Inspectors' Association." He said he regretted that during last year's death had removed that distinguished man, Sir Benjamin Ward Richardson, their late President. The Association had much more than justified its existence. Incorporated in 1891, it numbered, in 1895, 349 members, and at the present date it stood at a figure within a very few of 700, and the last year had been a record one in the number of provincial branches that had joined the Association. The President referred to some of the most important objects they had in view. The first was "The Sanitation Bill," which the Association had joined other municipal officers in promoting in Parliament. Another object of pressing importance was to obtain for sanitary inspectors the privilege which had been granted to medical officers of health, of more fixity in the tenure of their offices. Sanitary inspectors ought not to be subject to the caprices of members of Boards who were not always the best qualified men to sit upon those Boards. It would be infinitely better for the general public if these useful servants and those dependent upon them were protected from some of the many risks of their dangerous calling, and a generous consideration should be given to their claims. A satisfactory feature of their work was that the Association desired to effect a reformation from within. They sought to increase their knowledge and to make their mental equipment equal to the various calls the future would make upon them. The authorities should give them a voice in the examinations prescribed for members of their own body. The time would come when the State would be willing to accede to the claims of the members of an association which was of so much national importance.

Dr. Milton Rhodes proposed the toast of "Local Government," to which Sir Arthur Arnold responded. He contrasted the sanitary work performed in London at the present time by more than 3,000 members of vestries, who all gave their services, with the state of things found at the time when no sanitary inspectors existed, or they had not a proper knowledge of their duty. It was not uncommon forty years ago to find houses of the value of 60*l.* or 80*l.* per annum built over open cesspools, and from a sanitary point of view, the situation of the middle classes was worse than that of some of the races of Africa. But then, as now, men lived somehow, which seemed to prove that bad smells did not kill people. He thought that what people ate and drank rather than what they breathed was often the cause of the mischief. He hoped that sanitary inspectors would get all their just requirements, and that their humanitarian work of preserving the health of the community would flourish and prosper to the great benefit of the people of this country.

Archdeacon Sinclair proposed the toast of "Education." He thought that in this great citadel of education containing 4,000,000 souls more might be done with regard to sanitary science, and that it ought to be taken up as a special subject throughout the whole country. The Sanitary Inspectors' Association had a great opportunity amongst the classes in whose midst their work lay, to whom they could impart a good deal of useful knowledge. The toast was coupled with the name of the Master of the Carpenters' Company, Mr. J. Jacob, who, having briefly replied, Mr. Alderman Dyson, of Windsor, proposed the toast "Science and Art," to which Professor Atfield and Professor Crookshank severally responded. Professor Crookshank said he had reason to be proud of the work of the sanitary inspectors of this country. Their work was of a solid character, and might be regarded as one of the causes of the leading position which this country had taken in sanitary matters among the nations of Europe.

The health of the President was proposed by Mr. F. O. Crump, Q.C., and, at the close of a brief reply made by the Chairman, Mr. H. Thomas (Chief Inspector, Bermondsey) was called up to receive a timepiece and an illuminated address subscribed for by the members, in recognition of his services to the Association as Chairman of the Council during the last three years. Mr. Thomas suitably acknowledged the gift.

To the toast of "The Visitors and Guests," which was the next proposed, Mr. Nicholson, of Paris, responded for the Vice-President and himself, and read the friendly greeting of Dr. de Héra Santa, the viceroy of the President.

The toast of "The Executive," proposed by Dr. Shirley Murphy, was replied to by Mr. W. W. West, the Chairman of the Council, Mr. Raymond, the Hon. Treasurer, and Mr. Tidman, the Hon. Secretary. The Chairman of the Council said that twelve or fourteen years ago the Association had been formed because it was felt that improvements in the status of sanitary inspectors were necessary in the public interest. Thanks greatly to the powerful support of their past Presidents, Sir Edwin Chadwick and Sir B. W. Richardson, they had succeeded to a very considerable extent in gaining their objects, though they had not yet entirely succeeded.

Mr. Raymond and Mr. Tidman, editor of *The Journal*, also replied.

The toast of "The Press" (proposed by Mr. Priddig Teale, of Leeds) having been responded to by our representative, the proceedings closed.

GLASGOW SCHOOL OF ART.—The third lecture of the course on "Hellenic Architecture," by Mr. W. J. Anderson, A.R.I.B.A., was delivered on the 3rd inst., and aimed at presenting a view of the structural development of the archaic Doric style in Sicily and Magna Græcia. After a survey of the historical displacements which resulted on the settlement of the coasts of Southern Greece and Italy, Crete, and Sicily, by Greek tribes, under the influence of Dorian manners and religion, the growth of the Greek city was sketched from its citadel acropolis to the temple-crowned hill of the succeeding period, surrounded by its agora, stoa, theatre, gymnasium, &c. Attention was drawn to the evidences of enlightened design in the setting out of the buildings and the skillfully prepared transition from the natural surroundings to the building itself, and the point was illustrated by views of Gigenti, and its range of great temples. The Doric order was traced in its progress from the archaic reliefs of Selinus to the period following the Persian and Carthaginian wars, and photographs, details, and restorations supplied of the temples of Paestum, Segesta, and the Heræon, at Olympia. Summing up, the lecturer concluded that although grandly proportioned and profoundly impressive, the Doric Temple model was a work of architecture only of the second rank, and that in these buildings there was nothing quite comparable to the refinement, and freedom, and certainty of drawing which characterised the corresponding phase of Ionian architecture. In place of this the Dorians supplied a ponderous and logical stone construction, naively expressive of its wooden origin, and forming a noble frame for figure sculpture, which it was incomplete. The perfection of the following period as attained in the Parthenon and Propylæa was due partly to the fact that the model was adopted by the Athenian Ionians, who, apart from sculpture, combined with it Ionic features, and conferred upon it all the graces of drawing and refinement of tone and proportion which were the result of Ionian art.

PRICED QUANTITIES.—At a special meeting of the Liverpool Master Builders' Association, held at 6, Lord-street, Liverpool, on the 4th inst., the question of sending in priced quantities with estimates was under consideration, and after a general discussion it was unanimously resolved that the members of this Association should not send priced quantities in with their estimates.

COMPETITIONS.

DUDLEY GRAMMAR SCHOOL.—The following is the award of Mr. Arnold Mitchell, of London, the professional adviser appointed by the Governors of the Dudley Grammar School:—First premium of 50*l.* to Messrs. Woodhouse & Willoughby, of King-street, Manchester, the authors of the design numbered 41. The second premium of 20*l.* to Messrs. Forsyth & Maule, of 16, Great Marlborough-street, W., the authors of the design numbered 19. There were fifty-four designs submitted.

MORLEY PUBLIC BATHS.—A meeting of the Morley Town Council was held on the 1st inst., the Mayor (Alderman W. Middlebrook) occupying the chair. At a special meeting of the Council a few weeks ago it was decided to award the first premium for designs for the proposed new public baths to Messrs. Holton & Fox, of Dewsbury (No. 10), and that they be carried out, on condition that a tender was submitted from a contractor to the effect that the baths could be erected for the sum estimated. The Baths Committee now recommended that the design No. 5, selected for the second premium, was best adapted for the requirements of the borough, and that, subject to the author of it producing an approved tender for the amount of his estimate, the baths be erected according to this design. A lengthy and heated discussion took place, and an amendment was proposed and seconded that the recommendation be not accepted. The voting resulted in a tie, thirteen voting for the amendment and thirteen against. The Mayor declined to give his casting vote, and, after further discussion, it was agreed that the Mayor submit the designs Nos. 10 and 5 to a competent arbitrator for his opinion and report.—*Bradford Observer*.

PROPOSED WESLEYAN COLLEGE, SCARBOROUGH.—Five sets of plans were sent in by local architects for the premiums offered (viz., 50*l.* and 25*l.*), in connexion with the proposed Wesleyan College, Scarborough, on the Wapeness Estate, South Cliff. The award has been made, the first premium being awarded to Messrs. Hall, Cooper, & Davis, Westborough, Scarborough; and the second premium to Messrs. Tugwell & Barry, Westborough, Scarborough. ISOLATION HOSPITAL, THE GILROES, LEICESTER.—The Leicester Sanitary Committee had before them on the 5th inst. the report of the assessor, Mr. T. M. Aldwinckle, on the competitive designs for the new isolation hospital to be erected at the Gilroes. The design of Messrs. Blackwell & Thomson has been awarded the first place, that of Mr. Charles Kempton the second place, and that of Messrs. Everard & Pick the third place.

THE NEW HIGHER GRADE SCHOOL, SCARBOROUGH.—We are informed that Mr. Robson, F.S.A., architect to the Education Department, who was asked to judge the plans sent in for the erection of a new Higher Grade School, Scarborough, has made his award. The first place is taken by Messrs. Hall, Cooper, & Davis, Westborough, Scarborough; the second place by Messrs. Demaine & Brierley, York; and the third by Messrs. Marshall & Dick, of Newcastle-on-Tyne.

APPLICATIONS UNDER THE 1894 LONDON BUILDING ACT.

At the meeting of the London County Council on the 9th inst., the Building Act Committee reported that they had considered the under-mentioned applications under the London Building Act, 1894, and had arrived at the following decisions. Those applications which have been agreed to are granted on certain conditions:—

Lines of Frontages.

Bermondsey.—That consent be given to the erection of an addition in front of the Cbaucer Board School, Westcott-street, St. George-the-Martyr, Southwark, on the application of Mr. T. J. Bailey on behalf of the School Board for London.

Greenwich.—That consent be given to the erection of a coach-house and stable at Fairhaven, Myceno-road, Blackheath, on the application of Mr. W. T. Walker on behalf of Mr. R. Young.

Hamstead.—That consent be given to the erection of an addition on a portion of the forecourt of a house known as Daydown, No. 7, Netherhall-gardens, South Hamstead, on the further application of Mr. D. Brown on behalf of Mr. L. Sinclair.

Strand.—That consent be given to the erection of an iron and glass shelter in front of the Duke of York's Theatre, St. Martin's-lane, St. Martin-in-the-Fields, on the application of Messrs. Wilkinson, Howlett, & Wilkinson on behalf of the York Dramatic Syndicate, Limited.

Greenwich.—That consent be given to the erec-

tion of one-story shops upon the forecourts of Nos. 44, 46, and 48, Blackwall-lane, on the application of Mr. W. Busbridge.

Worwood.—That the application of Mr. E. R. Barrow for an extension of the periods within which the erection of the houses with shops on a portion of the grounds of The Abbey, No. 70, Herne Hill, were required to be commenced and completed, be granted.

Paddington.—That consent be given to the erection of a one-story workshop on the north side of Horn-road, Harrow-road, on the application of Mr. E. A. Vigers on behalf of Mr. W. Riley.

Packham.—That consent be given to the erection of a building with one story addition in front thereof at No. 8A, Queen's-road, on the application of Messrs. Ramsey & Co. on behalf of Mrs. S. Bonsall.

Hackney, Central.—That consent be not given to the erection of a house with shop on the north side of Blackstone-road, London-fields, to flank upon Lansdowne-road, on the further application of Mr. W. H. Adams.

Paddington, North.—That consent be not given to the erection of a church, with projecting chancel and porches, on the west side of Saltram-crescent, St. Peter's Park, at the corner of Croxley-road, on the application of Mr. A. W. Pite on behalf of the Rev. W. P. Legg, M.A.

Width of Way.

Bethnal Green, South-west.—That consent be given to the erection of an enclosed iron foot-bridge across Thomas-passage, to connect Nos. 216 and 218, Bethnal Green-road with No. 45, Derbyshire-street, on the application of Mr. W. Stone on behalf of Mr. H. Borton.

Kilnerhills.—That consent be given to the erection of two open iron foot-bridges across Pickle Flaring-street, on the further application of Messrs. Barnes-Williams, Ford, & Griffin, on behalf of Messrs. France & Co., Limited.

Kilnerhills.—That consent be given to the erection of an addition to the flank of the King's Arms public-house, No. 257, Tooley-street, to abut upon Three Oak-lane, St. Olave, Southwark, on the application of Messrs. F. J. Eedle & Meyers on behalf of Mr. J. Holt.

Diplford.—That consent be not given to the erection of buildings on the east side of Hoster-street and the north side of Creek-street, Greenwich, on the further application of Mr. L. Jacob on behalf of Messrs. J. & A. Dandridge.

Space at Rear.

Linehouse.—That the Council do, in the exercise of its powers under Section 41 of the London Building Act, 1894, allow a modification of the provisions of that section with regard to open spaces about buildings, so far as relates to the proposed erection of a one-story addition to a stable at Ratcliff Cross Wharf, Broad-street, Ratcliff, with an irregular space at the rear, on the application of Messrs. Bradshaw, Brown, & Co., on behalf of Messrs. P. Machin, Johnson, & Co.

Line of Fronts and Width of Way.

Fulham.—That consent be given to the erection of one-story shops upon part of the forecourts of Nos. 19, 21, 22, 23, 24, 25, and 26, Effie-road, Walham Green, on the application of Mr. E. Scott on behalf of Mr. T. Daves.

Hampstead.—That consent be given to the rebuilding of No. 1, College-road, Havestock Hill, so far as relates to the frontage only, on the application of Mr. C. C. Bradley on behalf of Mr. H. Benjamin.

St. George, Hanover square.—That consent be given to the erection of an inclosed porch on the east side of No. 74, Eaton-terrace, Eaton-square, to abut upon Graham-street, on the application of Mrs. E. J. Allen.

Westminster.—That consent be not given to the erection of buildings with projecting plinths, pilasters, bay window, balcony and porch, at No. 12, Great George-street, at the corner of Little George-street, on the application of Messrs. A. Waterhouse & Son on behalf of the Surveyors' Institution.

Width of Way and Construction of Buildings.

Greenwich.—That consent be given to the construction and erection of open sheds at Durham coal-wharf, River-bank, New Charlton, near Anchor and Hope-lane, with the boundary wall in front of the sheds at less than the prescribed distance from the centre of the road, on the further application of Mr. J. Rowland on behalf of Messrs. Wood Brothers.

Chelsea.—That consent be not given to the erection of a temporary wood and glass show-case on the eastern side of No. 125, King's-road, to abut upon Shawfield-street, on the application of Messrs. Plumsted Brothers.

Formation of Streets.

Clapham.—That an order be sealed and issued to Mr. W. N. Dunn sanctioning the formation or laying out for carriage traffic of new streets, 40 ft. wide, to lead out of the south side of Broomwood-road, Clapham Common (west side), Battersea, on his further application to the Council on behalf of Mr. T. Ingram. That the names Kyle-road in

(continuation), Broxash-road, and Amner-road be approved for the new streets.

Hampstead.—That an order be sealed and issued to Messrs. Tuckett & Son, sanctioning the formation or laying out for carriage traffic of an extension, 50 ft. wide, of Westbere-road, Hampstead, and the widening to 50 ft. of the existing portion of that road, on the application to the Council on behalf of Mr. P. H. G. Powell Cotton.

Wandswoth.—That an order be sealed and issued to Mr. W. Rivett-Carnac, refusing to sanction the formation or laying out for carriage traffic of new streets, each 40 ft. wide, to lead out of Hotham Villas-road and Worple-road, Putney, the widening and adaptation for carriage traffic of a portion of Hotham Villas-road, and the widening of portions of Worple-road, on his application to the Council on behalf of Mr. J. T. Leader.

Cubical Extent.

Finbury, Central.—That, subject to the provisions of Section 76 of the London Building Act, 1894, the consent of the Council be given to the erection on the west side of Berry-street, at the corner of Little Sutton-street, Clerkenwell, of an addition to a fermenting-house, such addition to exceed in extent 250,000 but not 450,000 cubic feet, and to be used only for the purposes of the trade of a brewer, on the application of Mr. W. Bradford, on behalf of the Cannon Brewery Company, Limited.

Recommendations marked † are contrary to the views of the Local Authorities.

Correspondence.

To the Editor of THE BUILDER.

DISCOVERY OF ROMAN REMAINS.

SIR,—I learn by a letter from Mr. George Allis, of Lincoln, to whose care and archeological enthusiasm are due the preservation of the columns of an important Roman Stoa near the famous Newport Archway, that one of the two bases which were wanting to complete the north and south line of the colonnade was excavated, through the liberality of a lady (whose name, however, he does not mention), on March 9; and he was in hopes that the other would not fail to be discovered before the end of this week.

F. C. PENROSE.

68, St. Paul's Churchyard.

CLAIM AGAINST THE ST. PANCRAS GUARDIANS.

SIR,—My attention has been called to Mr. Harston's evidence in this case on the question of brick. I have had an opportunity of reading the short-hand-writer's notes. In his cross-examination Mr. Harston stated that my firm, Messrs. Eastwood & Co., Limited, were not makers, but simply bought their bricks from a lot of little brickmakers. As this was stated publicly in open Court, and reported in your columns, I should be grateful if you would allow me to inform Mr. Harston, and others who may have the same opinion, that we are brick-makers, manufacturing bricks in our fields at the following places:—Shoeburyness, Essex; Otterham, Rainham, Kent; Halstow, Newington, Kent; Sittingbourne, Kent; Faversham, Kent; Teynham, Kent; West Drayton, Middlesex; Arlesey, Bedfordshire. Our make last year was 83 millions.

I feel sure that Mr. Harston, whose character for integrity, justice, and fairness is so well known, must have made this statement not knowing the above facts. His ignorance may, perhaps, have arisen from our invariably declining to supply bricks to any builder for work under Mr. Harston. He specifies stock facings to be: "The best gold-burned, hard, square-facing bricks, uniform in colour, specially picked in the brickyard, to be they know locally as picked stocks, bright stocks, paviors, mainly, or by any other designation." It is impossible for any brickmaker to supply such a brick.

GEORGE E. WRAGGE.

MODEL COTTAGES.

SIR,—Can you or any of your numerous readers tell me of a block of, say, six artistic model cottages, near London, if possible, with three bedrooms, that have been put up for something under 1,000? If you can, you will greatly oblige me as I am interested in a scheme for building some in this district.

HORACE BARRY.

Limpfield, Surrey, March 7, 1897.

"SKETCHES OF LONDON STREET ARCHITECTURE."

SIR,—My attention has been called to a letter of Mr. J. L. Williams in the *Builder* of March 6, in which he claims that he was the architect of 63, Sloane-street.

It is true that Mr. Williams was a paid assistant in my office at the time the work was done. He came to me as a boy some fifteen years ago and has

been in no other office, but a few months ago I found it necessary to dismiss him.

He has no more right to call himself the architect of this work than any man's assistant or clerk has to claim the credit of the work of his principal.

F. B. WADE.

The Student's Column.

SPECIFICATIONS.—XI.

FOUNDER AND SMITH.

MATERIALS.—The cast iron to be of clean, sound castings, sharp and sound, perfectly fair, and out of winding, free from cinder, boney-comb, blow-holes, and other defects. No stopping up or plugging cast on any cast-iron work is to be permitted. None of the constructive cast-iron work is to be painted until after delivery on the site. All columns are to be cast vertically and in dry sand and of even thickness; and to be subjected to such tests as the architect shall direct at the expense of the contractor. All castings to be rejected if found to be in any place as much as 10 per cent. thinner than they should be, as required by the drawings or specification. The castings to be of soft grey pig-iron of the second melting. All bearings are to be planed smooth.

The constructive wrought iron to be equal in quality to Staffordshire iron of "best" quality, and capable of bearing a tensile strain of 25 tons per square inch of sectional area before fracture, and a strain of 10 tons without permanent set, and to be tested if required by the architect at the expense of the contractor. All bolt and rivet holes to be carefully drilled (if punched holes are to be allowed it should be stated), and all bolts to be of wrought-iron with strong, clean Whitworth threads of uniform pitch, and all exposed heads to be hexagonal. All screwed work to have proper internal as well as external threads.

All rivets to be capable of being bent double either hot or cold without cracking.

The steel to be of the best mild steel capable of bearing a tensile strain of not less than 30 tons to the square inch, nor more than 35 tons. The contraction of area at point of fracture shall be at least 40 per cent.

All steel work required to be bent must be bent cold where practicable. Steel is not to be hammered cold, but all bendings required are to be done by pressure.

Work in Other Trades.—Supply and assist to fix all bolts, tie-rods, and other iron-work required in other trades.

Eaves Gutters.—The eaves-gutters and other rain-water goods to be of Macfarlane's manufacture, of medium weight ("heavy" or "light" if desired). Put to all eaves where shown cast iron moulded eaves-gutters to the following sections, as numbered in Macfarlane's list (give full list of the different sections for different situations). The eaves-gutters to be properly bolted together in red lead cement, and fixed with strong, large-headed screws to the woodwork. All eaves-gutters to have outlets cast on, and such stopped ends mitres returned ends, &c., as may be required. All outlets in eaves-gutters to have strong galvanised wire gratings.

Rain-water Pipes.—The rain-water pipes to be placed where shown on the drawings, and to be 3 1/2 in. internal diameter, fixed to stand 2 in. clear of walls with Macfarlane's special clips and bats. The heads of rain-water pipes to be of selected patterns, for which provide the p.c. sum of 10s. each. Each rain-water pipe to have the necessary swan neck and plinth bends, and a cast-iron shoe at foot discharging over a gully.

Columns.—The iron columns on ground floor to be hollow, 6 in. diameter, of 3/8 in. metal, with plain caps and bases. The face of caps and bases to be planed true. (Specify the bolts or coach screws, which would be necessary for fixing the base and cap.)

Rolled Iron Joists.—Supply and fix in position the following rolled iron joists of the size and weights described; the whole to be of English manufacture, and no Belgian joists to be used. (Give a tabular list of the joists, their long-h, size, position, and weight, thus.) No. 3 rolled iron joists, 15 in. by 5 in., weight 51 lb. per foot run over ground floor of school room at first-floor level. Similarly describe the steel girders and sraunchons.

Iron Railings.—Put over area to basement wrought-iron framed horizontal railing, with 1 1/2 in. by 1/2 in. frame, 1 1/2 in. by 1/2 in. bars, 6 in. apart, fixed to a stone curb with lugs let in and run with lead.

Put at the side of basement steps wrought-iron framed railing, with $1\frac{1}{2}$ in. by $\frac{3}{4}$ in. rounded rail with scroll end, and $\frac{1}{2}$ in. by $\frac{3}{4}$ in. bars 6 in. apart, let into mortises in stone curb, and run with Spence's metal. The guard bars to kitchen windows to be framed, and the whole height of windows, with $\frac{3}{4}$ in. by $\frac{3}{4}$ in. square bars, placed angleways 6 in. from centre to centre. Two horizontal rails, $2\frac{1}{2}$ in. by $\frac{3}{4}$ in.; the bottom end of bars to be framed to bottom of rail, the upper end to pass through rail and finish with pointed ends. The ends of rails to be 18 in. longer than opening, built into wall, split and turned up and down at ends.

Provide the p.c. sum of 200*l.* (two hundred pounds) for front railing, which is to be made and fixed by a smith to be appointed by the architect. The contractor is to prepare stone coping for fixing by cutting number 64 mortises for inch bars 3 in. deep.

Iron Staircase.—Provide the p.c. sum of 15*l.* (fifteen pounds) for circular iron staircase 4 ft. 6 in. diameter and fix same in position, shown on drawing. The staircase to be supplied by Messrs. _____, to whom the contractor is to pay the p.c. sum of _____ allowed within one month after the production of the architect's certificate.

Iron Casements.—Provide the p.c. sum of _____ for iron casements to windows numbered _____ on plans. These casements are to be properly and truly fixed by the contractor, but will be supplied by Messrs. _____ to whom the contractor is to pay the provisional sum within fourteen days after production of the architect's certificate.

Stoves and Ranges.—Provide the p.c. sum of 25*l.* (twenty-five pounds) for kitchen and the p.c. sum of 50*l.* (fifty pounds) for No 10 stoves, all of which are to be supplied by the firm to be selected by the architect, and to be fixed by the contractor.

Copper.—Provide and set in brickwork as shown on plan, in scullery a 24 in. copper copper weighing not less than 22 lb., with the necessary furnace work and flues with soot doors to chimney stack. The brickwork of coppers to be built in blue lias lime mortar, and rendered round the outside in Portland cement. Provide deal pegged copper lid 2 in. thick in two thicknesses, with cut handle out of $1\frac{1}{2}$ in. deal.

Chimney Bars.—Provide the wrought-iron chimney bars for fireplace openings as specified in the Bricklayer.

Coal Plate.—Provide Hayward's improved safety coal plate, No. 1 D, 14 in. outside diameter, with circular protecting ring for rebated perforation in York stone cover over coalshed.

Strong-room Door.—Provide p.c. sum of _____ for strong-room door and frame, size of door opening 2 ft. 6 in. by 6 ft. 6 in., and build in same to brickwork and stone threshold.

Ornamental Balusters to Staircase.—The principal staircase to have ornamental cast-iron balusters, as shown on detail drawings. Short balusters to weigh 14 lbs. each, long ones 18 lbs. All to be finely cast with lugs let into mortises in stone steps, and run with Spence's metal. The tops fitted to top rail of wrought iron, $1\frac{1}{2}$ in. by $\frac{3}{4}$ in., and screwed through same to oak hand-rail. The newel to be malleable iron cast from turned wood pattern one-tenth larger than size of finished newel as shown on detailed drawing.

Lightning Conductor.—Provide and fix along ridge to _____ ft. run of copper tape lightning conductor $1\frac{1}{2}$ in. by $\frac{3}{8}$ in. with four lightning rods of thick copper tube with platinum points p.c. _____ *l.* each. The copper tape to be secured to ridge with strong copper holdfasts, and to be carried down to ground with tape of the same scantling, securely attached to the building by strong copper holdfasts, and the lower end to be taken 6 ft. below the surface of ground and attached to copper plate $\frac{1}{2}$ in. thick and 2 ft. by 2 ft.; the hole 3 ft. square to be filled in to the height of 2 ft. with gas coke, and the remainder to surface of ground with large s'ize gravel or ballast. Provide the sum of two guineas p.c. for testing this lightning conductor when completed to the satisfaction of the expert, to be appointed by the architect.

Lift.—Provide the sum of _____ *l.* p.c. to be paid to Messrs. _____ for hand-power passenger lift, this sum to include delivery and fixing by Messrs. _____. But the contractor is to allow for attendance upon Messrs. _____ workmen, and for any scaffolding, ladders, or staging that may be required.

Corrugated Iron Roofing.—Roof over covered playground to be carried out as shown on detail drawing, in No. 18 gauge galvanised tinned

corrugated iron sheets; bent to curve, and put together with galvanised wrought-iron $\frac{1}{2}$ in. by $\frac{3}{4}$ in. bolts and nuts, edges and ends of sheets being properly punched for same. The roof trusses to be executed as shown on drawings with $\frac{3}{8}$ in. by $\frac{3}{4}$ in. by $\frac{1}{2}$ in. steel ribs, and 1 in. circular tie rods (if eaves, gutters, and iron water-pipes are required, specify them as desired).

Stable Fittings.—Provide the p.c. sum of _____ *l.* for No. _____ enamelled iron mangers, 6 ft. long, No. 3 ft. angular enamelled iron mangers, No. _____ galvanised iron hay-racks, No. _____ sets of steel divisions, with heel pillars, moulded ramped top rail, bottom sill, and matched boarding. Fix all these fittings in the position shown on drawings.

Provide the p.c. sum of _____ *l.* for enclosures, and doors to loose boxes, and fix same. Provide the p.c. sum of _____ *l.* for No. _____ enamelled iron lettered name-plates, to be fixed to wall with plugs and screws.

Ventilation to Stable.—Provide the p.c. sum of _____ *l.* for self-acting exhaust ventilator, to be supplied by Messrs. _____, and fixed by the contractor in turret shown over roof of stable, and connect same to zinc-lined air shaft 18 in. by 18 in. internal dimensions, formed with $1\frac{1}{2}$ in. deal casing dovetailed at angles, and connected to hollow beam fixed on stable ceiling. This hollow beam to be 12 in. by 6 in. internal dimensions, formed with inch wrought deal bottoms and tops, sides to have $3\frac{1}{2}$ in. by 1 in. wrought deal styles 18 in. apart, dovetailed to top and bottom, and filled in with perforated sheet zinc No. 2,542 in Messrs. Farnillo's catalogue.

Wrought-Iron Scrapers.—The doors numbered _____ on plans to have ornamental wrought-iron scrapers, as shown on detail drawing, with steel plates riveted to uprights which are to be let into mortises in York-stone base and run with lead.

OBITUARY.

MR. A. REID.—Mr. Alexander Reid, architect, of Messrs. Reid & Wittet, Elgin, died on the 4th inst. Deceased was over eighty years of age, and for the last half-century was one of the best known architects in the North. At the opening of his career in Elgin he was the only architect between Aberdeen and Inverness. Along with his late brother, William, he designed a large number of leading houses and mansions in Elgin and all over the North.—*Edinburgh Evening News.*

M. HENRI PILLE.—This able painter has just died in Paris, at the age of fifty-three, by a sudden illness and in full possession of his powers. He was a pupil of Felix Barrias, and made his first appearance in the Salon in 1864 with a pen-drawing, "Edmond Winston." He continued to exhibit annually after this. Among his most original works were "Marie Stuart at Lochleven," "Sybille of Cleves," "Flemish Interior of the Seventeenth Century," "Sancho Panza Recounting his Exploits," the portrait of Coquelin *admet*, and many others, including a remarkable illustration of a scene from "Quentin Durward." He was most widely known to the general public by his pen-drawings and book illustrations. He had a great deal of archaeological knowledge, and excelled in the reproduction of costume, architectural detail and ornament of the Middle Ages.

GENERAL BUILDING NEWS.

NEW FRONT, ALHAMBRA.—On Tuesday, the entrance to the new front of the Alhambra, in Charing Cross-road, was opened by a special matinee. Although the interior decoration is not yet quite completed, a good idea of the building can now be obtained. The whole front is built of stone from the Bath stone quarries, the lower facade, about 42 ft. in width, consists of three entrance doors, the whole framed by a heavy moulding in red Aberdeen granite. The style of the building is Moorish, and it looks rather like a renovated fragment of Seville transported to the middle of London. The interior decoration is very ornate; the ceiling decoration of the vestibule is similar to that of the Viceroys' Palace at Cairo; on all sides are columns of Sicilian marbles, and elaborate pendings in Pavonazza and Devonshire marbles. Mr. W. M. Bruton was the architect, and Mr. H. L. Holloway the contractor.

BATHS, MARYLEBONE.—On Saturday last the new public baths and washhouses at Marylebone, were opened by the Duke and Duchess of York. The building has been erected on the site of the old structure. The front of the building is faced with Portland stone up to the first floor level, and above that with red bricks relieved with Portland stone dressings. There are four swimming baths, two warm baths, a public washhouse and laundry to accommodate seventy-four women, establishment laundry, boiler house, engine room, administrative offices, waiting-rooms, and superintendent's apartments. The Pompeian bath is so constructed that in winter it can be boarded over and

converted into a gymnasium. The screen and central pay office in the entrance hall are of polished mahogany. The mosaic floor was laid by Messrs. Minton & Co., of Conduit-street, W., who also executed the tile pavings and wall linings, including the swimming baths and the hand-painted panels, and of the first-class (Pompeian) bath. The more ornamental of the wrought-iron gates, railings, &c., were supplied by Messrs. Brown & Co., of Birmingham. The contractor for the erection of the building was Mr. Charles Wall, of Chelsea. The engineering work has been executed by Messrs. J. & F. May, and the electrical works by Mr. L. Alwyn. Mr. F. W. Lee was the clerk of works. The architect was Mr. A. Saxon Snell.

NEW FIRE STATION, EDINBURGH.—At a meeting of the Plans and Works Committee of Edinburgh Town Council, on the 4th inst., Mr. Morham, the City Architect, submitted plans for the new central fire station at the south-west corner of the Cattle Market. These show buildings three stories in height in the Renaissance style, with a high tower in the rear. The design comprises an engine-house for four fire-engines, stabling for six horses, duty-room, private office for the clerk in charge, fire station gymnasium, recreation room, and baths for the firemen, workshops for the engineers, joiners, and painters, quarters for nine single men and dwelling-houses for twenty-one married men, residence for the firemaster, a bost-tower, and stores and boiler-houses. Mr. Morham also submitted plans showing the suggested rearrangement of the Cattle Market in consequence of the erection of the new fire station. A plan has likewise been prepared showing how, in the event of the Cattle Market being removed altogether from its present site, the ground might be made available for feuing, with an access from Lauriston. It is suggested that tenements of houses might be erected on the north and east sides, leaving the remainder of the space for recreation and drill purposes. The estimated cost of the buildings, exclusive of the site, is 23,500*l.*

NEW MARINA THEATRE, LOWESTOFT.—The old Rink at Lowestoft has been entirely converted into a play-house. The walls constitute nearly the whole of the old building that has been utilised for the new. The plans for the alterations were prepared by Messrs. R. F. Brett & Son, Lowestoft.

HOSPITAL, CHICKENLY WOOD, YORKSHIRE.—At a meeting of the Dewsbury and District Joint Infectious Hospital Board, on the 4th inst., Mr. G. A. Fox, of the firm of Messrs. Holton & Fox, was appointed the architect of the infectious hospital which it is proposed to erect at Chickenly Wood. Mr. S. Wood (the chairman) explained that it was only proposed to erect buildings to meet present requirements at a cost of about 15,000*l.* The total estimate for the work, as shown by the plans, is over 30,000*l.*

PROPOSED PUBLIC BUILDINGS, WORKSOP.—The plans of the new Free Library and Municipal Buildings, presented at a recent meeting of the Urban Council and approved, were designed and prepared by Mr. T. Kidd, the Engineer and Surveyor to the Council. The buildings will be irregularly rectangular in plan, with frontages to Watson-road and Newcastle-street, the latter containing the principal entrance—to the public offices—and the former the entrance to the Free Library. Both entrances will, however, be in direct communication, and serve also as exits in case of such an emergency as fire. In the basement will be the muniment and strong-room, and the heating chambers and coal and general storage rooms. On the ground floor will be a new and general reading room overlooking Watson-road, and abutting thereon will be the librarian's room, lending library, borrowers' lobby, reference library, ladies' room, and proper conveniences. On the Newcastle-street side will be the Clerk's and Burial Board offices. Over the news room, on the first floor will be a council chamber, a councillors' retiring and deputa-tion room, a large committee room, a book store, lavatories, &c., and fronting Newcastle-street, the Surveyor's offices, with storage above.

TOWER OF ST. OSWALD'S CHURCH, FLAMBOROUGH.—The Bishop of Hull laid the foundation stone of a new tower to St. Oswald's Church, Flamborough, recently. The work is being carried out by Messrs. Bowman & Sons, of Stamford, according to the designs of Mr. Hodgson Fowler, of Durham. A clock and bells are in contemplation, and if these are placed in the tower the total cost will be between 14,000*l.* and 1,600*l.*

FEVER HOSPITAL, EDINBURGH.—The Public Health Committee of Edinburgh Town Council have instructed Mr. Morham, City Superintendent of Works, to complete the plans and specifications of the new City Hospital, and to obtain estimates for the work. A Sub-Committee was also appointed to consult with Mr. Morham, with powers to obtain such special advice as they might require in regard to heating, electric lighting, and such matters.

PREMISES, PINSTONE-STREET, SHEFFIELD.—The building development of Pinstone-street will soon be completed, as the last plot of vacant land, at the corner of Charles-street—opposite the Empire Palace—has been purchased by a company from the Corporation, and a block of shops and dwelling-houses are in course of erection thereon. The block will consist of seven shops and a restaurant five

shops will be in Pinstone-street, one at the corner of Pinstone-street and Charles-street, and one shop and a restaurant in Charles-street. The buildings will be of brick, with stone dressings. The contract is for £10,000 without the land. Messrs. Holmes & Watson are the architects, and Messrs. G. Longden the contractors.

REAL ASSURANCE OFFICES, DUNDEE.—The contract for the mason and iron work of the new Pearl Assurance Offices in Dundee has been placed with Messrs. D. & A. Powrie, builders, Dundee. The contract price of the new structure is between 3,000*l.* and 4,000*l.* Building operations have already been begun. The architects are Messrs. C. & L. Ower.

POLICE STATION, PAIGNTON.—The Devon Standing Joint Committee have accepted the tender of Messrs. Dart & Pollard, contractors, for the erection of a new police station and sessions hall in Palace-avenue, Paignton. The building will comprise a three-cell station, with married and single men's quarters, and a large sessions room. It will be built of red brick, with Bath stone dressings, and red tiled roof. The cost will be 3,600*l.* The plans are by Mr. E. H. Harbottle, architect, of Exeter.

Y.W.C.A. BUILDINGS, LOWE BRIDGE.—The memorial stones were laid recently of the new home of the Lowestoft Young Women's Christian Association, on Regent-road. The architect is Mr. Alfred Clarke, C.E.

CONGREGATIONAL CHURCH, PRESTATYN, FLINTSHIRE.—The newly-erected Welsh Congregational church at Prestatyn has been opened for public worship. The building has been erected on a site in Victoria-avenue, from plans prepared by Mr. Richard Owen, of Liverpool. The contractor was Mr. E. D. Jones.

BOARD SCHOOLS, CARNARVON.—The Education Department have approved of the plans prepared by Mr. R. L. Jones, of the new Board School proposed to be erected on the Pavilion field.

THE COUNTY SCHOOL, CARNARVON.—The County Governing Body have approved of the plans of the new county school buildings for Carnarvon. Mr. R. L. Jones is the architect.

ALTERATIONS TO TRINITY CONGREGATIONAL CHURCH, DEWSBURY.—Alterations and additions are to be made in connexion with this church. It is proposed to erect a wing on the east side of the church, which will allow of an enlarged infants' classroom in the basement and provide a new open staircase from the school to the church. The whole of the gallery at the north end of the sacred edifice, and where the organ is now located, will be taken out and a new floor for the instrument, which will be 5 ft. 3 in. above the ground floor level of the church. A new minister's vestry, as well as a new deacons' vestry, will be added, with entrance hall, &c. A new mahogany pulpit is to be constructed, and the members of the choir will be on the ground floor to the right and left of the minister. On the gallery floor there will be a new class room and a church parlour, with ladies' lavatory, &c. The new partition at the north end of the church will have Corinthian pilasters, and there will be a moulded arch over the organ. The ceilings of the various rooms will be divided into panels by moulded plaster ribs. Messrs. Kirk & Sons, Dewsbury and Huddersfield, who are the architects, will superintend the works. The successful contractors are as follows:—Mason's work, Messrs. C. Whitehead & Sons, Ravenshoepe works, Messrs. Fothergill & Schofield, Batley; Carr, Plasterer; Mr. Samuel Crawshaw, Batley; plumber, Mr. F. Newsome, Dewsbury; and painter, Mr. Ned Ramsden, Batley Carr. The total cost of the works will entail an expenditure of about 2,500*l.*

CATHOLIC CHURCH, DERBY.—On the 25th ult. St. Joseph's new church, Mill Hill, Derby, was opened. The new church is of brick and stone, being faced outside with pressed bricks, with Bath stone dressings. The building consists of nave, north and south transepts, sanctuary, lady chapel, and baptistry, with north porch, vestry, and octagon belfry. The main entrance is at the west front in Gordon-road. The octagon belfry rises to a height of 56 ft., and it comprises a spiral staircase leading to the choir gallery. A bell is fixed at the top. The east or sanctuary end in Moore-street contains a circular tracery window; the other windows in the church are double lancet, and are all glazed with tinted cathedral glass. A covered gateway leads from the presbytery to the north porch. Inside the church is 92 ft. long, the sanctuary being 18 ft. long and 23 ft. wide. The width of the nave is 30 ft., and, including transepts, 49 ft. The choir gallery is at the west end. The benches are of pitch pine, and the church will hold about 450 people. The floors are covered with wood blocks on cement, excepting the sanctuary, which is covered with Goodwin's sanitary tiles, with blue York stone steps leading from the nave. The roof has pitch pine principals, with double collar beams and arch ribs. The rafters are deal boarded on the top, and covered outside with Broseley tiles. The inside stone arches, &c., are of Bath stone, and the walls are faced in Parian cement. The building is heated by hot water pipes, and is lighted by radiators, the heating chamber being under the baptistry. Mr. J. Hart of Corby, Grantnam, was the architect, and Mr. J. Clarke, of Nottingham, was the builder.

ACCIDENT WARD, MERTHYR HOSPITAL.—The Merthyr General Hospital has been extended by the recently-completed provision of an accident ward on the western side of the building. The designs of the late Mr. T. C. Wakeling were accepted for its construction, and in May, 1894, the contract was given to Mr. Richard Lloyd, of Cefn. The architect died before the work had far advanced, and after his death its supervision was undertaken by Messrs. James & Morgan, of Merthyr. Externally the ward is built of red and buff Ebbw Vale bricks, with Loughborough stone dressings. The entrance is from Gwaelodyarth-lane. The door opens into a vestibule, floored with encaustic tiles, and fitted with hot and cold baths, the windows by which it is lighted being of stained glass. The vestibule contains a padded receiving-table, upon which patients are placed immediately upon their admission. The walls are the same as in the ward, which is entered by means of folding doors. In the ward itself accommodation is provided for five beds. It is heated by Musgrave's patent stove, fitted with electric bells, and ventilated by Boyle's patent automatic induced current extractor, with fresh air inlet wall brackets. Folding doors separate it from the operating chamber; and there is direct communication with the night nurses' room.

RESTAURANT, EXETER.—The ground-floor of Gifford's Hotel, High-street, Exeter, has just been converted into a restaurant. The work has been carried out by Exeter tradesmen, from the designs and under the superintendence of Mr. J. Archibald Lucas, architect, of Exeter. The general contractors were Messrs. Tree & Bailey, the decorator Mr. R. J. Mills, the plumbers and gasfitters Messrs. Hubber & Son, and the carvers Messrs. Hams & Sons.

MUNICIPAL BUILDINGS, CONWAY.—At the Conway Council meeting on the 3rd inst., Dr. Prichard (Mayor) in the chair, the Surveyor (Mr. Farrington) submitted plans for converting the old Market-hall into new municipal buildings, with a market hall and public hall, and armoury for the volunteers. He explained that the Council had had a loan of 2,500*l.* sanctioned for the work. Dr. Morgan moved that tenders be obtained at once. Alderman H. Hughes seconded the resolution, which was carried; and it was agreed to try and obtain the adjoining property to carry out the scheme.

CHURCH, CASTLEBAR, IRELAND.—On the 2nd inst. the Rev. Father Lyons turned the first sod of Castlebar new church. The new church will be erected in close proximity to the old one. Mr. Walter Doolin, C.E., Dublin, is the architect.

BUSINESS PREMISES, DUBLIN.—The premises at 46, Mary-street, at the corner of Jarvis-street, Dublin, have been entirely reconstructed. The building covers an area of nearly 4,000 ft., and has been erected from plans prepared by Mr. W. Kaye Parry, of Dublin. The contractors were Messrs. Joseph Pemberton and Son, and all the plumbing work has been executed by Mr. T. W. Little.

LOUISE MARGARET HOSPITAL, ALDERSHOT.—The memorial stone of a new hospital for the wives and children of soldiers in the district was laid at Aldershot recently by the Duchess of Connaught. The hospital is to be built on the south-east side of Thorn Hill, on a prolongation of a frontage line of the Cambridge Hospital, but inclining slightly to the north, owing to the configuration of the ground, and at a height of 350 ft. above the sea level. The building will provide accommodation for fifty-three beds. There will be two two-story blocks containing six wards, and two one-story blocks containing five small wards and an isolation ward. An administrative block will contain the matrons' and nurses' quarters, surgery, and all necessary offices. The joinery and fittings are to be of pitch pine, including the floors, with the exception of those of the corridors, which are to be of wood blocks laid upon concrete. The work is being carried out by Messrs. G. G. Wallis & Sons, of Maldstone, under the superintendence of Mr. C. J. Slade.

ST. GEORGE'S CHURCH, STOCKPORT.—The Bishop of Chester recently consecrated St. George's Church, Heavily, Stockport. The church is of Runcorn stone. It has a central tower and spire of the height of 230 ft. The nave is 29 ft. wide and 112 ft. long inside, with north and south aisles each 19 ft. 3 in. in width. The chancel is 28 ft. 6 in. wide and 68 ft. long, the westernmost portion being under the central tower, with a morning chapel on the north side, and on the south the organ chamber opening into the tower, with the vestries (choir and clergy) farther east of the organ chamber. The total length of the church is 180 ft., and the total width across the aisles is 75 ft. The nave, which has a clearstory of twelve windows on each side and a triforium, is 57 ft. high to the wall plate, the aisles being 37 ft. The architects were Messrs. Austin & Paley, of Lancaster. Messrs. Thornton & Sons, of Liverpool, carried out the masonry, and Mr. Hindmarsh was clerk of the works.

INDUSTRIAL INSURANCE.—The report of the Prudential Assurance Company states that in the Industrial Branch "the premiums received during the past year have amounted to 4,570,793*l.*, an increase of 22,168*l.* over the previous year." This looks as if insurance among the industrial section of the population was steadily on the increase.

SANITARY AND ENGINEERING NEWS.

SEWERAGE SCHEME, LYTHAM, LANCASHIRE.—The Lytham Council, on the 4th inst., amended its application for sanction to borrow 5,500*l.* on account of sewage disposal works, and made it 6,500*l.*, the former amount being insufficient to meet the latest estimate. This includes the putting down of a destructor. It was also resolved to enter upon an expenditure of 2,829*l.* on the drainage of the west end of the town, and Mr. Henry Bancroft was appointed engineer for this scheme.

PIERS, MORECAMBE.—Messrs. Magnall & Littlewood, architects, are now engaged on two piers and three pavilions for Morecambe.

PUBLIC IMPROVEMENTS, SCARBOROUGH.—Colonel Hasted, R.E. (Engineering Inspector), and Mr. E. P. Burd (Inspector of Local Loans, Acts, and By-laws), held an inquiry at the Scarborough Town Hall, on the 3rd inst., with reference to the application of the Corporation for a provisional order. The Corporation seeks powers, among other things, to borrow moneys for the construction of the Marine Drive and sea-wall authorised by the Act of 1889, and for other purposes connected therewith. The Town Clerk explained that under the Act of 1889 the Corporation obtained powers to borrow 70,000*l.* for the construction of the drive and wall, but when they received the tenders they found that this sum would be exceeded, as there were several additional works to be done at the instance of the Board of Trade and the Commissioners of Woods and Forests in order to meet the Scarborough Harbour Commissioners and the local fishermen. The borrowing of the additional 10,000*l.* had been sanctioned by a poll of ratepayers in October last. Mr. J. E. Everett (the engineer for the construction of the drive and wall), in explaining the works to the Inspectors, said that the estimated cost of the whole scheme was now 73,457*l.* Colonel Hasted: Is there any chance of your getting the work completed in two years?—Mr. Everett: Yes; we shall have three summers. Colonel Hasted: You cannot do much before June this year?—Mr. Everett: No; but we shall go on preparing concrete blocks and so on. The next question was as to enabling the Corporation in the case of new buildings or buildings without proper closet accommodation, if in either case a sufficient sewer and water supply are reasonably available, to require that such buildings shall be provided with water-closets.

FOREIGN.

FRANCE.—M. Chancel, head architect at the Elysée, has been ordered to make designs for the enlarging of the Presidential Palace in preparation for the fêtes that the President will give at the time of the 1900 Exhibition. The principal feature will be a large reception hall by the side of the Avenue Marigny.—An exhibition of china will be held at the Palais des Beaux-Arts from May 15 to July 31. It will be under the Presidency of M. Georges Berger, President of the "Union Centrale des Arts Décoratifs."—Some new negotiations have been entered into between the State and the Department of the Seine on the subject of the wall round Paris and the military zone. In consequence of this the barracks of the Ecole Militaire, and the Duplex and Quai d'Orsay quarters, will all be demolished, and will be replaced by buildings bordering the road between the Porte de la Famine and the Porte de Versailles. This will assist towards the total destruction of the Paris fortifications.—There is an exhibition of painting and sculpture by Russian artists at 97, Rue de Rome, and another exhibition of the works of Jean Veber at the Georges Petit gallery.—M. Brésson has gained the first premium at the open competition for the Hôtel de Ville at Brunoy.—The artist M. Donnât has just received a gold medal from the Académie des Beaux-Arts at Florence.—A committee has just been formed with a view of raising subscriptions for the erection of a monument in honour of Petrarch, to be placed near the fountain of Vaulouse, where there is a bust of the celebrated "Laure de Noves" by M. Clovis Hugues.—The Municipal Council of Lyons have decided to make several roads and squares in place of the old fortifications on the left bank of the Rhône.—A statue of Péronnet, the engineer who built the bridge at Neuilly, is to be erected at Neuilly at the expense of the town and State.—M. Eugène Leseur, architect, of Sens, has just died. He was a member of the "Société des Architectes de l'Yonne."

—The death is announced of Marius Dieudonné, (sculptor), Keeper of the Museum at Arles. Amongst his works may be mentioned, "Le Serpent d'Airain," bought by the State at the Salon of 1890, a colossal statue on the clock tower at Trinquetailles, and a marble bust of Bossuet, in the court of the school at Arles.

GERMANY.—The Amalgamated Societies of German Architects and Civil Engineers will hold their annual business meeting of delegates at Rothenburg on August 27 and 28. Herr Süßleben is President for the year 1897; the secretary is Herr Hinckenburg.—A founding hospital and school is to be erected at Berlin in accordance with a bequest of approximately 40,000*l.*, and the Municipality will take over the management of this new institution. The bequest has been

the subject of much litigation since 1802. Rapid progress is being made with the erection of the national monument to William I, opposite the "Schloss" at Berlin. Every effort is being made in order to unveil the monument on March 22, in honour of the hundredth anniversary of the birthday of the deceased.—The Arts and Crafts Association at Berlin has opened the exhibition of modern glass windows, which, according to the German Press, is considered to be very successful.—Some memorial tablets are being prepared as a record of the founding of the German gunboat *Hitts*, which happened last year on the China Station.—It has now been definitely decided to erect a memorial to the Emperor Frederic at the "Museum Island" at Berlin. The bridge to the island will be rebuilt to accord with the arrangements for the monument, and the Municipality has voted 10,000*l.* for this purpose.—Considerable attention is being given at Berlin to a scheme for connecting the whole of the suburbs by an electric district railway.—The "Potsdamer Platz" at Berlin is to be modified, the heavy traffic at this point making it impossible to keep to the old plan of the square. The exact re-arrangement of the square is the subject of much discussion in the local press.—The city of Lubek has framed a series of regulations for the better protection of historical monuments in that city. The code is so framed as to give the authorities very extensive powers. A curator has been appointed to make an inventory of everything of historical interest at Lubek.—An important Roman graveyard has been discovered off the old Roman road on the left bank of the River Eisbach; 205 graves have already been uncovered, and a large number of coins, seals, and household utensils have been found.—The Avenue of Victory, for which the Emperor has ordered a number of statues which he will give as a present to the Municipality of Berlin, is to be rearranged with a view of affording good positions for the sculpture.—The suburb at Grunewald, near Berlin, is to have its own Bismarck monument, owing to the old forest having been a favourite resort with the ex-Chancellor.—We understand that further extensions of the important observatory placed at Potsdam are to be taken in hand immediately, and that the foundations for another large telescope will be laid next month.—AUSTRIA.—Some new people's baths are to be erected at a cost of 5,000*l.* for the Municipality of Vienna; the system adopted is that of providing a large number of shower baths, and 100 will be installed to begin with.—The Emperor of Austria has accorded a number of distinctions in connexion with the completion of the new buildings of the Graz University, and neither architect, nor the contractors, nor sculptors have been forgotten. Baurab Rezonni is in charge of the work.—A kind of "people's palace" is to be erected in a suburb of Vienna, with assembly rooms, concert rooms, restaurants, &c. Mr. Roth will be the architect. There will also probably be a new suburban theatre at Vienna; the building itself will cost about 500,000 florins; the site is to be provided by the Municipality.—Vienna will next year have a so-called "Common-Welfare" Exhibition, and preparations are being energetically made. There will be a model theatre for an audience of about 1,800, in which plays relating to social problems will be given.—The Barons Albert and Nathaniel Rothschild have given a large sum of money for the erection of a new Synagogue at Vienna.—A large number of historical buildings in the town will be demolished directly after Easter, in connexion with the extensive city improvements which are to be carried out at Vienna.—The well-known suburb Frazensbad is to have new waterworks, new sewage, and electric light.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. Arthur E. Street is moving, on Lady Day, from 119, Cavendish-place, to 214, Bryanston-square, W.

GREEK HISTORY AND MONUMENTS.—The opening lecture of a course treating of "Greek History and Extant Monuments" was given on the 4th inst. at the Royal Institution, by Professor Percy Gardner, L.R.D., F.S.A. He commenced by remarking that archaeology served as a handmaid to history, and that by its means the general knowledge and appreciation of past days was made more easy and distinct. Modern archaeology was nothing if not scientific. The force which had changed the older antiquarianism into the newer evolution was that of evolution, which had ranged in an ordered whole the monuments preserved in the museums of different countries. The critical tendency had dealt hardly with the ancient writers, and their value as authorities was much diminished. A check on modern scepticism was furnished by the researches of archaeology, which dealt with things that could be seen and felt. Archaeological data not only assisted in the sifting of historical narrative, but also supplied a background to the theatre on which the historical drama was played, and as such was a great help to the imagination. Professor Gardner then went on to refer to the result of museum work in the field of numismatics and of painting, and to describe with the help of lantern slides the recent excavations of the French at Delphi, pointing o

the gain that had thence resulted to the student of Greek history.

DUBLIN BUILDERS' ASSOCIATION ANNUAL DINNER.—The annual dinner of the Dublin Master Builders' Association took place recently at Jury's Hotel. A company numbering about ninety assembled. The Right Hon. Alderman Meade, J.L.D., presided. The Chairman first gave the toast "The Queen." Sir Charles Cameron, in proposing the toast of "The Master Builders' Association," said from what he knew of the Association of Master Builders he could say it was composed of craftsmen of the highest order. Alderman Meade, President, responded. He said that as an Association they were face to face with a very serious condition of affairs in the spring of last year when they had to deal with a disagreement with their workmen, and during that time the work of the Association had been well and satisfactorily done. He was happy to say that they had drawn up a satisfactory system of working, and the men were now working with a better heart than before the strike, and under such rules as would, in his opinion, make it unlikely that they would hear of a strike again for many a long year. They also hoped to have rules adopted between the builders and architects, which would probably put an end to those little differences which sometimes culminated in the law courts; and he was sure when that was done there would be a court of appeal between the builders and the architects that would be able to settle all differences. The Hon. Secretary of the Association (Mr. Good) also responded. The Chairman gave the toast of "The Guests," and called upon Mr. T. Drew, President of the Royal Institute of Architects of Ireland; Mr. Orpen, President of the Architectural Association; Mr. Spencer Hart, City Engineer; Mr. W. A. Craig, J.P.; and Mr. Maurice Brooks. Mr. Drew, in the course of his reply, said that architects and builders had worked cordially together. The builders had now become organised, and the architects had a body with whom they could deal. That showed one good that had arisen from the great strike of last year, which was probably one of the best things that had taken place in Dublin for a long time. Other toasts followed.

STATUE AT THE WELSH CHURCH, CARDIFF.—A new statue has just been unveiled at Eglwys Dewi Sant, Cardiff, by Lord Tredegar. The figure is carved in Portland stone, and represents Dew Sant in the full vestments of a Celtic bishop of early times, with a crown instead of a mitre. The architect is Mr. E. M. Bruce Vaughan.

DECORATION OF ST. PAUL'S CHURCH, HULLERSFIELD.—This building, after being closed for several weeks for renovation, was reopened recently. The scheme of decoration, which is chiefly in warm terra-cotta hues, was prepared by Mr. Isaac Hordern, of Edgerton, who also has designed and given a reredos. The paintings on the reredos are the work of Mr. A. O. Hemming, of London. Electric light, with 205 lamps, has been installed in the church.

REREDOS, ST. MICHAEL'S CHURCH, HEADINGLEY, LEEDS.—A reredos has just been placed in the side chapel of St. Michael's church, Headingley. The reredos has been designed by Mr. M. Pearson, R.A., the architect of the church, and executed by Messrs. Clayton & Bell, London.

BIRMINGHAM MASTER PLUMBERS' ASSOCIATION.—The members of the Birmingham and District Master Plumbers' Association held their first annual dinner at the Colonnade Hotel, on the 3rd inst. The Association, which is a branch of the National Association, was formed in 1805 to advance the interests of the trade. Mr. G. Osborn, President of the branch, occupied the chair. The toast of the National Association was submitted by the President, who said that the Association had not existed very long, but it could boast of a membership of about 800. Its object was to place the plumbing trade on a higher footing than it had hitherto occupied, and to bring about a higher class of work. Mr. J. Peattie responded. The society had now forty-five branches, with a membership of between 700 and 800. There were over 2,270 registered master plumbers in Great Britain and Ireland. That number did not represent more than one-tenth of the number of master plumbers practising. They ought, therefore, not to be satisfied until they had at least 2,200 members of their Association. Incidentally, he remarked that they must strive to show architects the necessity of receiving separate tenders for plumbing work. If this were done the work would come into the proper quarter. Mr. Peattie also proposed the toast of the Birmingham and District Branch. Mr. Hill, in acknowledging the toast, said they were negotiating with the Birmingham Corporation and trying to devise some method of authorising plumbers. They did not want people in the trade who had no knowledge of it. Other toasts were honoured.

ANNUAL REPORT OF THE PEABODY FUND.—In this, the thirty-second annual Report, it is stated that the net gain of the year, from rents and interest, has been 28,787*l.* 4*s.* 1*d.* The sum given by Mr. Peabody was, in 1862, 150,000*l.*; in 1866, 100,000*l.*; in 1868, 100,000*l.*; and received by bequest from him in 1873, 150,000*l.*; making a total of 500,000*l.*, to which has been added money received for rent and interest, 698,126*l.* 0*s.* 9*d.*, making the total fund on

December 31 last 1,198,126*l.* 0*s.* 9*d.* Of the 85,000*l.* advanced by the Bank of England, as stated in the last report, the trustees have repaid 31,000*l.*, leaving a balance of 54,000*l.* still due. The capital expenditure on land and buildings to the end of the year was 1,250,390*l.* 10*s.* 8*d.* The whole of the repairs for the year amounting to 11,000*l.* 5*s.* 1*d.*, which include extensive structural and drainage alterations at Islington, Old Fye-street, and Stamford-street, have been charged to income as formerly. At the end of the year the trustees had provided for the artisan and labouring poor of London 11,367 rooms, besides bath-rooms, laundries, and lavatories. These rooms comprised 5,121 separate dwellings, viz.:—53 of four rooms, 1,784 of three rooms, 2,429 of two rooms, and 825 of one room. The average weekly earnings of the head of each family in residence at the close of the year was 17*l.* 3*s.* 5*d.* The average rent of each dwelling was 4*s.* 9*d.* a week, and of each room 2*s.* 2*d.* Therein in all cases includes the free use of water, laundries, sculleries, and bath-rooms.

BUILDING IN UGANDA.—According to a recent report on the Trade and Industry of Uganda, by Mr. E. I. L. Berkeley, issued as a Parliamentary paper, the proceedings of the Administration in regard to building in burnt bricks and roofing with tiles are being followed with keen interest, and a number of Waganda are permitted to join the work-yard for the purpose of learning. Several chiefs have already built for themselves very creditable houses with sun-dried bricks and thatched roofs, and preparations are being made for at least a score of new buildings on more skilled principles, amongst them a large central office and court house for the native administration. The natives show a great aptitude in carpentry, and with the introduction of better tools and particularly, in time, of saw mills, the industry will make great progress. They are also experts in iron-working, and though the industry was more flourishing before the wars that in recent years have ravaged the country, it is now rapidly recovering its activity, and will greatly improve under the example of the skilled workmen recently brought by the Administration from India. They also make a very good class of pottery, and show evidence of marked and continuous improvement in the art.

DUNDEE MASTER BUILDERS' ASSOCIATION: DINNER.—The annual dinner of the Dundee Master Builders' Association was held in the Queen's Hotel on the 4th inst. There were about seventy gentlemen present, and Mr. John F. Shaw, the President, occupied the chair. The Chairman proposed the usual loyal and patriotic toasts. Mr. W. Low proposed "The Lord Provost, Magistrates, and City Council," and Bailie Robertson replied. Lord Dean Guld Paul, in proposing "The Building Trade," said the building trades of the city had for some time been very prosperous, and it was a pleasure to think that, for a considerable time to come, there was likely to be as prosperous times for these trades. Within the past fortnight applications had been made to the Town Council for the opening up of four or five new streets in Dundee, which showed there was to be a considerable boom in the building trade for a year or two. The Chairman, in responding, acknowledged that the building trade had been very prosperous during the past year. When he came to Dundee about forty years ago he worked sixty hours per week for 16*s.*, and he was now paying men 1*l.* 16*s.* for fifty-one hours. Provisions were as cheap now as they were then, but house rents were dearer. About forty years ago they would have got two rooms in Dundee for 5*l.* or 5*l.* 10*s.*, but they would now have to pay 8*l.* or 9*l.* for that accommodation. There was no doubt that the high wages paid to the men in the building trade raised the prices of property, but there were many trades in the city in which the wages had not risen in the same proportion. However, he hoped that good trade would continue, for there was nothing more satisfactory to masters and men than that there should be plenty of work. Mr. W. Alexander proposed "The Trade and Commerce of Dundee," and Convener Bell replied. The other toasts included—"Representatives from other Cities," "The Timber Trade," "The Quarrymasters," "The Legal Profession," &c.

THE SHIP LIFT, DORTMUND.—The ship lift, which is an important feature of the new canal between Dortmund and Ems Harbours, is fully described in a publication issued by Messrs. Ernst & Sohn, of Berlin. It is written by Mr. B. Gerdaun, and illustrated by diagrams taken from the working plans. We have already had occasion to refer to this ingenious piece of mechanism for overcoming what would otherwise have been the necessity for constructing a series of locks.

THE DOCK GATES OF LIVERPOOL.—At a meeting of the Liverpool Engineering Society, held on the 3rd inst. at the Royal Institution, Mr. S. B. Cottrell, President, in the chair, a paper was read by Mr. William Brodie on "Dock Gates." The lecturer mentioned that the old Liverpool dock was constructed in 1705, but that dock gates might have been constructed much earlier if required, as gates were used for canal locks in Europe as early as the fourteenth century. A novel and very special form

* "Das Schiffshewerk bei Henrichsburg am Canal von Dortmund nach den Emsbäfen." By B. Gerdaun. Berlin: Ernst & Sohn.

of gate was that in use at Messrs. Clover, Clayton, & Co.'s yard, Birkenhead, consisting of an iron frame approximately rectangular, covered with sheet iron, and turning on a horizontal hinge in the bottom of the entrance. The clapping faces of the gates were formed of pitch-pine baulks, with india-rubber sheeting to ensure water-tightness, and the gates were opened by being lowered by wire ropes into a horizontal position outside the sill, and below its level. The lecturer considered this a new, interesting, and bold departure from the precedent of the ordinary two-leaved wooden gates seen in the Liverpool docks, and which he proceeded to describe. The materials used for gates have been timber, timber and wrought iron combined, wrought iron alone, and steel. Timber has been exclusively used for the Liverpool gates. Oak was long the favourite material, and most of the docks gates of the port have been constructed of that wood. A former engineer to the Liverpool docks, Mr. Jesse Hartley, curing the dock extensions, spent a good deal of time periodically travelling about England looking for suitable wood. Oak has now been supplanted by greenheart, which is to be obtained in better lengths, and which resists the attacks of sea worms. After the reading of the paper a discussion ensued, which was adjourned until the 17th inst., on the motion of Dr. Hele-Shaw.

MONUMENT TO THE LATE MR. HAMILTON MACALLUM. A memorial of the late Mr. Hamilton Macallum, in the form of a monument of Portland stone and a bust by Mr. Onslow Ford, R.A., was unveiled at Beer, South Devon, on Saturday last. The memorial was unveiled by Professor Herkomer, R.A., in the presence of Mr. Macwhirter, R.A., Mr. Onslow Ford, R.A., and Mr. Colin Hunter, R.A.

LECTURES AT CARPENTERS' HALL.—The third of these lectures, entitled, "Is a National Twentieth Century Style of Architecture Probable?" was delivered on Wednesday, by Professor Banister Fletcher, and did not prove so interesting as the subject had led us to expect. The lecturer spoke of the various fantastic eccentricities of recent times, which the originators had boldly proclaimed to be the style of the future; these future models had died a natural death, and the Professor pointed out that any attempts to produce a style in any other way than by the development of the architecture of the past would result in a similar failure. He then proceeded to trace the development of the successive styles from the Parthenon to Westminster Abbey, in each instance pointing out the motives that had prompted the workmen to stray from the models before them. But if the lecturer disappointed his audience at all, it was by maintaining a severe silence upon the architecture of to-day; no light was thrown upon the vexed question of a modern style of architecture, the Professor contenting himself by expressing the popular sentiments of the profession, and remarking that until the public took some interest in the building of their towns and private houses the progress in architecture would be a slow one. Much thought and attention was given to science at the present time—probably no branch of learning had made such rapid advances—but in a reign remarkable for the encouragement of art and science, architecture was comparatively neglected and ignored. Next Wednesday the lecture will be upon "The Chemistry of Certain Metals Used in Building Construction," by Professor J. M. Thomson.

CAPITAL AND LABOUR.

DISPUTE IN THE BUILDING TRADE AT LEANDUNNO.—The stonemasons of Leandunno have struck work in consequence of their demand for an advance of 4s. 6d. a week being refused. The plasterers have also come out on strike for a similar reason.

LEGAL.

THE CLAIM AGAINST THE ST. PANCRAS GUARDIANS.

MR. RIDDLEY, Q.C., the Official Referee, resumed the hearing of his claim this week. It will be remembered that the plaintiffs, the trustees of creditors of Mr. Wm. Brooks, builder, of Folkestone, sued the Guardians of the Poor of St. Pancras and their architects, Messrs. A. & C. Harston, for a balance of 24,226*l.*, or, alternatively, 24,262*l.*, alleged to be due on a contract for the completion of the St. Pancras workhouse. The plaintiff's case was that some years ago the Guardians resolved to reconstruct the workhouse in King's-road, and appointed Messrs. Harston as their architects. The contract for the work was at first taken by Messrs. Kirk & Randall, of Woolwich, but disputes arose, and in 1892 the firm requested to be relieved of further work under the contract. Fresh tenders were invited for the unfinished work, and that of Brooks was accepted. For 50,861*l.* the work was to occupy fifteen months from May, 1892, but delays arose, and in Nov. 1894, the work was stopped. Messrs. Drew-Bear, Perks & Co., of Queen Victoria-street, who

supplied the ironwork; Mr. H. Tolpitt, of Folscombe, who supplied the timber; and Mr. J. Brown, of Cannon-street, who supplied bricks, sued on behalf of creditors for the balance alleged to be due to Mr. Brooks. The net cost of the work executed was stated to be on the first claim 65,479*l.*, plus 10 per cent. profit, 6,547*l.*, making 72,026*l.*, of which 47,800*l.* had been received under the architects' certificates, leaving a balance of 24,226*l.*. In the alternative claim the net cost of the work executed was estimated at 65,479*l.*, plus 10 per cent. profit was reckoned on the contract price of 50,861*l.*, which, with other amounts claimed, brought the alternative claim to 24,262*l.* The plaintiffs alleged that Brooks was hindered from continuing and completing the contract by the action of Mr. George Poole, the clerk of the works, who interfered without sufficient cause, and condemned materials supplied wholesale. It was also further alleged that the architects were seldom on the works, and that the interference of the clerk of the works caused needlessly a net loss to Brooks of 2,526*l.* in addition to 193*l.*, the value of the materials left by Kirk & Randall and not permitted to be used. The defendants generally denied the charges against the clerk of the works, and alleged that Brooks had not carried out his undertaking to complete the work left unfinished by Kirk & Randall. The Guardians further relied on the Public Authorities Protection Act, 1893, as being a defence, inasmuch as the matters referred to in the action occurred more than six months before the action was brought. Messrs. Harston, the other defendants, pleaded that they were not liable, and said that they had received no complaints from Poole with respect to the manner in which the works were being carried out by Mr. Brooks. Upon the conclusion of the evidence called on behalf of the Guardians, however, the learned Referee decided that, as the plaintiffs had failed to make out that Messrs. Harston had been guilty of fraud, dishonesty, or collusion, those gentlemen were entitled by law to judgment, but he reserved the question of costs. Reports of the case have appeared in the *Builder* of November 21 and 23, and December 5, 1895, and January 23 and 31, and March 6 last.

Mr. Reginald Bray and M. A. A. Hudson appeared as counsel for the plaintiffs; Mr. English Fitzroy and Mr. W. Moses for the Guardians; and Mr. MacIntyre and Mr. R. W. Turner for the architects.

Mr. English Harrison, in addressing the learned Referee on behalf of the Guardians, submitted that the builders had made out no case as against his clients of anything done by Messrs. Harston with regard to the condemnation of materials, as not being in accordance with the specifications. He (Mr. Harrison) also wished to point out that the action of Mr. Poole, who was under the terms of the contract, solely the inspector and assistant of the architects, could give the plaintiffs no cause of action against the Guardians. The evidence of the Guardians proved that they did not interfere in any way whatever. The evidence also made it perfectly clear that the decisions of Mr. Harston had always from first to last been acquiesced in by the builder. Mr. Boden (the Chairman of the Building Committee), had said that when a complaint was made to him on the matter, he told Fearon that if he wanted to make any complaint he was to write a letter to the Clerk to the Board, and then it would be dealt with. Fearon had never taken that course at all, and from first to last brought no complaint—excluding the hand-rail matter—before the Board or the Building Committee, and therefore had always acquiesced in the decisions of Mr. Harston. From time to time when Poole had expressed his non-approval of the work, one of two things had happened; in some cases Fearon had gone on using the material, or left the work in without taking any further trouble at all. On the other hand, there were instances where Poole served a written notice on the builder in the terms of the provisions of the contract that he would not allow certain materials to be used. In some cases Mr. Harston did not agree with Poole, and over-ruled him, and in other cases agreed with the views of Poole, and decided against Fearon. He (Mr. Harrison) therefore submitted that as all those matters had been dealt with and settled under the contract, the learned Referee could not enter into them. It must, he said, also be recollected that there was no guarantee in the contract anywhere on behalf of the employers that Messrs. Harston would properly superintend the work, although the work was to be done to their satisfaction. The plaintiffs asked that the contract should be set aside altogether, and that a totally different set of obligations should be substituted in the place of those obligations which had been signed, sealed, and delivered by them in their contract. That course would lead to considerable danger unless it were done under the most exceptional and extraordinary circumstances. There could be no doubt that all the parties had acted upon the supposition that the contract was absolutely binding upon them and that the terms were to be fulfilled by all of them. At the time that there were disputes and friction about columns, sand, bricks, and so on, and Mr. Harston was enforcing certain rights under the contract, Fearon never went to the Guardians and suggested that he was not being properly treated, and therefore the Guardians had not the slightest idea that anything improper

was going on. It was not fair to the Guardians to keep them in the dark and try to make them liable afterwards. It seemed to the learned Counsel a most monstrous thing for the plaintiffs to assert that they were not bound by the terms of the contract, having regard to the fact that they persuaded the Guardians to go on with it, and got the Guardians to advance them more money under the contract than they were entitled to obtain. It was said that the conduct of Poole and the conduct of Mr. Harston was the cause of the contract being set aside, and a reason why the Guardians should have obligations put upon them which they never understood. If the builder acquiesced in what Poole said, he could not afterwards turn round on the employer and complain that Poole told him to do a thing which he had no right to do, and that he (the builder) went and did it. It seemed a startling proposition to say that a document which was under seal could be got rid of in that way.

The learned Referee: If the contract is made impossible of performance there is an end of it. If you make a contract with me, and then put it out of my power to perform it, that is an end of the contract. You cannot complain of my not performing the contract if you put it out of my power to do so.

Mr. English Harrison, continuing, contended that inasmuch as the parties had acquiesced in and acted on the contract from first to last, they were bound by the terms of it, and that the proper course for the learned Referee to take would be ascertain what damages (if any) the plaintiffs would be entitled to for breaches of the contract, and what those breaches (if any) were.

Mr. Bray, in the course of his reply, said that the question of acquiescence did not enter into the case at all, and that in the special circumstances the contract had ceased to exist. The learned counsel having dealt in detail with the figures in the claim, said that it was suggested the plaintiffs had employed an incompetent foreman, but he contended that if ever there was a competent man for the work, that man was Mr. Fearon. He impressed upon the learned Referee the fact that the work in question cost over 20,000*l.* more than was anticipated, and, therefore, the assumption was, he said, that the circumstances were altered. He asked the learned Referee to find on the evidence that the contractor was prevented from taking possession of the site, and that it was not the contractor who neglected to do so. Dealing with the conduct of Poole, the clerk of the works, the learned counsel asked the learned Referee to find that that gentleman had condemned materials which he knew perfectly well were sufficient. This he probably did in some cases to get better materials than he was entitled to, and in others might be attributed purely to temper.

The learned Referee: I think he did. I don't think that anybody who recollected him in the witness-box could deny what they say on the other side, viz., that they ought to have treated this man, who lost his temper, with contempt, or gone to the architects. I should like to know how you deal with that point. Although Fearon says that Mr. Harston informed him that he should always support the clerk of the works, that was not until June, 1893. Why did not Fearon go to Mr. Harston?

Mr. Bray replied that his answer to that was that it was not a practical remedy, inasmuch as it would take three or four days to get the attendance of the architect, the work being suspended in the meantime, and therefore it was better and saved expense for the contractor to give way to Poole than to go to the architect. It did not rest there, however, as Poole, like all other clerks of the works, had the ear of the architect, and it was therefore no use for the contractor to struggle against it. Although the charge of fraud or dishonesty of the architects had gone, he did not abate one atom from the suggestion that he had made throughout, that the architects had been unreasonable and grossly unreasonable. The architects in delegating their functions in the main to Poole, had not exercised their discretion in the matters in question, but had left them to be entirely governed by Poole. Mr. Bray concluded his address by asking the learned Referee to find that the plaintiffs had proved their case up to the hilt, and were entitled to a *quantum meruit*.

The learned Referee intimated that he should take a few days to consider his judgment.

Judgment reserved accordingly. In our report of the case last week, we should have stated that Mr. Henry Currey, F.R.I.B.A., architect of St. Thomas's Hospital, was present in court to give evidence for the defendants, but that he was not called.

ALLEGED OBSTRUCTION OF ANCIENT LIGHTS IN WALES.

The case of Jones v. Jones came before Mr. Justice North in the Chancery Division on the 5th inst., it being a motion by Mrs. Elizabeth W. Jones to restrain the defendant, Mr. Harry Jones, until the trial of the action, or further order, from erecting a building in High-street, Aberavon, in the county of Glamorgan, in such a way as to darken or obstruct the plaintiff's ancient lights.

Mr. Swinfen Eady, Q.C., in opening the motion, stated that the plaintiff's house was No. 10, High-street, Aberavon.

Mr. Ingle Joyce, who appeared for the defendant,

nterposed and suggested that the matter should be sent for trial at the Glamorganshire Assizes, which would come on next June. If the other side did not consent to that course being adopted he should ask his Lordship to make an order to that effect, which he had power to do under the rules.

Mr. Eady said that as to the obstruction there could be no question. The defendant's old building, which was immediately opposite the plaintiff's, was only 22 ft. high and that had been pulled down, and the defendant was proposing to erect a building 43 ft. high up to the coping, with an additional 4 ft. 9 in. to the top of the roof. The defendant said that the plaintiff's lights were not ancient. The plaintiff's house had been rebuilt, but at the time it was taken down the contractor who did the work took the exact bearings of the windows and doors, and he had made an affidavit to the effect that the lights of the new building corresponded with the lights of the old. That was met by a mere denial on the part of the defendant that the plaintiff's lights were ancient lights.

Mr. Justice North asked whether many witnesses would be called at the trial.

Mr. Ingle Joyce replied in the affirmative.

Mr. Eady remarked that the issue would be a very simple one. The plaintiff's house was rebuilt in 1892, and there would be no difficulty in proving the position of the lights of the old building. He would prefer the case being tried in London.

Mr. Ingle Joyce said that if his clients were to be prevented from going on with their building until the trial they would like the trial as soon as possible.

Mr. Justice North said there was every probability of the case being reached before June.

Mr. Eady then produced a plan of the windows of the plaintiff's old building, and contended that there could be no question that the plaintiff's ancient lights would be interfered with, and that he was entitled to an interim injunction.

After some further discussion, it was arranged that the action should be set down at once for trial, the motion to stand over till the first motion day in June. It was also arranged that the defendant should not go on with his building, the plaintiff giving an undertaking in damages.

ALLEGED INTERFERENCE WITH ANCIENT LIGHTS AT LEEDS.

The case of Taylor v. the New Brigiate Arcade Company came before Mr. Justice North in the Chancery Division on the 6th inst. It being motion on behalf of the plaintiff for an injunction to restrain the defendant company from building so as to interfere with the plaintiff's ancient lights at Leeds. The defendants, whilst denying that the plaintiff's lights were ancient, or that his building had been blocked, undertook not to build any higher pending the trial of the action, which was ordered to be set down at once at the forthcoming Leeds Assizes. It was pointed out that Leeds was the last town in the circuit, whereupon his Lordship suggested that the motion should stand till the first motion day next sittings, when the parties would be able to ascertain where they would be likely to obtain the speediest hearing.

Order accordingly.

THE LIVERPOOL CORPORATION AND ARTIFICIAL STONE MANUFACTURE: CASE IN THE COURT OF APPEAL.

The case of the Adamant Stone and Paving Company, Limited, v. The Liverpool Corporation came before the Court of Appeal composed of Lords Justices Lindley, A. L. Smith, & Righty, on the appeal of the defendants from an order of Mr. Justice Romer in the Chancery Division dated November 23 last. The action was brought by the Company to restrain the Corporation from infringing two patents, No. 8,747 of 1884, and another patent of 1893 granted to Alexander Maclean for the making of artificial stone from cement and other substances. According to the earlier patent, porous moulds were used, and the water was squeezed from the enclosed material by the application of very heavy pressure, and the plaintiff Company contended that the mixture of dust-destroyer, clinker with Portland cement and subjecting it to pressure in a filter press by the defendants was an infringement of their patent. Mr. Justice Romer held that the patent of 1884 was valid on the ground that it was novel, good subject matter, had not been anticipated, and that it had been infringed. The learned judge, however, held that the patent of 1893 was invalid for want of proper subject matter, and no question was raised as to that on the appeal. The case was reported in the Builder of December 5 last.

The arguments on the appeal occupied the attention of their lordships for some days, and on the 6th inst. it was ordered to stand over until after the adjournment with a view to a settlement, and the appeal was then withdrawn in accordance with an arrangement between the parties the terms of which did not transpire.

Mr. Fletcher Moulton, Q.C., Mr. Bousfield, Q.C., and Mr. C. E. E. Jenkins were counsel for the appellants, and Mr. Roger Wallace, Q.C., Mr. A. J. Walter, and Mr. H. Spensley for the respondents.

MEETINGS.

FRIDAY, MARCH 12. Royal Institution.—Professor A. Westminster on "The Source of Light in Flames." 9 p.m. Institution of Junior Engineers (Westminster Palace Hotel).—Paper to be read and discussed: "The Protection of Buildings, &c., from Fire," by Mr. W. R. Beckett. 8 p.m. Institution of Civil Engineers (Students' Meeting).—Mr. H. F. Brand on "The Inverness Section of the Inverness and Aviemore Railway." 8 p.m.

SATURDAY, MARCH 13. Sanitary Institute (Demonstrations for Sanitary Officers). Inspection at Aylesbury Dairy Company's Premises, Bayswater. 3 p.m. Edinburgh Architectural Association.—Visit to Hatton House, West Calder.

MONDAY, MARCH 15. Royal Institute of British Architects.—Mr. W. H. St. John Hope, M.A., F.S.A., on "Heraldry in English Medieval Architecture." 8 p.m. Sanitary Institute (Lectures for Sanitary Officers).—8 p.m. Society of Arts (Cantor Lecture).—Professor W. C. Roberts-Austen, F.R.S., on "Alloys." 1. 4. 30 p.m. Leeds and Halifax Society.—Exhibition of Institute Drawings, and nomination of officers. 7. 30 p.m.

TUESDAY, MARCH 16. Institution of Civil Engineers.—Discussion upon "The Main Drainage of London" and "The Purification of the Thames." To be continued and concluded. Also paper on "The Mond Gas Producer Plant and its Application," by Mr. H. A. Humphrey. 8 p.m. Society of Arts (Foreign and Colonial Section).—8 p.m. Devon and Exeter Architectural Society.—A lecture on "Architectural Photography" will be given at the Athenaeum, Exeter, by Mr. Charles Cole.

WEDNESDAY, MARCH 17. British Archaeological Association.—(1) Mrs. Collier on "The Old Church and Glass at Mead, Wiltshire." (2) Mr. H. Styr Cuming "On Mead and Mead Vessels." 8 p.m. Society of Arts.—8 p.m. Carpenter's Hall, London Hall.—Professor J. M. Thompson on "The Chemistry of Certain Metals used in Building Construction." 8 p.m. Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m. Sanitary Institute (Lectures for Sanitary Officers).—Inspection at the L.C.C. Common Lodging House, Park-street, Drury-lane. 3 p.m. Liverpool Engineering Society. Mr. M. C. Bannister on "Construction of Cold Stores for Preservation of Perishable Food." 8 p.m. Edinburgh Architectural Association.—Mr. David J. Vallance, F.S.A. (Scott.), on "Decorative Woodwork." 8 p.m. Edinburgh Architectural Society.—Mr. W. N. Cuming on "Interior Perspective." 8 p.m.

THURSDAY, MARCH 18. Society of Antiquaries.—(1) Mr. F. M. Nichols on "Some Works hitherto unnoticed, executed by Holbein during his first visit to England." (2) Mr. C. H. Read on "Two Hoards of Bronze Implements from Middlesex and Essex." 8. 30 p.m. Sanitary Institute (Lectures for Sanitary Officers).—8 p.m. Royal Institution.—Professor Percy Gardner, F.S.A., on "Greek History and Extant Monuments." III. 3 p.m. Dundee Institute of Architecture, Science and Art.—Mr. J. A. Williamson on "Architecture in the Reign of Queen Victoria." 8 p.m. Devon and Exeter Architectural Society.—Mr. E. M. Leest on "Rochester, its Architecture and Relation with Dickens." 7. 30 p.m. Institution of Civil Engineers.—The Fifth "James Forrest" Lecture; Dr. G. Sims Woodhead on "Bacteriology." 8 p.m.

FRIDAY, MARCH 19. The Architectural Association.—Mr. J. A. Gotch on "Eighteenth Century Work." 7. 30 p.m.

SATURDAY, MARCH 20. The Architectural Association.—Spring Visit to the Building Trades Exhibition, Agricultural Hall. 3 p.m. Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at Fickett's Barnet Sewage Works. 3 p.m. British Institute of Certified Carpenters (Carpenters' Hall).—Visit to the Building Trades Exhibition, Agricultural Hall. 6 p.m.

ABSTRACTS OF PATENTS.

RECENT PATENTS.

2,726.—CHIMNEY AND VENTILATING SHAFT, A. ROSSIGNOL.—This invention concerns the application of air shafts (constructed of any suitable material) to any chimney, air flue, &c., to counteract tendency to down draught. The air shaft would be carried from any convenient place (if possible, from an air propelling fan, or from any wind) to the top or exit of any chimney, flue, &c., and thereby cause an upward current inside the chimney, &c. 2,660.—FASTENING CORDS, CHAINS, &c., TO WINDOW METAL PLATE. J. LUNSDON.—The invention consists in a metal plate for fixing to sash, &c., having two raised sides, between which the cord or chain, &c., is placed. In each of these sides is a tapered groove, into which is put a metal wedge, provided with two teeth, which pierce the cord, chain, &c., into a square slot in the metal plate, thereby holding them firmly there as long as any pressure is used. 2,691.—BUILDING COLUMNS, BEAMS AND GIRDERS: J. A. BLAIN.—The inventor separates the J of iron or steel bars used in the construction of building columns, &c., of the lattice or similar type, by bars curved or dish'd in cross section in order to stiffen them. In a lattice column, for example, he employs two or more bars of curved section to form longitudinal channels, and connects thereby, crimped,

zigzag, or sinuous strips rivetted to them so as to bind them together.

6,095.—WASTE WATER CLOSERS: J. J. GREEN AND ANOTHER.—This invention concerns water-closets which "tippers" are employed and emptied intermittently by waste water or otherwise. When these tippers have been emptied by the action of water weight, they oscillate back to their normal position against a buffer. This buffer inventors propose to make of a combination of layers of wood and India-rubber, to prevent breakages and lessen wear and tear on the tippers, which come into contact with the top edge of tipper, which comes into contact with the buffer, wider or thicker. They also propose to make the mouth of the pipe, connected with the bottom of the tipper box, crescent-shaped, or somewhat of D form.

6,891.—BUILDING BLOCKS: C. WALL.—A box or mould is made of the shape and size desired for blocks. Sufficient inventors' facing fractions are laid face downwards in this. On these are placed stock bricks or other suitable backing material; cement and sand mixed with water to a weak consistency is then poured in, and the mould immersed in water and block allowed to set. The facing fractions with grooves on the top and bottom, are of different thicknesses in alternate courses, and may be of any material or size.

7,227.—BUILDING BLOCKS: C. WALL.—A mould is made suitable thickness of wall and special requirements. At the bottom of mould is put a layer of cement, coarse stuff, on top of this is put a backing of stock brick or other suitable material, and cement and sand mixed with water to a weak consistency is then poured in, filling interstices and covering surface of brick. When the block is then immersed in water and allowed to set. Surface may be finished off smooth, or left rough for a setting coat.

7,232.—WINDOW SASHES AND FRAMES: F. DE J. CLERE.—Relate to sashes that are cast in concrete, coarse stuff, on pivots to revolve. Inventor retains pivots at one or near centre of sash, but fixes parting and staff beads permanently to frame after sash has been put in position. The pivots work in sliding blocks, which correspond in length of the height of the sash, and are made with V-shaped faces, and pressed by springs into a corresponding groove in the sash. When the top or bottom of the sash is pushed up, the pivots, by the force back the sliding blocks into their grooves, and leave the sash free to revolve. When returned to its normal position, the pivots in the sash will again recede into the sliding blocks, and form a joint to exclude wind, rain, and dust.

NEW APPLICATIONS FOR LETTERS PATENT.

FEBRUARY 22—5,684, E. Prestwich, Door Spring.—4,623, N. Simmonds, Sanitary System.—4,724, W. Howse, Socket Pipes.—4,728, R. Ames, Manhole Frames and Covers.—4,740, J. Coyer, Flushing Apparatus for Waste or Slop Water-closets.—4,743, J. Peure, Ventilators.

FEBRUARY 23—4,725, J. Peure, Ventilators.—4,726, W. Wasie preventing Flushing Cistern.—4,757, D. Annan, Windows and their Frames.—4,806, W. Kenzie, Machinery for Making Plumbers' Traps of Lead.—4,817, E. Prince, Window Fastener, &c.—4,829, J. M. Gage, Sash Fasteners.—4,830, L. Moses, Tinting Plumbar.—4,834, F. Eisenberg, Ventilators.—4,835, T. Deall-Thrum, Mosaic Tiles.—4,912, A. Pice, Cutting and Planing Millres and Similar Joints of Picture Frames.—4,913, J. Sullivan, Ladders.—4,920, B. Baily, Tiles for Kilo Floors.

FEBRUARY 24—4,960, E. Coding, Sewer and Drain Pipes.—5,001, W. Suggs, Ventilators.—5,016, M. Eckley, Fasteners or Catches for Gates, Doors, &c.

FEBRUARY 25—5,042, E. Minquet, Tubular Heating Apparatus for Hot-houses, Dwelling-rooms, Baths, &c.—5,043, V. Buzurieri, Erecting Scaffolds.—5,059, H. Collins, Double Expanding Stretcher for Inserting Timber in Trenches Excavated in Earth.—5,580, J. McCrindle and W. Wilson, Windows.

FEBRUARY 26—5,245, W. Freity, Sash Fastener.—5,247, J. Cox, Locks for Doors, &c.—5,258, J. McCrindle and W. Wilson, Windows.

FEBRUARY 27—5,292, W. Greenwood, Sliding Bolt Fastening for Doors, Windows, &c.—5,354, A. Boulton, Construction of Greenhouses, Hot-houses, &c.

PROVISIONAL SPECIFICATIONS ACCEPTED.

24,492, J. Wild, Water Closets or Waste Water Sinks.—2,525, A. Blacker, Heating and Ventilating Rooms and other apartments.—2,524, J. Drummond, Securing Plate and Sheet Glass to Walls, &c.—2,745, R. Gibson and others, Sanitary Fittings.—2,118, J. Hannah & W. Peele, Fire Grates, Stoves, &c.—2,723, W. Witham, Flushing water-closets.—2,724, J. Morgan, Electric Alrm Sash Fastener.—2,834, J. Shank, Lavatories, &c.—3,141, A. Boulton, Ropes especially applicable to Cranes, &c.—3,155, A. Hill & A. Barratt, Combined Nail and Screw.—3,226, A. Leroy, Stone Sawing Machines.—3,657, H. Darrah, Ceiling Rosses, &c.—3,767, D. Pont, Moulding Machines.—4,205, W. Bailey, Water Heating Apparatus for Kitchen Grates, &c.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months. 6,871, W. Thompson, Water Closets.—6,949, J. Shaw, Window Sashes.—7,083, J. Mellows, Roof Glazing.—8,499, F. Suggs, Automatic Door-closing Devices.—19,379, H. Messera and J. Mayer, Ventilators.—22,571, A. Poul, Floor Construction.—28,664, D. Fletcher, &c., Lowering, and Locking Window Sashes, &c.—30,109, J. Wood, Fire Grates.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT. February 9.—By WENSTON & SONS. Kennington.—48 and 49, Kennington Oval, with Stabling, out, s. yrs. g. r. 291, c. r. 153d 2s. ... £210 By H. MORTIMER (at Ipswich). Stowupland, Suffolk.—"Pook Farm," 41a. 1 r. 25 p. f. and c. ... 1,110 Stonham, Aspal.—"Bush Farm," 26 a. 2 r. f. ... 203 By AMOS DURDEN (at Clitheroe). Slaidburn, Yorks.—"The Green Hall Estate," containing 500 a., f. ... 19,500 By R. WATERMAN & SONS (at Ashford). Rye (near), Sussex.—Udimore Level, two enclosed acres of marsh land, 2 a. 2 r. f. ... 800 Tenterden, Kent.—High St., "The Pebbles," and 2 r. 14 p. f. ... 590 By February 10.—By J. C. PLATT. Bromley, Kent.—London Road, "Holmbury House," f. r. 159d. ... 2,500 Chiswick.—5, Steam Packet-ter, ut. 8 1/2 yrs, g. r. 17. 195d. ... 300

By DOUGLAS YOUNG & CO.
Long Acre, -No. 89, at 21 yrs., gr. 156 r. 270f.
Hlf.-Balfour-rd., "Merton Villa," & 1, 200f.
Balfour-rd., "Mortimer House" and "Shirley," 1,100
Newington, -25, Cannon-rd., u.t. 484 yrs., gr. 1,050
Harrow, Middlesex. - Sudbury Hill, a freehold residence, r. 130d.
Upton Park - 65 to 75 (odd), Monegar-rd., f. r. 1,40f.
Hackney, -25, Spurwood-ter., ut. 78 yrs., gr. 61.
Stoke Newington, -40, Allen-rd., ut. 584 yrs., gr. 1,100.
Forest Gate, -47, Hampton-rd., u.t. 704 yrs., gr. 82. 8s. r. 35f.
Spitalfields, -3, Wilkes-st., r. 53f. 4d.
Clapham, -By GEORGE BROWN & SONS.
Stoke Newington, -13, Brownswood Pk., ut. 624 yrs., gr. 174 r. 50f.
Canonbury, -45, Cannon-rd., ut. 484 yrs., gr. 41, ut. 484.
Clapton, -By NEWTON, EDWARDS, & SHEPHERD.
Stoke Newington, -13, Brownswood Pk., ut. 624 yrs., gr. 174 r. 50f.
Canonbury, -45, Cannon-rd., ut. 484 yrs., gr. 41, ut. 484.
Clapton, -By STIMSON & SONS.
City of London, -9, Union-court and 7, Pen Hentcourt, ut. 514 yrs., gr. 334.
Battersea, -15, High-st., f. r. 316f. 8s.
Wandsworth, -25, Tonsley-rd., ut. 66 yrs., gr. 20f.
North Kent, -154 and 156, Glegg-rd., ut. 62 yrs., gr. 101. 10s. r. 65f.
Peckham, -79 and 81, Peckham-rd., f. r. 86f.
Surrey, -Daycroft, eight plots of building land, f. r. 20f.
By GERMAN, SON & BEVEN.
Hyde Pk., -18, Oxford-ter., ut. 264 yrs., gr. 97. 17s.
By M. J. BROWN & MATTHEWS.
St. Luke's, -4 to 18 (even), Hatfield-st., ut. 504 yrs., gr. 42f.
1 to 10 (odd), Hatfield-st., ut. 52 yrs., gr. 60.
106 to 108 (even), Hatfield-st., ut. 484 yrs., gr. 100f. r. 248f.
By RIDER & SONS.
Notting Hill, -30 to 31 (odd), Ladbrooke-grove, ut. 184 yrs., gr. 24f.
118, St. Clement's-rd., ut. 62 yrs., gr. 108 r. 35f. 16s.
By FULLER, MOON, & FULLER (at Croynold).
Selhurst, -7, Princess-rd., f. r. 20f.
By PETER FREEMAN (at Ormskirk).
Aughton, Lancs. - Brookfield-lane, a farmhouse and 20a 3f. 12 p.
By KINGSLEY & SONS (at the premises).
Willesden Green, -Dean-rd., "St. Pierre," ut. 83 yrs., gr. 12f. r. 2d.
By JONES, LANG, & CO.
Crouch Hill, -23, Princess-rd., ut. 84 yrs., gr. 12f. 10s.
By A. J. SHEPHERD.
St. George's, East, -11, 13, 23, and 25, Anthony-st., ut. 104 yrs., gr. 86.
97 to 99 (even), Lucas-st., ut. 35 yrs., gr. col. 10s.
100 to 122 (even), Lucas-st., ut. 25 yrs., gr. 145f.
Stepney, -2, 8, 10, 12, 14, and 16, Taylor's-pl., ut. 254 yrs., gr. 12f.
Manor Park, -"White Post-lane," &c., f. r. 20f.
Kensington, -By THOMPSON & CO.
Kensington, Devon, -"Pirwell Farm" and "Pirwell Dairy," 78 a. f.
By R. & G. C. NEWSON (at Bedford).
Hertford, Priory-rd., a plot of building land, f. Railway-st., a yard with buildings and stabling thereon, f.
Streatham, -77 and 79, Wellfield-rd., u.t. 644 yrs., gr. 5f.
Old Kent-rd., -13 and 14, Whittington-rd., ut. 47 yrs., gr. 8f.
By TAYLOR, GOSWOLD, & CO.
Belgravia, -Chapel-st., an improved profit rental of 120f. for 7 yrs.
Landlord-yrs. Rhos, Denbigh, -"Haloty Farm," 37 a. 3 r. 27 p. f.
By REBBECK BROS. (at Bournemouth).
Bournemouth, Haris, -Wimborne-rd., "Studley" and 2 a. ut. 84 yrs., gr. 18f.
By BOURNE & SON (at Torquay).
Torquay, Devon, -Cary-parade, The Cary Hotel, "The Lodge," and house and shop adjoining, f, subject to a rent charge of 27f.
February 16. -By CHINNOCK, GALSORTHY, & CO.
Bayswater, -13 to 43, Moseley-st., also "Palace Court Villa," & "York Villa," area 38, 289 ft. f, f. r. 57f.
48, 49, and 50, Moscow-rd., and 1A, Princess-ter., f. r. 280f.
By DEBENHAM, TEWSON, & CO.
Rotherhithe, -8 and 10 to 24, Oldfield-rd., ut. 86 yrs., gr. 48f. r. 39f. 4d.
Regent's Pk., -65, Princess-rd., ut. 554 yrs., gr. 107. r. 36f.
67, 69, and 71, Gloucester-rd., ut. 554 yrs., gr. 32f.
Camberwell, -31, 33, 35, and 37, Harvey-rd., f. r. 174f. 8s.
Newington, -127 and 129, Union-rd., ut. 104 yrs., gr. 82. 8s. r. 35f.
Brookley, -36, Manor-rd., ut. 624 yrs., gr. 61. 10s. r. 38f.
By RIDD & MARTIN.
Pimlico, -13 to 23 (odd), 20 to 25, Bondfield-ter., ut. 21 yrs., gr. 36f. 10s. r. 59f. 15s.
February 17. -By A. H. POTTER.
Brixton, -25, Trent-rd., ut. 85 yrs., gr. 97 r. 45f.
Hackney, -Hassard-rd., f. r. 20f. reversion in 34

Hassard-rd., f. r. 24f. reversion in 34 yrs. 6,900
Hackney-rd., "The Nag's Head" p-h, &c., a freehold rental of 262f. 12s. 7d. for 244 yrs., with reversion. 13,500
Newington, -By "THE GEORGE," a copyhold income of 240f. for 514 yrs., with reversion. 7,700
By IMMAN, SHARP, HARRINGTON, & CO.
Sidcup, Kent, -"The Herby," "Northorpe," f. r. By V. LEIGH & CO.
Hackney, -119, King Edward-rd., ut. 45 yrs., gr. 74. 10s. r. 40f.
Llanor, Carnarvon, -"Pontygriffin Farm," 33a. r. 20. f.
February 18. -By GREEN & SON (of Hammersmith).
Brompton, -117, Brompton-rd., a leasehold improved rental of 80f. for six yrs. 300
19, Brompton-rd., ut. 6 yrs. gr. 22f. r. 330f.
Pimlico, -5, Worcester-st., ut. 364 yrs., gr. 97 r. 50f.
Battersea, -7, and 9, Stammer-st., ut. 804 yrs., gr. 15f. 15s.
110, 112, 173, 175, 177, and 179, Ingrave-st., ut. 60 yrs., gr. 30f.
1 to 25, Barnum-st., ut. 604 yrs., gr. 65f.
1 to 35, Benfield-st., ut. 604 yrs., gr. 90f.
26 to 34 (even), Benfield-st., ut. 604 yrs., gr. 25f.
36, 38, and 40, Benfield-st., ut. 55 25s. gr. 12f.
By NEWTON, EDWARDS, & SHEPHERD.
Islington, -46, South-street, ut. 114 yrs., gr. nil, r. 45f.
32, Canonbury-rd., with stable, &c., ut. 24 yrs., gr. 64. 10s. r. 62f.
Northampton, a workshop and ground adjoining, ut. 214 yrs., gr. 4f. 6s. r. 30f.
Northampton-st., f. r. 40f. 4s. and 214 yrs., gr. 24f.
Canonbury, -5, Canonbury-pk. South, ut. 394 yrs., gr. 97. 10s. r. 70f.
Leyton, -7 and 8, Kenilworth-villas, ut. 84 yrs., gr. 10f. 10s. r. 51f.
Forest Gate, -37, Khedive-rd., f. r. 32f.
25, Elmhurst-rd., f. r. 32f.
29, Golding-rd., f. r. 30f.
Whitechapel, -29A, Commercial-rd., f. r. 200f.
Kilburn, -63, Messina-av., f. r. 40f.
8 and 10, Percy-rd., ut. 84 yrs., gr. 30f.
95 and 97, Canon Vale, ut. 84 yrs., gr. 30f.
Horseley, -79, Cecil Pk., ut. 86 yrs., gr. 97. 9s. 4d. and 45, Ridge-rd., ut. 86 yrs., gr. 18f. r. 90f.
Kingsland, -20, and 24, West-st., f. r. 62 and 64.
Ormsby-st., ut. 94 yrs., gr. 10f.
By HARDS & BRADLEY (at Kidderminster).
Kidderminster, Worcester, -55 to 60, Wood-st., f. r. 67, Wood-st., f. r. 30f. 12s.
Wood-st., &c., ten building plots, f. r. 61 and 62, Wood-st., f. r. 16f. 18s.
By RICHARDSON & PRINCE (at Stowmarket).
Riceal, Yorks., -A freehold farm, 40a. 1r. op.
Enclosures of land and cottage, 4a. or 7p. f.
Common allotments, 65a. or 38p.
By SALTER, SIMON, & SONS (at Stowmarket).
Gillingham, Suffolk, -"The Mill Farm," 71a. 2r. 14p. f.
Two enclosures of land, 13a. or 3p. f.
Rickling, Suffolk, -"Allwood Green Farm," 72 a. or 34 p. f.
February 19. -By W. HOLCOMBE & BETTS.
Camden Town, -259, High-st., ut. 16 yrs., gr. 54. 3s. r. 75f.
By PHYSICK & LOWE.
Bromsbury, -2, Winchester-av., ut. 90 yrs., gr. 12f.
Clerkenwell, -3, 4, and 5, Coldbat-lane, f. r. 150f.
Kennington, -15 and 16, Ward-st., ut. 180 yrs., gr. 39f. 8s. ut. 114 yrs., gr. 18f. 4s.
Stockwell, -55 to 59, Stockwell-green, ut. 76 yrs., gr. 40f. r. 15f.
Clapham, -1 to 7, Triangle-pl., ut. 84 yrs., gr. 35f.
Sydenham, -9 and 11, Eildon-rd., ut. 20 yrs., gr. 12f.
February 22. -By S. H. DAVIDS & CO.
Regent St., -35, Georget, Corporation leasehold, gr. 74. 9s. 8d. r. 170f.
Convent Garden, -55, New-st., f. r. 80f.
Kingsland, -288, Kingsland-rd., ut. 11 yrs., gr. 12f. r. 48f.
By J. H. NORRIS & HADLEY.
Islington, -32 and 34, Rocill-st., ut. 42 yrs., gr. 61 r. 70f.
Kilburn, -176, Kilburn-pk.-rd., ut. 81 yrs., gr. 8f.
Peckham, -10 to 17, Park-st., ut. 33 yrs., gr. 39f.
By ROLAND HADDOCK.
Mitcham, Surrey, -Cricketer green, two houses, two cottages, and range of stabling, area 10,000 ft. f, f. r. 97f. 2s.
Clapham, -10 and 12, Old Town; also stabling and four rooms, f. r. 175f. 16s.
129 and 131, Clapham-pk., ut. 62 yrs., gr. 12f.
3 and 4, Albert-cottages, ut. 144 yrs., gr. nil.
Park-pl., f. r. 19f. 18s. ut. 144 yrs.
By J. H. LOTT, SON & BOWEN.
Marylebone, -57, Wimpole-st. lease for 4 yrs., r. 170f., with reversionary lease for 39 yrs., gr. 50f.
February 23. -By H. LEWIS & SON.
Limehouse, -19, Salmon-lane, ut. 29 yrs., gr. 4f.
Fishbury-pk., -51, Lothair-rd., ut. 804 yrs., gr. 61. 10s.
By W. B. HALLISTON.
Holloway, -24, Wellington-rd., ut. 451 yrs., gr. 6f.
10, 11, and 12, Charles-st., ut. 37 yrs., gr. 18f.
24, 26, 28, and 40, Brand-st., and 10 to 6, Ormsburgh Cottages, f. r. 130f.
2, 4, 6, and 8, Brand-st., and 10, Slaney Place, f. r. 89f. 14s.
By BEAM, BURNETT, & EXBRIDGE.
Belgravia, -42, Lowndes-st., ut. 32 yrs., gr. 52f.
City of London, -Australian-av., f. r. 150f., reversion in 80 yrs. 4,350

Australian-av. -F. g. r. 200, reversion in 80 yrs. ... 6,800
Highbury, -St. Paul's-rd., f. r. 26f., reversion in 884 yrs. 730
Corstica-st., f. r. 184, reversion in 694 yrs. 450
Holloway, -Langdon-rd., &c., f. g. r. 127. 10s., reversion in 82 yrs. 335
Sydenham, -39, Silverdale, ut. 72 yrs., gr. 32f., r. 100f.
By M. MATTHEW MILLS (at Mason's Hall Tavern).
Caledonian-rd., -North-rd., "The Lion" p-h, f, r. 450f., with reversion in 14 yrs. 12,100
North-rd., "The Lamb" p-h, f, r. 300f., with reversion in 14 yrs. 10,000
South-rd., "The White Horse" p-h, f, r. 345f., with reversion in 14 yrs. 11,000
South-rd., "The Black Bull" p-h, f, r. 292f., with reversion in 14 yrs. 9,000
York-rd., "The Butcher's Arms" p-h, f, r. 272f. 10s. 6d., reversion in 14 yrs. 10,000
By FLEURET, SONS, & ADAMS (at Mason's Hall Tavern).
Strand, -Nos. 329 and 330; also 5, 6, and 7, New Church-ct. (Loveidge's Restaurant), leases 74 and 26 yrs., r. 250f. and 720f.
Bethnal Green, -Bethnal Green-rd., "The Gibraltar" p-h, lease for 38 yrs., r. 80f.
Dalston, -Stonebridge Common, "The Duke of Wellington" public-house, profit rental of 50f. for 394 yrs. 900
By H. H. BLETSON (at Thrapston).
Thrapston, Northants. -Markets-g, "The White Hart" hotel, f. r. 3,600
Briestow, Northants. -"The Old Three Cocks" p-h, f. r. 1,700
Thrapston, Northants. -Bridget-st., &c., three enclosures of land and a garden, 15a. 2r. 21p. f, 1,680
10 acres, three residences and plot of land, f, 1,550
Oundle-rd., "The Allotments," 15a. 2r. 21p. f, 500
Huntingdon-rd., "The High Farm," 81a. 1r. 21p. f, 1,800
Huntingdon-rd., a freehold farm, 28a. 3r. 25p. f, 150
Trembarsh-lane, seven freehold cottages 150
By R. EARL (at Adwick).
Anwick, Lincs. -A farm, comprising 76 a. or 2 p., lease for 82 yrs. 805
February 24. -By BARON & STRADY.
Brixton, -44, 46, 48, and 50, Strathleven-rd., ut. 94 yrs., gr. 20f.
By HARRIS & BRADLEY.
Rotherhithe, -Rotherhithe-st., "Vardley's Wharf and Granaries," f, r. 480f. subject to rent charge of 100f. 4,500
By WILLIS & CROUCH.
West Smithfield, -No. 27, f. r. 774.
Horseley, -21, St. Joseph's-rd., ut. 774 yrs., gr. 4f.
By TIBBY & SON.
Islington, -133 and 135, Church-rd., ut. 43 yrs., gr. 10f. r. 32f.
De Beauvoir Town, -31, Benyon-rd., ut. 24 yrs., gr. 9f. r. 34f.
55, Benyon-rd., ut. 35 yrs., gr. 5f.
By SENNEWICK, SON, & WEALE (at Rickmansworth).
Rickmansworth, Heris. -Wharf-lane, enclosure of land, f.
Red Palms-rd., two freehold cottages 485
By J. LEE & BISHOP (at Redhill).
Redhill, Surrey, -Station-rd., "Checkley" ut. 65 yrs., gr. 11f. 15s. r. 140f.
By DICTIONSON & RIGGALL (at Louth).
North Somercote, Lincs. -Freehold farmhouse and 7 a. enclosures of land, 25a. 1r. 36p. f. 896
By LANCASTER & SONS (at Barnsley).
Barnsley, Yorks. -Oak Mills, Linn Manufacturing with Machinery and Plant; also Three Houses and land, 9, 284 yds. f. 6,500
February 25. -By MERRITT & MOULD.
Putney, -Putney Bridge-rd., "The Castle" p-h, also 2 and 4, Brewhouse Lane, f. r. 120f.
Mortlake, -Upper Richmond-rd., "The Hare and Hounds" p-h, and 11a, f. r. 130f.
High-st., "The Old George" p-h, f. r. 89f.
By DELFORD & SONS.
Kensington, -Church-st., "The Old George" p-h, c., ut. 39 yrs., r. 90f., with reversion 63 and 65, Church-st., c., r. 120f.
By COOPER & GOULDING.
Hyde-pk., -Great Cumberland-pl., f. g. r. 105f. ut. 7 yrs., gr. nil.
GloUCEster-pl., f. g. r. 110f. 5s. ut. 7 yrs., gr. nil.
Bloombury, -Russell-sq., f. g. r. 56f. 14s. ut. 2 yrs., gr. 27f. 6s.
Tavistock-pl., &c., f. g. r. 190f. ut. 3 yrs., gr. 22f.
Tavistock-pl., f. g. r. 98f. 14s. ut. 3 yrs., gr. 30f.
By G. HERBERT BURNS.
Bloombury, -35, Heathcote-st., ut. 234 yrs., gr. nil. r. 65f.
By A. PHILLIPS.
Stroud Green, -95, Fernie Park-rd., ut. 82 yrs., gr. 7f. 7s. r. 38f.
Willesden, -1 to 14, Brunswick-ter., ut. 98 yrs., gr. 55f. r. 37f. 15s.
By W. SIMMONDS.
Camberwell, -27 and 29, Avenue-rd., ut. 64 yrs., gr. 7f.
Peckham, -2 and 4, Grenard-rd., ut. 68 yrs., gr. 10f.
By J. A. & W. THART.
Shoreditch, -1, High-st., and 15, Blossom-st., ut. 494 yrs., gr. 220f. r. 78f. 16s. 4d.
Leytonstone, -Malvern-rd., &c., f. g. r. 94. 10s. od., reversion in 96 yrs. 625
Wood Green, -84, Truro-rd., f. r. 45f.
By ERNEST OWERS.
Willesden Green, -Norfolk-ter., f. g. r. 20f., reversion in 98 yrs. 605
High-rd., f. g. r. 108f., reversion in 96 yrs. 3,495
High-rd., f. g. r. 15f., reversion in 68 yrs. 65
High-rd., f. g. r. 9f., reversion in 87 yrs. 1,765
Hamstead, -Reddington-rd., f. g. r. 30f., reversion in 974 yrs. 2,676
Lithos-rd., f. g. r. 35f., reversion in 65 yrs. 1,410
Willesden Green, -10, Huddleston-rd., ut. 85 yrs., gr. 6f. 10s. 1f. 3d.
30, 32, 34, and 36, Lechmere-rd., ut. 86 yrs., gr. 26f. r. 128f.
Marylebone, -102, North-st., ut. 29 yrs., gr. 10f. 190

CONTRACTS AND PUBLIC APPOINTMENTS.

CONTRACTS.

Table with columns: Nature of Work or Materials, By whom Required, Forms of Tender, &c. Supplied by, Tenders to be delivered.

CONTRACTS—Continued.

Table with columns: Nature of Work or Materials, By whom Required, Forms of Tender, &c. Supplied by, Tenders to be delivered.

Those marked with an asterisk (*) are advertised in this Number. Contracts, pp. iv, vi, viii, & ix.

PUBLIC APPOINTMENTS.

Table with columns: Nature of Appointment, By whom Advertised, Salary, Applications to be in.

By STIMSON & SONS. Brixton—1 to 15, Classroom-cms. u.t. 67 yrs. g.r. 20d. Kentish Town—31, Potshall-rd., u.t. 64 yrs. g.r. 6d. e.f. 50d.

1 to 6, Burfield-rd., f. r. 95l. 11s. £550. Benthall, Sussex, Station-rd., 6 freehold house and shop, r. 45l. 570. Contractions used in these lists.—E.g. for freehold ground-rent; i.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for gross; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p.a. for estimated rental; u.t. for unexpired term; p. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; ft. for feet; terr. for terrace; cres. for crescent; yd. for yard &c.

PRICES CURRENT OF MATERIALS.

Table with columns: Timber, Metals, and other materials with their respective prices.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and reach us not later than 10 a.m. on the day before the date of publication. Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is not given, unless in some exceptional cases and for special reasons.]

Table listing tenders for Bath Stone, Stamford Stone, and other materials.

BANSTED (Sussex)—For a new farmhouse in Park-road, Mr. St. Pierre Harris, architect, 16, Broad-street, Stamford.

BATLEY (Yorks.)—For paving and sewerage Trinity-street, &c. for the Town Council. Mr. H. Dearden, Borough Surveyor, Market-place, Batley.

BEVERLEY—For the erection of a Catholic church at Beverley East Yorks. Messrs. Smith, Bradford, & Louthan, architects, 1, Abchurch-lane, London, E.C. 4.

BOLTON—Accepted (as per schedule of prices) for draining and forming Kildes Farm, Outwood (Contract No. 9), for the Corporation. Messrs. Himeel & Murphy, C.E.s., 15, Maudslayi-street, Bolton.

OLTON.—(Accepted as per schedule of prices for the construction of an effluent conduit, Rhodes Farm, Ringley to Hackney, Leaver, for the Corporation. Contract No. 1. Messrs. Hall & Mansel, 44, Corporation Street, Manchester.

OURNEMOUTH.—For alterations and additions to the Rain-Tree Works, Pokesdown, Messrs. Jennings & Goater, architects, Bournemouth. Quantities by the architect:—

RADFORD.—For the erection of show rooms and offices, rick works, Obey-road, Messrs. Empsall & Clarkson, architects, Bradford:—

URSLEM.—Accepted for alterations to Hill Top Schools, for Burslem School Board, Messrs. Wood & Hutchings, architects, W. Cooke, Burslem. £534

URSLEM.—Accepted for extension to Middleport Schools, for Grant & Sons, Burslem. £845

RISTOL.—For the erection of school buildings, Fairfield road, the Board, for the School Board, Mr. W. L. Bernard, architect, 10, Peter St., Stephen's chambers, Baldwin's Court, Bristol, quantities by Messrs. G. R. Tucker & Sons, 38, John-street, Bedford, W.C.:

ANTERBURY.—For the erection of public library and institute, for the Corporation, Mr. A. H. Campbell, City Surveyor, 88, Margaret-street, Canterbury.

CARDIFF.—For private improvement works for the Corporation, W. Harpur, C.E., Borough Engineer, Town Hall, Cardiff, quantities by Borough Engineer:

Table with columns for Carriage Way, Foot Way, and various contractors like Ellis & Davison, Cardiff, and others.

CARDIFF.—Accepted for the execution of paving works in the street for the Corporation, Mr. W. Harpur, C.E., Town Hall, Cardiff. Quantities by Borough Engineer:

CARDIFF.—For the construction of a sewer and the erection of a pipe over Roath Brook, for the Corporation, Mr. W. Harpur, C.E., Borough Surveyor, Town Hall, Cardiff. Quantities by Borough Engineer:

CARDIFF.—For the erection of a hotel, Cadoston, for Messrs. Ince & Co., Ltd., Messrs. Roberts, Hill & Co., surveyors, Thomaston, Cardiff.

OMBS Suffolk.—For the erection of six cottages, Needham-st., for Mr. J. B. H. G. Bishop, architect, Market place, Ipswich.

CREWE.—For sewerage, paving, &c., Hunsford-avenue, for the Town Council, Mr. G. Eaton Shave, Borough Surveyor, Earle-street, Crewe:

CROSSHAVEN (Co. Cork).—For the erection of a dwelling house, &c., Mr. Jas. F. McMullen, architect, 34, South Mall, Cork:

CWMPAARN (Wales).—For the erection of school buildings, for the Llambardar School Board, Mr. J. H. Williams, architect, Quebec-road, Llambardar:

DARTFORD.—For laying sewer, &c., East Hill, for the Urban District Council, Mr. W. Harston, C.E., High-street, Dartford:

DOVER.—For the supply of road materials, &c., for the Town Council:

Table with columns for materials like Gurney Granite, Kerling, Pitcher, Stone, and prices per ft. or per ton.

FARNBOROUGH (Kent).—For alterations to "the George and Deben" public-house, for Messrs. Page & Overton, Limited, Mr. A. Broad, architect, 3, High-street, Leyden:

FOLKESTONE.—For the erection of mortuary buildings, Mr. John White, Borough Engineer, Dover-road, Folkestone. Quantities by Borough Engineer:

HARGROVE.—Accepted for paving, kerling, &c., St. Mary's avenue, for the Corporation, Mr. S. Stead, Borough Surveyor, Municipal Offices, Hargrove:

HORSHAM.—For new shops, &c., West-street, Horsham, for Col. J. Chilton Brown, Mr. G. Lynn, architect, Brighton. Quantities supplied by Mr. Wm. Shearburn, of Dorking:

ILFORD.—For tar paving, &c., Valentine's Park, Cranbrook-road, for the Urban District Council, Mr. Herbert Shaw, C.E.:

KESWICK.—Accepted for the erection of a lodge and museum, Fitz Park, Keswick, Cumberland, for the Fitz Park Trustees, Thomas Hodgson, architect, 27, Station-road, Keswick:

KIDSGROVE.—For new public offices, for the Kidsgrove Urban District Council, Messrs. Wood & Hutchings, architects:

KILMAURS AND HIGH FENWICK (N.B.).—For the execution of water supply works, for the Kilmaurs and High Fenwick Water Sub-Committee of the Kilmaurs District Committee of the County Council of Ayrshire. Mr. F. C. Hart, C.E., 30, John Finnie-street, Kilmaur:

KNARESBOROUGH.—Accepted for the execution of street works, Park-street, &c., for the Rural District Council of Knareborough, Mr. R. Annakin, Surveyor, 44, Station Parade, Hargrave:

LEYTON (Essex).—For the erection of sheds at electric light station, Canthab-rood, for the Urban District Council, Mr. Wm. Dawson, C.E., Town Hall, Leyton:

LITHERLAND (Lancs).—For the supply of road materials, for the Urban District Council, Mr. W. S. Garton, surveyor, 95, Sefton-road, Litherland:

LONDON.—Accepted for alterations to hall-house at Work-house, Plumstead, for the Woodwich Union Guardians. Mr. J. O. Cook, architect, 1, Eleanor-road, Woodwich:

LONDON.—Accepted for sundry alterations, additions, and decorations to St. Andrew's House, Messrs. Barry & Son, architects, 1, Victoria-st., Westminster, S.W. 1:

LONDON.—For the erection of new business premises in Otley-road, Kennington-road, for Messrs. J. A. Sharwood & Co., Mr. H. Phelps Drew, architect, 33, King-street, Covent Garden, W.C.:

LONDON.—Accepted for sanitary and decorative repairs to No. 2, Cockwood-road, Regents Park, N.W. Mr. H. Phelps Drew, architect, 33, King-street, Covent Garden, W.C.:

LONDON.—Accepted for painting and decorating Manhattan Mansions, Holloway, Mr. H. Phelps Drew, architect, 33, King-street, Covent Garden, W.C.:

MARTLEY (Worcester).—For the execution of drainage works, Upper Park, St. John's, for the Rural District Council, Mr. A. H. Parker, Surveyor, 5, Foregate street, Worcester:

MARYPORT.—For the execution of sewerage works, Crosby, for the Cockermouth Rural District Council, Mr. J. B. Wilson, C.E., Court-House-buildings, Cockermouth. Quantities by Engineer:

MIDDLETON (Lancs).—For sewerage, paving, &c., Booth-street, for the Corporation, Mr. W. Welburn, Borough Surveyor, Upper Hill, Middleton:

MIDSOMER NORTON (Somerset).—For the construction of sewage works, Welton, &c., for the Urban District Council, Mr. Wm. J. Bird, Engineer, Market Hall, Midsomer Norton. Quantities by the Engineer:

NEEDHAM MARKET.—For the erection of a house at Needham Market, for Mr. George Cooper, Mr. Henry Geo. Bishop, architect, Market-place, Sevensmarket:

NEW BARNET.—For the erection of a villa residence at New Barnet, for Mr. J. Rowley, Mr. W. Stevens, architect:—

ORPINGTON (Kent).—For additions and drainage works to a private residence, Mr. St. Pierre Harris, architect and surveyor, 8, Ironmonger-lane, E.C., and Orpington:—

ORPINGTON (Kent).—For a new infant school, and alterations to the existing school buildings at the Chislehurst road, Orpington, Mr. St. Pierre Harris, architect and surveyor, 8, Ironmonger-lane and Orpington. Quantities by Messrs. Stanger & Co., General Builders:

OXENHOPE (Yorks).—Accepted for the erection of stone premises and seven houses, Station-road, Mr. John Haggas, architect, North-street, Keighley:

OXENHOPE (Yorks).—Accepted for the erection of six houses, stone street, Mr. John Haggas, architect, North-street, Keighley:

PENARTH.—For the execution of private street improvement works for the Urban District Council, Mr. E. E. Evans, C.E., District Council Offices, Penarth:

Table with columns for Streets, Contractors (Chaplin, Bames, Muckey & Co., Davies, Pace, Shephard), and prices per ft. or per sq. ft.

PER TON.—Brundick & Co., Runcorn, Cheshire (hand-broken macadam) 78.6d. Brundick & Co., Runcorn, Cheshire (litter delivered at the docks) 78.6d.

Totals 3,593 2 8 = 3,037 7 1 = 556 0 7 = 4,640 1 4

RAMSGATE.—Accepted for the execution of sewer and street works, Ferry road, for the Town Council.— C. Home, contractor, Denmark-road, Ramsgate £579 0 0

RUSHDEN (Northants).—For the erection of two houses, Oakley-road, for Mrs. Southam. Mr. H. H. Packer, architect, Silver-street, Wellingborough.— Whitington & Tomlin £239 0 0 T. Willmott £617 10 0 H. Sparrow 635 0 Dickens Bros 610 0 Coates & Son 653 0 F. Hanson, Flinedon* 565 0 * Accepted.

ST. ALBANS.—For new painting works at St. Albans, for Messrs Smith & Co., of Hatton-street, London, E.C.— Smith & Son £2,540 W. Sparrow* £2,080 E. Dunham 8,804 J. & W. Savage 7,994 J. T. Buschell 3,320 C. Nisbitt 7,432 * Too late.

SOUTHAMPTON.—Accepted for laying, &c., of miles of c. water mains, for the Corporation. Mr. Wm. Matthews, waterworks engineer, Municipal Offices, Southampton.— F. Osman, Southampton £4,442

SOUTHAMPTON.—For laying a main sewer, Derby-road, for the Corporation. Mr. W. B. G. Bennett, Borough Engineer, Southampton.— H. Stevens & Co. £3,791 0 W. W. Batten £3,089 17 Dyer & Son 3,400 0 F. Osman, Southampton 3 0 0 Saunders & Co. 2,997 0 Roe & Grace 2,356 0 * Accepted.

SOUTHEND-ON-SEA.—For the erection of the superstructure of the "Hated Victoria" for Mr. J. P. Burdett. Messrs. James Thompson & Greenhagh, architects, Southend-on-Sea.— Shelburne & Co. £8,750 0 A. E. Symes £17,900 13 4 Thompson & Beve 18,325 0 E. West 17,343 0 0 Edge 18,325 0 0 Pattinson & Sams 18,715 0 0 S. Whitehall* 17,327 0 0 Dupont & Co. 18,670 0 0 * Accepted.

SOUTHEND-ON-SEA.—For the construction of underground conveniences, High-street, for the Corporation. Mr. Harold Hatfield, Borough Surveyor.— Thomas & Edge £2,377 0 0 A. E. Symes £2,705 18 0 Dupont 2,860 15 2

STOWMARKET.—For the erection of ten cottages in Crown-street, for Mr. Charles Marriott. Mr. Henry Geo. Babo, architect, Market-place, Stowmarket.— W. Murray £2,400 H. Plummer £2,255 A. Taylor 2,335 Cheney & Gilson 2,820

SWANSEA.—For the erection of school buildings, Genders, for the Cocket School Board. Mr. G. E. T. Lawrence, Bridge House, 15, Queen Victoria street, London, E.C. Quantities by Messrs. W. H. Barber & Son, surveyors, 25, Buckingham-street, Adelphi, London, W.C.— Thos. Watkins & Co. £3,244 4 8 Gustavus Bros. £2,647 H. Billings 3,168 13 7 Thomas Davies 2,673 12 8 Thomas Waters 3,273 7 2 I. & F. Weaver 2,605 0 0 David Rees 3,017 0 0 Elms Morgan, Leam 2,043 0 0 J. J. Dore, Swansea* 2,654 0 0 Lloyd Bros. 2,770 10 0 * Accepted.

TRIMLEY (Suffolk).—For the building and drainage of a laundry, for Mr. Sydney L. Harlock. Mr. Matt. Garbutt, architect, 35, Great James-street, Bedford-road, W.C.— Building. The whole. Fred. Bennett £1,620 0 £83 £3,113 0 Wm. Wawman 857 0 80 882 0 F. C. Thorman, Walton* 723 16 87 881 9 * Accepted for the whole.

WALTHAMSTOW.—Accepted for machinery foundations, at and for extension of the Low Hall Sewage Works, Walthamstow, for the Urban District Council. Mr. G. W. Holmes, Engineer.— Water Lawrence, Waltham Abbey, N. £2,350

WANSTEAD (Essex).—For making up Pelham-road and part of Putney-road, for the Urban District Council.— G. Bell £713 0 0 John Jackson £400 0 0 Wm. Gibbs & Co. 573 4 1 Jesse Jackson 441 0 0 G. Wilson 510 0 0 W. Griffiths 428 0 0 Joseph Jackson 215 0 0 John Reeves, Wal 2 0 0 W. & C. French 666 0 0 (Hamstow) (accepted) 488 0 0

WEYMOUTH.—Accepted for the erection of a villa residence for Mr. F. A. Risley, Rodwell-avenue, Metars, Jennings & Goster, architects, Bourne-mouth, Quantities by the architects.— Stevens £2,350

C. B. N. SNEWIN MAHOGANY, WAINSCOT, WALNUT, TEAK, VENEER, and TIMBER MERCHANT, Nos. 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, & 17, BACK HILL, HATTON GARDEN, and 29, BAY STREET, FARRINGTON ROAD, E.C. The Largest Stock of all kinds of Woods in every thickness, dry, and at for immediate use. Telephone, 65, 274 Holborn. Tele. Address "SNEWIN, London."

WIMBLEDON.—For additions, &c., to parochial school buildings, Haydon-road, for the Wimbledon Parochial School Committee. Mr. H. G. Quartermen, architect, 36, Queen's-road, Heston, Surrey.— Williams £1,770 Buxton, South Wimbledon £1,645 Bullen 1,340 Wood 1,310 Davey Bros. 1,940 Brox 2,310 * Accepted.

LONDON SCHOOL BOARD TENDERS. At the meeting of the London School Board on Thursday the Works Committee submitted the following lists of tenders:— AMBLER ROAD.—New school:—

Table with 2 columns: Contractor Name and Amount. Includes Perkins & Co., T. L. Green, R. A. Verbury & Son, W. Downs, W. Shumir, W. M. Dabbs, J. & M. Patuck, W. Greer & Son, T. Boyce, Lashby Brothers, Stinson & Co., Kirby & Gayford, Treasure & Son, E. Lawrence & Sons, G. Cox.

GIPSY ROAD.—Heating:— H. C. Price Lea & Co., I. Davies & Sons, Ltd., Rosser & Russell, J. Fraser & Sons, H. G. Pender & Pattinson.

HAMOND SQUARE.—Repairing stones:— G. Cox.

TO CORRESPONDENTS. J. H. B. (Below our limit)—S. S. (Amounts should be sent stamped)—S. S. (Below our limit). NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors. We are compelled to decline pointing out books and giving addresses. Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED. If you cannot indicate to whom you wish your articles to be addressed, we are compelled to decline pointing out books and giving addresses. Any communication to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance. All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements to other exclusively business matters should be addressed to THE PUBLISHER, and not to the Editor.

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ILLUSTRATIONS.

Illustrations accompanying Professor Aitchison's Royal Academy Lectures:—

St. Wulfran, Abbeville	Two Single-Page
St. Riquier, Somme	Ink-Photos.
Palazzo Comunale, Piacenza.—Drawn by Mr. M. Starmer Hack, A.R.I.B.A.	Single-Page Photo-Litho.
Sketch at Burgos.—By Mr. M. Starmer Hack, A.R.I.B.A.	Single-Page Photo-Litho.
No. 1, Conduit-street, W.—Mr. H. Huntly-Gordon, A.R.I.B.A., Architect	Single-Page Ink-Photo.
Bush Lane House, Cannon-street.—Mr. Delissa Joseph, F.R.I.B.A., Architect	Single-Page Ink-Photo.
Sketch for New Room at "The Wood," Sydenham.—Mr. C. H. M. Mileham, Architect	Double-Page Ink-Photo.

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Ecclesiastical Zoology.



LN the year 1125, St. Bernard of Clairvaux, writing to William, Abbot of St. Thierry, asks, "What mean those ridiculous monstrosities in the courts of cloisters; those filthy apes, those fierce lions, those monstrous centaurs, those half-men, those spotted tigers, those fighting soldiers and horn-blowing hunters; many bodies under one head, or many heads on one body; here a serpent's tail attached to a quadruped, there a quadruped's head on a fish; here a beast presenting the fore-parts of a horse, and dragging after it the rear of a goat; there a horned animal with the hind parts of a horse?" It is a question which must have suggested itself to many, when surveying the wealth of imagery on a Norman doorway or the misereres of Beverley, Boston, or Bristol. What does it all mean? How did it get into churches of all places? Where did it come from? To the last question a full answer cannot yet be given; much more investigation and many comparisons must first be made. The second question is answered to a considerable extent, and the first question at length, in Professor Evans's interesting and erudite volume on "Animal Symbolism in Ecclesiastical Architecture."

This zoological imagery unquestionably mounts back to an immense antiquity. Some of it has been imported, almost unaltered, direct from the primitive myths of the Egyptians, on whose sepulchral monuments the Supreme Judge is seen determining the worth of souls by weight, and condemning each, in accordance with the theory of metempsychosis, to be re-embodied in the animal form for which it has fitted itself by its manner of life in its previous existence. In Christian art the Archangel Michael and Satan are usually the protagonists in the scene; but at Autun and Saint Lô the scales are held by the hand of God reaching out of the clouds. At Bourges Satan is trying to cheat; he has put his foot

in the scale, while one of his imps is pulling at it from below. In Egypt again was celebrated on the 23rd of April the slaying of



Fig. 1. Weighing Souls (Bourges Cathedral).

Seth-Typhon, a personification of the desert-demon, drought, sterility, famine and death, by Horus, the vivifying and fertilising principle. Bas-reliefs in the Louvre and the British Museum depict the god as a mounted warrior thrusting his spear into the neck of a crocodile. The myth spread to Syria and Asia Minor, whence the Crusaders obtained it, and adopted St. George as their patron against the Mussulman's dragon. The crocodile has become a dragon; but on one of the two famous columns in the Piazzetta of St. Mark's, Venice, may be seen St. Theodore and a crocodile.

Nor are there wanting survivals of a form of religion of an antiquity perhaps equally remote, that of sun-worship. Christmas, Epiphany, Easter, Whitsuntide, the Midsummer Feast of St. John, are all survivals of a solar or stellar cult. Most of all does this come out in the legend of the Phoenix. She lives in a far-away Arcadia in the East till five hundred years are overpast, when she flies to Heliopolis in Egypt, and burns herself upon the high altar in the Temple of the Sun. When the priest comes on the



Fig. 2. The Phoenix.

next day to offer sacrifice, he removes the ashes from the altar, and finds therein a small worm of exceedingly sweet odour, which in three days develops into a young bird; on the fourth, in full size and plumage, she greets the priest returns to her home. In Jewish writings and the Phoenix is often

mentioned. On Roman cinerary urns, with peculiar appropriateness when the body had been cremated, she is often sculptured with the inscription "Dis Manibus." Thence the bird passes to the sarcophagi, and the mosaics both of Rome and Byzantium; for, as Lactantius writes, "she has gained eternal life by the boon and blessing of death." Finally, as Phoenix is Greek both for the bird and for the date-palm, the latter becomes, by a diseased etymology, a sacred tree. St. Jerome and the Septuagint translate a passage from Job, "I shall die in my nest, and shall multiply my days like a date-palm." Hence the palm-trees on the sarcophagus of St. Apollinare in Classe, Ravenna.

A far more important source of Christian symbolism is to be found, as was to be expected, in classical mythology. In the early days of Christianity there was naturally much "accommodation." Deities and rites which could not be expelled forthwith were Christianised—coated over with an allegorical import. An especial favourite was Orpheus, from his descent into Hell to rescue imprisoned Eurydice. Even Bacchus and all his train are pressed into Christian service; for Christ was the vine, and the Church a vineyard. In the mosaics of the tomb of Constantine's daughter at Rome is a charming representation of the vintage, with little Pagan genii treading the grapes. Amor and Psyche are taken as emblems of the love of God and the human soul; the golden apples guarded by a dragon in the garden of the Hesperides typify the tree of knowledge in the Garden of Eden; Mercury, or Hermes, is not only the conductor of souls, but, with a ram on his shoulder, represents the Good Shepherd. The Sibyls become Christian prophetesses on Giotto's tower, and the bronze gates of Ghiberti in Florence, and on the pavement of Siena Cathedral; Virgil's Fourth Eclogue takes its place in Christian sculptures. Theseus and the Minotaur typify David and Goliath; Pyramus and Thisbe find their way into Bale Cathedral, one does not quite see how. The peacock of Juno, and of the Roman empresses, becomes the favourite Byzantine symbol of immortality; for, says St. Augustine: "Quis nisi Deus dedit carni pavonis mortui ne putresceret?" Ulysses sailing past the Isle of the Sirens becomes the ship of the Church, with the ears of its crew stopped to

* "Animal Symbolism in Ecclesiastical Architecture." By E. F. Evans. (Heinemann, 1896.)

the temptations of the flesh. The centaurs, like most of the ecclesiastical monsters, enter into heraldry also. They are usually armed with bow and arrow, and are annoying the believer with "the fiery darts of the wicked." This sagittary appears in the arms of King Stephen, and may serve to date the font of West Rounton and the chancel-arch of the little church of Adel. In all cases the centaur is a personification of unbridled animal impulses and passions.

More ancient, however, than classical mythology, even than sun worship and Egyptian eschatology, is the piteous deprecatory beast worship, a survival of that hard time when prehistoric man, equipped not yet with axe of iron or bronze, perhaps unprovided yet with weapon of rude or polished stone, covered before the beasts of the forest, terrified at the monstrous dimensions of the elephant and the mammoth, shuddering at the appalling night howls of the hyena, the lion's tremendous roar, the ravening fang of the boar, the gleaming eye of the bear, filled with an uncanny awe and a superstitious dread of provoking the enmity even of the ape, the hare and the fox. The woods were full of horrors to him, mysterious and malignant creatures capable of inflicting injury by occult and magical influences, and therefore not to be irritated or enraged in any way; not to be named, but addressed as broad-brow, flash-eye, forest-brother. Wild stories were invented, circulated, perpetuated. This went on for ages. Aristotle stands out alone, a scientific naturalist 2,000 years ahead of his times. What the mediæval mind thought of Aristotle may be gathered from the voracious "Lay of Aristotle" represented in many a cloister, where the grave philosopher is perambulating the lawn on all fours, with a lady mounted on his back.



Fig. 4. The "Lay of Aristotle" (St. Jean, Lyons).

The Greek writers, Ctesias and Megasthenes, on the other hand, and the Roman Pliny, recorded every zoological marvel they could hear of. From one source or other, the early Christian zoologist had a plentiful stock of material. The Talmud had declared that "he who interprets the sculpture literally is a liar and a blasphemous." Philo of Alexandria, half Jew, half Hellenist, had given an esoteric treatment to the Mosaic records. Origen recognised in the Scriptures a threefold sense, literal, moral, and spiritual. What was true of the Bible narrative generally was true of the Bible animals; they were moral beasts; and what was true of them was true of animals in general, and of plants, too. When Solomon spake of all trees, and of beasts and fowl and fishes, he did not write botanical treatises, but moralities. And what was

true of genuine, was true of imaginary creatures also; else the believer must have rejected the apocalyptic monsters of St. John



Fig. 3.—The Sirens (Psalter of Isabella of France).

the Divine. All this was justified by such sayings as that of Job: "Ask the beast and it shall teach thee; and the birds of heaven, and they will tell thee." Gradually all this crystallised into a collection of some fifty moral beasts, called The Physiologus; *i.e.*, The Naturalist; or sometimes the Book of Beasts, or the Bestiary. The Physiologus is at least as early as the fifth century, and was translated into Latin, Ethiopic, Arabic, Armenian, Syriac, Anglo-Saxon, and all the principal Germanic and Romance languages. Probably no book was so popular in the Middle Ages. And, unlike most literature, it was translated into dialect, and thus became everywhere the possession of the common people. Everybody knew the moral beasts; and a representation of one of them on a capital or a bench end; a reference to another, in a sermon or a song, was caught up at once, and relished by man, woman, and child. That is why mediæval architecture, especially in the eleventh and twelfth centuries, teems with zoological sculpture, to us a mystery and often an offence, but once a lesson understood and appreciated of all the common people.

Here are a few specimens of the Physiologus. It is the nature of the lion to howl over the newborn cubs for three days till the tremendous roar awakes them to life. "So Christ on the third day was raised from the dead." It is also the nature of the lion, though it is not generally known, to sleep with his eyes open. "So our Lord slept with his body on the Cross, but awoke at the right hand of the Father." Hence a brace of lions is often seen in front of Italian or German churches, or mounted on pedestals, as wakeful guardians of the sanctuary. A survival of this idea is found by some in the Landseer lions of Trafalgar-square. But as the devil walketh about as a roaring lion, seeking whom he may devour, the lion is also a symbol of evil; and when the whole

weight of a porch or a pulpit is placed on his back, as at Pisa and Siena, it is plain that he typifies Satan not merely subdued, but pressed into the service of Christianity. The unicorn can be captured by one method only, which may be seen in Boston church, *viz.*, by decking a virgin with beautiful ornaments and seating her in a solitary part of the forest; when the unicorn runs up, lays his head on her lap and falls asleep; then the hunters come up and catch him. So Christ "has raised up a horn of salvation for us;" the mighty ones of the world were unable to lay hold of Him, until He abode in the womb of the Virgin Mary.

The existence of the animal was authenticated by numerous horns, fabricated from the tusks of the narwhal, just as the griffin's claws shown in the churches of Hildesheim, Cologne, and Gran are nothing but horns of the Caffirian buffalo. The elephant cannot bend its knees. Hunters saw the tree almost asunder against which the beast leans at night; the elephant falls and cannot rise. So Adam "fell through a tree." This peculiarity of the elephant finds a parallel in Julius Cæsar's description of the Gallic elk. Elephant and howdah are seen in a Beverley miserere. The eagle can gaze at the bright sun without blinking, and carries the eaglets on its wings upwards and compels them to look on the shining orb; those who can do so with steadfast eyes it rears; but lets the others fall to the ground. So none can behold the face of God but Christ and his elect. This scene is portrayed at Alne, in Forfarshire and Worcestershire, Capua and Lyons. The whale remains stationary on the surface of the water till his back is covered with mould, in which large forests grow. Mariners land, cook their dinner as on an isle, and in a moment are engulfed. The whale is the devil. For the moral stories of the remora, the pelican, the panther, the otter, the beaver, the partridge, the charadrius, and the rest of this strange menagerie, the reader must refer to Professor Evans's entertaining pages. Incredible, now-a-days, the state of mind may seem which invented or believed such a farrago of nonsense; but it had the support of Clement of Alexandria, Augustine, Origen, Chrysostom, Jerome, Isidorus; whose test of evidence can have been none but that of Tertullian, "Credo quia absurdum."

As we have seen, the Physiologus was the great source of eleventh and twelfth century imagery. Later on another monstrous pack of animals, apes, pigs, asses, goats, rushed into the sacred building. The Physiologus was not the only source of zoological instruction. In the thirteenth and fourteenth centuries the same treatment was applied to the immensely popular romance of Reynard the Fox, and other beast ethics. But the object of the artist was different. Hitherto it had been to instruct, to preach, to edify, to present scriptural truth in concrete form, intelligible to those who could not read. Now, the object was not so much to edify, as to satirise and ridicule. Carving and sculpture became weapons of offence, wielded by Christian against Christian. Monks hated



Fig. 5.—Hunting the Unicorn (Old German Engraving).

friars, and despised the secular clergy, our parish priests; the parish priests owed the loss of the great tithes of many of their churches

the monks, and of marriage and confessional fees to the friars, who undersold them: the parish priest hated monk and friar alike. So in the misereres of Beverley Minster, the clergy, who there were secular canons, depicted the Black Friars and Grey Friars, who were very active in the town about 1520, and were about as popular with the clergy as the Salvation Army is now, as foxes with friars' habits. The authorities of St. Mary's Church, in the same town, reserve their satire for the Cistercian Monks, having probably suffered from the neighbourhood of the Abbey of Meaux. Here there are foxes at a lectern reading the lessons; foxes with crosiers, each with a goose in his hood; and a man riding a goat with a rabbit under his arm, a suggestive reference to monastic immorality. Nor was the new weapon confined to the broad field of ecclesiastical humbug in its very numerous varieties. That huge humbug, the mediæval doctor, finds his right place in the carvings. The profession of minstrel also, once so honourable, seems to have sunk into the deepest disrepute; pigs and dogs and cats and asses play fiddles, harps, lutes, and organs. The coarseness and obscenity of many of these later representations, even in the misereres or cloisters of a nunnery, is indescribable. But perhaps the harm of it has been overstated. It is quite a modern fashion to call a spade some other name.

Another source of animal symbolism in later times is to be found in travellers' tales, especially of monstrous births. Hence the legend of that extraordinary freak of nature, the Papal ass; hence also the sea-bishop caught in the Baltic, A.D. 1453, and the monk-calf, born A.D. 1522. Another source is to be found in fables and popular proverbs—the fox and the crane, the cat waiting for the mice to put a bell on it, a man shearing swine, and the like.

From one source or other, every bird and beast that did exist and did not exist found its way into the church. "First they took possession of the chancel, the chapels, and the pulpit, and finally overran the whole building, nesting in capitals, creeping along cornices, squatting on balustrades, peeping out of illuminated windows, peering over portals, grimacing as gargoyles from the roof." Every reader, layman or cleric, architect or archaeologist, will find instruction and entertainment in the glimpse which Professor Evans has given us of that strange, far-off, mediæval world.

EXPERT EVIDENCE.

IN a recent number of the *Builder* a letter of a correspondent was published which criticised adversely some evidence which was given by an expert in a law suit, of which our correspondent was a spectator. There is, no doubt, a popular dislike of what is called expert evidence. This arises very largely from the wide difference between expert opinion in the valuation of properties for the purpose of compensation, or in regard to the assessment of damages. To a large extent experts have only themselves to thank for this state of the public mind. It may, perhaps, therefore be desirable to consider what should be the frame of mind which an expert, whether architect or surveyor, should take up when he is called

on by a person who is at variance with another. In one word, he should look at the matter judicially. He is called in as a person having a special knowledge of a subject, with the object of giving as nearly as he can a true opinion.

Now, we make no doubt that among high-class practitioners this is the frame of mind in which the question is approached in the first instance. But in most cases also it is equally certain that when the matter gets into the Law Courts this frame of mind is changed. It is a well-known practice among bankers to keep new coin for those who have to pay legacy duty at Somerset House; and, in like manner, surveyors, when they put on the character of witnesses, take up the opinions of partisans. This is altogether wrong, and it largely tends to deprive expert evidence of its value and to make it much more expensive and, consequently, adds to the cost of litigation. For it is clear that if one expert differs widely from another he must be supported by further evidence if his testimony is to carry weight. The result is that when lands and houses have to be valued by a jury or an arbitrator it is constantly the practice to call three or four experts on each side, each of whom supports the contention of the side to which he is attached. A house cannot be truly worth both 5,000*l.* and 10,000*l.*, and this is the kind of radical difference which is constantly witnessed. It is obvious that if six men assert their opinion that a property is worth the former sum, and six others assert that it is worth the latter, the frame of mind which permits of this difference is not judicial. The result, of course, is that persons whose duty it is to decide what is the true sum, in nine cases out of ten regard each opinion not as a true one, but as indicative of a figure either greater or less than the person who states it expects the property to fetch. This has become a system, with the result that the public have fallen into a frame of mind which regards the assertions of experts as wholly untrue, and that judges and arbitrators are led to regard the evidence of experts with great suspicion.

This is not a satisfactory thing for professional men, who, when they give evidence in a court of law or in the room of an arbitrator, should be regarded as persons who come to give testimony which may be thoroughly relied upon. We fear that, so far as the valuation of buildings and property goes, the present practice of giving what may be termed partisan valuations, has become so fixed that it can hardly be given up without danger to the interests of land and house owners. Because, if a surveyor were now to come and state a figure something near the true one, the jury or body who have to give a final verdict would not regard it from the right point of view, but would proceed to discount it in the usual manner. But in other matters experts may very well adopt throughout a dispute a more judicial attitude. Thus in questions which relate to the interference with light, it has not been unusual to see dismal pictures of the results of a new building on the light of an old one put forward by those who are acting on behalf of the dominant owner. On the other hand, the way in which the height of buildings is minimised is also equally misleading. This is not as it should be, and

those who are called on in this class of disputes can, and should, endeavour to prevent themselves from becoming partisans. It is not an unusual thing for us to receive reports of light and air cases in which it is stated that Mr. A. B., architect, appeared for one side, and Mr. C. D. for the other, as if they were counsel or solicitor. This shows the kind of non-judicial frame of mind in which these disputes are too often approached, and which too often also results in costly litigation instead of in a reasonable and business-like compromise.

There is also some misapprehension in light and air cases in regard to the value of expert evidence. A surveyor is not a better judge of a pure matter of fact than is any other intelligent person. But it is to be noticed that in this class of law suit, architects and surveyors are often asked to testify to matters of fact with a view to the judge regarding their evidence as that of experts, when in truth they do no more than state actual facts. If, for example, the light to a jeweller's shop window be interfered with, the jeweller or persons in this kind of business are experts in regard to the effect of the alleged diminution of light. But an architect or surveyor is only in the same position as any other intelligent man, and it is very undesirable for an architect or surveyor under such circumstances to allow himself to be called as a witness as an expert. In truth, the more careful experts are in allowing themselves to become witnesses, and the more judicial a frame of mind they take up, the better it will be in the long run for all parties.

The above remarks on the subject of expert evidence have been confined as far as possible to its relation to litigation which more immediately interests our readers. But in every profession in which experts are to be found the same faults are observable. In Admiralty litigation, surveyors and shipbrokers are, we believe, found to differ widely and absurdly in regard to the value of ships, and any official connected with the legal department of the large railway companies can give any amount of instances of extraordinary differences of opinion among medical men as to the possibility of the ultimate recovery of persons injured in railway accidents. It must not, therefore, be supposed that architects and surveyors are in this respect different from experts of other professions.

NOTES.

The London
Water
Question.

THE manner in which the Government deal with the water question is deplorable.

It has been announced in the House of Commons that the Government are about to appoint a Royal Commission to investigate more especially areas and terms of purchase. If there was to be a Royal Commission, why was it not appointed at the beginning of last session, when it might long ago have been at work? But we cannot see that a Royal Commission is required. What is needed is adherence by the Government to one of two lines of policy, either to create a special body to manage the water-supply of London, or to hand it over to the County Council. If there is difficulty about the extent of the central area, that is a matter to be settled by the Cabinet. It is not a question for a Royal Commission, which is needed to

collect facts. The actual state of matters in regard to the water question is thoroughly known, and we can only regard the appointment of a Royal Commission as a weak and useless device to postpone the taking in hand of a troublesome question.

It is as well that our Government, who are for letting the South Kensington Museum buildings remain in their present discreditable condition, apparently, for an indefinite period, should be aware that they are making themselves an object of derision in other countries where national buildings are considered a matter of some importance. The *Central Blatt der Bauverwaltung*, in a recent issue, speaks contemptuously of the manner in which the completion of our Museum buildings has been put on one side time after time, without even the slightest promise of attention to it, and expresses the opinion (probably quite correctly) that such a procedure would be impossible in any Continental capital.

ONE of the principal events in connexion with the ceremonies being held at Berlin this week will be the unveiling of the equestrian statue to the Emperor William I. which forms the central feature of the "National Monument" erected opposite the Royal Castle, and to which we have frequently referred. The monument is now nearly completed, the equestrian statue, the principal side figures, and the colonnade being in position, and there is only the bas-reliefs in connexion with this colonnade wanting. The monument figures as a national memorial, and yet it is difficult to imagine a more unpopular piece of work, quite independent of its merits as a work of art. The public did not wish for a small equestrian statue opposite the Castle, by which it is dwarfed, and where it was backed by the river Spree with its unsightly barge traffic. What they wanted was a pantheon in the "Thiergarten," and both the general public and artists would have welcomed even a modification of that scheme. The memorial embodies only the wishes of the present Emperor, and no doubt affords a better outlook from his Castle than the old buildings which have been destroyed to make room for it.

The managing body of the Paris Exhibition for 1900 is about to open a competition for the best form and construction for the circular railway which is to connect the various portions of the Exhibition. In addition to this general line of railway communication, there is to be a special railway track laid down for experiments in various methods of traction. These may prove of considerable interest.

The fact, recorded in our "General Building News" column, that it has been found necessary to call a meeting, and consider the means of acquiring funds for the repair of the stonework and the roof, and also that it is proposed at the same time to decorate the interior of this church, may well be considered a matter of interest beyond the limits of the parish. The church is one of the three that we have by Wren's pupil Hawksmoor, and one of the

fifty churches built under the provisions of the special Act passed in Queen Anne's reign. Most persons outside the architectural profession are not aware that the peculiar design of the tower was an attempt, though an erroneous one, to realise the design of the Mausoleum of Halicarnassus. The bad condition of the stonework has in fact been painfully apparent for some time, and we may well ask how it came to be so long neglected by the parish authorities. We may add that those in charge of the fabric should be careful what kind of decorator they admit into it. A work of this kind should not be undertaken but with the advice of some eminent architect well skilled in classic architecture. The church will clearly lend itself to a decorative scheme of the highest order.

THE Medical Officer and Surveyor of the St. James's Vestry (Westminster) Vestry have jointly reported on the proposed new by-laws in regard to drainage proposed by the London County Council, and make some good suggestions, especially in regard to the simplification of clauses, as may be seen by the following examples:—

CLAUSES AS DRAFTED. 2.—Every person who shall erect a new building, and shall provide, in connexion with such building, a pipe or channel for the purpose of conveying to any sewer any water that may fall on the roof, shall cause such pipe or channel to discharge over a properly trapped gully or into such gully above the level of the water in the trap thereof.

He shall not cause any such pipe or channel to be so constructed as to receive into such pipe or channel any solid or liquid matter from any water-closet, urinal, slop or other sink, bath, or lavatory.

PROPOSED SUBSTITUTION. 2.—Rain water shall be discharged over or into a properly trapped gully so that sewer air shall not ascend into any rain water pipe.

No rain water pipe shall receive any urinary or feculent matter.

The tendency to voluminous wording in documents of this kind is increasing, and increases the difficulty on the part of the average householder in finding out what he is really required to do. As to the second quotation the St. James's Vestry Report objects, as we did, that to prohibit wastewater from baths, lavatories, and sinks discharging into rain water heads would be "oppressive and unnecessary." There are some other conditions also, as we have already pointed out, which are somewhat excessive. But the objections raised to the proposed By-laws in general seem to take rather too much the form of a complaint against the extra trouble and expense they will involve, an argument which we do not think is much to the purpose where the provisions are salutary in themselves.

The Report of this Association for the year 1896 gives, as usual, a record of their successful work in the way of securing open spaces for the public, or laying out and improving them after they have been acquired. The Association, among other good works, contributed 1,000*l.* towards the formation of the recreation ground on Battersea Wharf, and have laid out, or contributed largely towards the laying out, of several other places of public recreation, chiefly formed out of disused burial grounds. This year the Association accompany their Report with an extra circular announcing the appointment of a Committee to provide for the formation or securing of public parks and

open spaces in connexion with provincial towns, as a commemoration of the Queen's reign.

THE mysterious accident by which a labourer employed by the Hampstead Vestry lost his life when cleaning out a transformer substation, shows that it is impossible to take too great precautions when dealing with high electrical pressures. It was only recently that the Board of Trade insisted that the cases of the transformers should be put in direct connexion with the earth. When this was done, one would have thought that it would be perfectly safe to step on the case. What the accident proves, however, is that the resistance of the man's body, for some reason or other, was comparable to the resistance of the wire path to earth. As he was holding the ladder with damp hands, and making good contact with the transformer case with a damp boot, no very high difference of potential would have been required to give a fatal shock. The case having come into connexion with the high potential main, a considerable current must have been flowing along the earth wire, heating it and drying the soil round it, hence this path might well offer a comparatively speaking, large resistance to the electric current. We shall be interested to know what plan the Board of Trade will adopt to make the recurrence of such an accident impossible. Mr. S. Z. de Ferranti, whose experience with high pressures is second to none, has advocated for some time the necessity of having a cover to the transformer substation which, when lifted, automatically cuts off the high tension. As in Hampstead alone there are twenty-four of these substations, and water has often to be syphoned out of them, we think that the Board of Trade ought to insist on these covers being adopted.

It is announced that Sir Arthur Blomfield has prepared the plans for a massive tower to be built at the south-west end of St. Mary's, Chatham, as part of a scheme of complete restoration, at an estimated cost of 8,000*l.* With the exception of the chancel and side chapel, which were rebuilt eight years ago in the Early English style, after the same architect's designs, the present structure consists for the most part of the rebuilding in 1788, but it still retains some features of the original church. St. Mary's, standing on the chalk cliff, above the Ordnance Wharf and Old Dock, formerly appertained to, and was served by, the Black Canons of SS. Mary and Nicholas Priory at Leeds, near Maidstone, upon whom it had been bestowed by their founder, Robert de Crevecoeur, or Crouchheart, *temp.* Henry I.* At the Suppression the King gave it to the Dean and Chapter of Rochester. The first church was destroyed by fire and rebuilt 1316-20; in 1635 the Navy Commissioners repaired the fabric, reconstructed and enlarged the west end, and erected a small western tower. In 1689 Benjamin Ruffhead, anchor-smith, gave some branch and other ironwork. In pulling down the old chancel there were found, amongst materials that had been used for filling the east window, some finely-sculptured fragments, one of them being a mutilated figure of the Virgin and Child,

* For Leeds, and the Crevecoeurs, see "A.A. Vacation Visits," *Builder*, August 3, 1889.

supposed to be that of Our Lady of Chatham, of which Lombard gives a curious account in his "Perambulation of Kent." In St. Mary's was set up an inscription in memory of Steven Borough, *obit* 1584, the Arctic explorer, to whom is credited the discovery of the passage to Archangel.

THE Rochester Town Council Eastgate House, Rochester, have agreed to acquire, for the purposes of a museum and public library as a memorial of the Queen's reign, this highly interesting relic of the old city. Eastgate House—the "Nun's House" of Dickens's unfinished "Mystery of Edwin Drood"—stands in the High-street, near the site of the East Gate of the wall, and Williamson's school erected on the filling-up of the ditch. Constructed of timber and stucco, it is remarkable for the irregularity of its outline and plan, and for the fine wooden chimney-pieces, carved woodwork, and enriched ceilings within. On a beam in one of the principal rooms is cut "1691;" the house, though, is believed to be of an earlier date. The six-sided turret staircase has a projecting saddle-back roof, in strange contrast with the roof of the adjacent hexagonal bay which almost conceals the gable behind it.

It appears that M. Bartholdi the sculptor (if one can use the word in this case) of the colossal "Liberty" at the entrance of New York Harbour, and also of the rather mediocre monument to Gambetta at Ville d'Avray, claims also to be the real author of the design of the Palais de Longchamp at Marseilles, of which M. Espérandieu is the reputed architect, and has incited the Société des Artistes Français to address a remonstrance to the authorities at Marseilles in regard to the omission of any mention of M. Bartholdi's share in the work. M. Allar, the Mayor of Marseilles, repudiates the claim energetically, declaring that he is in possession of documents which constitute a full answer to M. Bartholdi's unfounded pretensions, in which for our own part we certainly have very little faith. M. Bartholdi is an artist who has always shown a great anxiety to keep himself in evidence.

THE eightieth exhibition of this Institute, at the Gallery in Piccadilly, contains some very charming works, which however must be looked for mostly among the smaller and less conspicuous drawings. The President, however, has made a real success with his "Jessie" (165), not only a most beautiful face but one which really looks the character, though his Shylock is a respectable old nonentity. His larger figure, "Rosalind" (345) is a beautiful piece of colour and costume, arranged on a figure which is certainly not Shakespeare's heroine. A new architectural artist of high talent appears in the Honorary member, Count Seckendorff, whose drawings of Roman remains, the "Forum" (44) especially, are admirable. Mr. Fulleylove is hardly at his best in his large view of Athens (365), which is interesting rather in a topographical than artistic sense. There is much humour in Mr. Dollman's "Dogma" (175), spoiled by the disagreeable woolly texture of some of the faces. After these, the main interest of the exhibition lies in the land-

scapes. Mr. Joseph Knight sends a large work, "O'er Moor and Fell" (257), one of the finest specimens of a manner from which he never departs, but in which, within its limits, he is always successful. Among smaller works which must be looked for, but which are worth looking for, are Mr. John White's "Village Street, Branscombe" (157), Mr. Max Ludby's "Close of Day" (154), with a grand warm-coloured cloud resting on the horizon; Mr. C. E. Johnson's "Break of Day" (140), Mr. Colman's "Tender Light of Afternoon" (96) and two beautifully refined little landscapes by Miss Squire (91 and 97). Mr. Alfred Parsons' bright and brilliant view of old "Warley Place" in the midst of its garden (67) is among the more prominent works, as also Mr. Wimperis's "High Down, Dartmoor" (161), also Mr. Austen Brown's "Ste. Geneviève" (234) a picture evidently painted under French inspiration and training; Mr. W. Rainey's children dancing in a field, under the title "A Ring of Roses" (292); Mr. Bernard Evans's "Fountains Abbey" (327), a large and rather too solid drawing, but with a certain power; and Mr. Weedon's "Hayfield, Pulborough" (373), a work in a broad style and with a very fine sky. The West Gallery is occupied with older works, "Royal Institute Art Union Prizes," including some good examples of Prout, and some not very remarkable ones of Varley, Holland, and some other old names. The two best things in this part of the collection are Mr. Wimperis's "Arundel Castle" (78) and Mr. Harrison's exceedingly beautiful and real coast scene under the title "The Rising Moon" (103), which could hardly be surpassed in its way.

At the Goupil Gallery is a collection of landscapes by James Maris, one of those modern Dutch painters with whom landscape painting is not so much a representation of nature as a representation of one special type of effect which they read into nature, and to which they always adhere. The deadness and coldness of colour in the land portion of his works is almost depressing; on the other hand his skies are often very fine, and rendered in a manner entirely his own. The large painting entitled "Seaweed Harvest," a narrow strip of beach with a great mass of clouds above it, is splendid; and some of the smaller works are very interesting, though the impression of the whole collection is rather monotonous.

THE ADVANCEMENT OF ARCHITECTURE.*

In my last lecture I pointed out how the Gothic architects dealt with one new feature, viz. the flying buttress, how it was at first a plain piece of structural work, and how it was gradually brought into an ornamental feature. This was more or less the case with every new feature. The Early Gothic window was a plain lancet. Sometimes three were grouped together—of course, for light, the two side ones being lower; when there were two together they were both embraced by one arch, doubtless for good structural reasons, and, as light was the object, a circular opening was made in the spandrel over the central shaft, which practically became a mullion, and this circular opening was mostly adorned with a trefoil or a quatrefoil. The columns were gradually diminished as much as possible, and the heads were eventually filled with geometric tracery. We know in our own English

* Being the sixth and concluding Royal Academy Lecture on Architecture this session. Delivered on the 17th ult. by Professor Aitchison, A.R.A.

Gothic that this was called the Geometrical period.

It is curious, with all the desire for novelty that characterised the whole Gothic period, how conservative the architects were; they never substituted a new form for an old one until the old one interfered with the proper development of their new aim. The original divisions of the windows were shafts, made slenderer and slenderer, until at length they were superseded by the plain moulded bars we call mullions, which were continued and bent into tracery. It was by development rather than by anything absolutely new that the astonishing results of the latest phase were obtained; for instance, the gables of porches or doorways were made higher and higher, until they ran above the central rose window of the west end, and were pierced to admit light. At Amiens the finial of the flat gable of the central porch only runs up a little above the string of the ground story, though it is raised by the figure of an angel blowing a trumpet. At Reims, the high-pointed gable is surmounted by a finial with a cross on the top, just level with the centre circle of the great west rose window. At St. Wulfrand the thin point and finial run high up into the west window. At the Cathedral of Rouen the gable, as seen in perspective, cuts the great rose window in two, and its finial reaches on to the upper archivolt above the circular rose. At Notre Dame de l'Épine, as seen in perspective, the tops of the two finials of the gables run above the crowning string on to the battlements.

The buttresses were originally merely structural, to resist thrusts or to stiffen walls, with plain sets off and water tables. As the architects got more and more skilled in construction, they seemed to have developed a stronger taste for ornate structures; you may be sure that this was appreciated, and was more and more wanted. You must remember that though architecture had passed from the hands of the clergy into the hands of the laity, the clergy had not lost their taste for it, but had only seen themselves surpassed by superior talent and skill, and besides as the people were getting richer and more fastidious as soon as they were organised into trade guilds, the clergy must have heard of their appreciation of more ornate buildings. At the Cathedral of Notre Dame at Paris, the buttresses were still plain, but in the west front the architect had put an ornamental note in each, by means of a niche with a statue, the niche being made by two projecting columns covered by a roof. The architect, too, had carried the arcade of Kings across each buttress and done the same in the upper arcade. At Amiens, owing to the projection of the porches, the lower stories of the buttresses were brought forward too, they were arcaded on the face and at the level of the string of the ground floor octagonal spires were put on them and angle pinnacles.

At Reims the portals came in front of the buttresses, and the face of the buttress above the portal was arcaded with a triple arcade to the level of the first floor string; above that an oedicle for a statue was formed by an arch on two columns and was capped with a spire and pinnacles as at Amiens, and like them the spires ran up into the gallery of Kings, the finials reaching to the top of the pedestals on which the kings stand. At St. Wulfrand the buttresses project considerably before the jambs of the portals and are square for a certain height, and then are set anglewise and are hollowed into niches on both the diagonal faces, and have statues with canopies over them, whose spires are tufted with crockets; above the canopy is a gable with a tufted finial bearing on its top the stand for another statue with a canopy over it, the finial of which runs up and divides the angle buttress which is gabled, and the spire over this dies against the square face of the buttress above, about the level of the middle of the rose tracery of the west window. The same sort of buttresses, but even more elaborate, projects in front of the portals at Rouen. In late French Gothic the canopies form an important ornamental feature.

The only other things I know that make up the sum total of the external architectural ornamentation are the pierced balustrades. I may here point out a motive at Rouen Cathedral I never noticed elsewhere, that the balustrade to the highest open gallery has its top line diversified by each alternate space of the arcade being formed into a canopy, this is very like the semi-octagon projection in the window lattices at Cairo, used for keeping the water bottle cool. I never was in the gallery at

Roman, and so can only speak of its appearance from below, but all these new methods of ornamenting show the tendency of first turning necessities into ornament, and then developing and multiplying the ornamental features.

The arced or panelling of the plain surfaces of stonework, the filling in of gables with tracery, sometimes blind and sometimes pierced, the new mouldings, the modelling of piers and jambs, and the sculpture, and I may add the development of the fringes, like those round the porches at Amiens, end the list. I may say, however, that by making the sides of the arches of the fringes vertical, as is done in late work, gives them a Sarcenic look, like the stacchites to the arches of the Alhambra. I have so often adverted to the Gothic mouldings that it is needless to repeat my remarks that they were studied to tell in a misty climate, as the Greek ones were to be effective in a sunny climate. The modelling of piers is the result of the stepped arches and the logical desire of the Romanesque architects to have a separate column to support every separate rib. Not being a sculptor I say nothing of the carved work.

Before the end of the twelfth century the Romanesque sculptors had taken their floral ornament from the leaves, plants, and flowers that were native to the parts where they were building, and evidently copied their figures from the natives, too; but that particular floral ornament we call a crocket became a distinguishing feature of Gothic. You may notice that the old spire at Chartres has no crockets, but in the new one not only the spire, but every pinnacle, is crocketed.

As a rule, the outside of buildings tell nothing of their internal structure, and I do not mean by that their shapes, for the apses and chevets are striking enough. St. Bacchus at Constantinople, often called the little St. Sophia, might, as far as its outside is concerned, be a printing-office or a Dissenting chapel, in spite of its domed inside.

It was the Byzantine custom to utilise the space between the buttresses, as was ultimately done at Notre Dame; but this is not the case in vaulted Gothic structures, as a new principle had been introduced of counteracting thrusts from the inside by the external thrusts of the flying buttress, as, with the exception of the west front and the north and south ends of the transept, every bay of vaulting is shored up outside by flying buttresses. It will, therefore, be best to say something of the vaulting before making the final remarks.

I mentioned the vaults in my last lecture, but it may not be amiss to repeat my remarks. The vault was confined in the first instance to transverse, diagonal, and wall ribs, each pair forming an arch. The ribs at first being merely beaded at the edges, but these were gradually turned into mouldings, and in England smaller ribs, under the name liernes were multiplied, and a ridge rib introduced, possibly to make the filling in easier, and eventually the spaces were so small as to be filled with thin stones, scribed and fitted in. Short ribs, tiercerons, were also inserted, set at an angle to the liernes, forming stars in the middle, the horizontal section of the solid part of the vault being polygonal, with curved faces. Gradually the horizontal section became circular, and the ribs got so small and numerous that it was easier to make the horizontal section of the solid round, and to work the ribs out of the voussours, than to use ribs and panels. These were called fan vaults, and are still constructively valuable in brickwork, as they save the waste of time and expense in cutting the groin points, as well as the weakening of the vault. I have used them for basement vaults. These fan vaults were often used with pendants, as at Henry VII.'s Chapel and elsewhere. As construction and as mason's work these fan vaults were most wonderful, but, aesthetically, the monotony of the repetition of arches and cusps is sickening. I have often wondered why this form of vault was not used now, only carved with something interesting, instead of being covered with the everlasting cusps. Of course, at first sight, the stellar vault is striking, and so is the fan vault, and those with pendants are more astonishing still. In fact, to those unacquainted with the method of support, they are unwarvellous. But interminable repetition is beyond human endurance. Though all the leaves of a tree arc, roughly speaking, alike, no two are exactly the same, nor in the same position. The Greeks realised the advantage of this device of nature and

acted on the lesson; so that we never tire of looking at the Parthenon.

Now, as before, all the external features of a building are the walls and roof, and the walls are only necessarily pierced by doors and windows. The Greek temples, if Dr. Dörpfeld is right, were alone without windows, and every habitation must at least have one chimney for the cooking-fire, or a hole in the roof for the escape of the smoke. It is a matter of genius as to how these walls and roofs, these windows and doors are to be treated to make the whole building interesting or beautiful. We should be grateful to the Saracens and to the Medævals for showing us the possibility of making them striking, effective, and beautiful, in a new way, and showing us that every form of beauty was not exhausted by the efforts of their predecessors. Architecture is really the creation of religion. It is much more for pleasing his deity than himself, that man has built all the most famous buildings in the world. As soon as the savages that over-ran the Roman Empire were nominally converted to Christianity, their main object was to have temples built as large, grand, and stable as their wealth and the skill at their command would permit, and when the architects were skilful enough to enable them to show their enthusiasm, lanterns, towers, and spires were added to every abbey, church, or cathedral, and the whole was covered with every form of ornament that they admired.

The Greeks did not, so far as I know, make any improvements in structural art. Their temples, as far as their construction went, were no advance on Stonehenge; but they were a tasteful people, who loved the beautiful, and they made the most perfect temples the world has yet seen, where every artistic touch still tells its tale as well as it did when it was new. The Romans were greater than the Greeks in everything that we call practical. They saw the advantage of the arch, and used it as it never had been used before; they saw the advantages of architecture, and there was no country they conquered and kept that is not enriched with it. They learnt the art of building in rubble—or, if you prefer it, in concrete—faced with stone or burnt brick, so that there was no place they stayed in where the main material was not to their hands. There is in Tunisia an aqueduct, some 70 ft. high in parts, that is built of the soil of the country mixed with lime, and cast into huge blocks; but then they had the taxes of the then civilised world for their revenue, armies of slaves, excellent roads, and the power of requisitioning the population wherever they stayed. They were admirable planners and most excellent builders, and, of course, could choose their architects from the cleverest of all the tributary nations, and they always succeeded in getting dignity and magnificence in their buildings. The Byzantines were Romans, with a larger admixture of Greeks and Orientals, and they perfected the dome on pendentives and invented domes on drums. The Saracens were savages when they emerged from Arabia, but with a passion for literature and some skill in it, they deeply studied Greek philosophy, and Greek and Hindoo, arithmetic and geometry, mathematics, and eventually developed a new style that has captivated mankind by its gorgeous and magical effects. The various savages who over-ran the Western part of the Roman empire, as soon as they settled down began to practise building and showed an energy, perseverance, a power of observation and logical deduction that has never been surpassed, if it has ever been equalled. In less than a century after the taking of Jerusalem, in 1099 A.D., they became original and daring architects, and eventually the most skilful the world has yet seen, but how any one can suppose that they were not indebted to the Saracens for their methods is beyond my comprehension. The magnificent Norseman showed a passion for the massive and the grand. If you will go from the nave of Southwell or Gloucester into the choir, you go from the grand and gloomy work of giants to the exquisite skill of pigmies. Where did the ideal of all this mysterious elaboration and slightness come from but from the admiration of Saracen work?

I daresay most excellent reasons could be given why the great epochs of architectural art cannot occur again, and particularly in the immediate future; for there is always some good reason to be given for any bad practice; men can say that "so-and-so, with no more knowledge than I, made a comfortable income by keeping an architectural fancy

dress shop, and that a few have made their fortunes at it;" but as I addressed you as poets in structure, so I continue.

If we want to imitate the Gothic architects in creating a new style, we must at least learn all that can be learnt, and strive all we can, before we are in a position to say that a new style is impossible.

No one can say that there is no poetry left in this age. I believe no age is absolutely wanting in the elements of poetry, but it may want the man gifted with perfect utterance to make it known and acknowledged.

When I was a student I took in Viollet le Duc's "Dictionary." There is one short remark in it that it will not be amiss to quote—"The constructors of those days sought without ceasing, and routine had no hold on them; in searching they found, they advanced, and never said 'We have arrived, let us stop here.'" This seems to me to be good teaching to follow. We at present want an architecture of our own time, a new architecture; this is a good wish. But we must know how a new architecture is found. Let us see how it was found in the Middle Ages, and to do this we must begin at the beginning with the Romanesque architects. I did more or less describe their efforts until they found out the pointed arch, the vaulting ribs, and the flying buttresses. They had learnt all they could, they had observed the various strengths and qualities of stone, they had reasoned on every step they took, they had dared and striven, and they had become more or less masters of descriptive geometry, which in itself is a great training to the mind. They had to set out full-sized diagrams on the floor prepared for them, of every piece of work that required accuracy, and to draw out every moulding full size in section; but besides this, they had to get out the forms the mouldings took when the joint came on to a horizontal line, for the masons to cut their templates from. Every piece of stone was completely worked before it was carried up to its place, and the architect had to see that the work was properly executed and bonded, and that the rubble filling was properly put in, or else, especially in high walls, there would sure to be settlements, but this was not all, for until the schools had turned out efficient workmen and foremen in each trade, the architect had to arrange the necessary scaffolding, and draw out all the centring for the arches and ribs, besides having to look after the quarrying of the stone, and its conveyance to the work, and the proper economy in cutting it, and this did not apply to the stone alone, but to every material used, so that the architect was very properly called, "The Master of the Work;" but probably when the communes were constituted and made up of trade guilds in the latter part of the twelfth century, the different trades were well versed in the knowledge of their arts. The bottom half of the circle of the west rose window at Reims, which is 4 ft. in diameter with open spandrels, was no easy task to joint, when there was only one light circle in each corner to support it, and besides its own weight, it had at least half the tracery to carry. The cause of invention or the capacity for the production of æsthetic effect by individuals is impossible to discover, and if it should happen that a new style should come about, we cannot foresee what form it will take, but I think we can say that it will not take the form of Gothic, for ornamental geometry is not the passion of the present day. I think the cultivated would now prefer the Palace at Brescia to anything Gothic. It is doubtful if any new grand style is likely to be developed in the immediate future; for the embodying of any great idea in building is very remote from the thoughts of the present day. The embodiment of every great idea came as naturally to the people of the Middle Ages as sending a letter to the papers comes now, and the Church schools of those days represented all the education that was to be had, technical and other. The clergy were a protection from the arbitrary power of feudal lords, and pointed out the way to Heaven, while the Church offered all the innocent delights that were then known. The exercise of architecture and all the sister arts, as well as the sumptuary ones, offered the most perfect intellectual exercise without fear of the dungeon or the stake; consequently to endow the church with excellence and beauty offered not only the highest but the most cogent motives. All I can now say is this, that before we can hope for a new style, we must acquire the knowledge of construction possessed by the engineers, skill in planning, and the proper dis-

position of light and shade. With this as a foundation we can only hope the poetic inspiration may come to enable us to clothe the necessary forms with an elegance more perfect than the world has yet seen.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

HERALDRY IN ENGLISH MEDIEVAL ARCHITECTURE.

A MEETING of this Institute was held on Monday, at No. 9, Conduit-street, Mr. Aston Webb, Vice-President, in the chair.

The minutes having been taken as read, Mr. W. H. St. John Hope read a paper entitled "Heraldry in English Medieval Architecture," of which the following is an abstract:—

Mr. St. John Hope said he should confine himself to the historical period beginning with the accession of Henry III., in 1216, and ending with the death of Henry VIII., in 1547. The applications of heraldry to architecture in this period were so numerous that it was not easy to deal with them in any degree of connexion. Arms, hedges, crests, and supporters were freely used in every conceivable way, and on every reasonable place. Whether the building were ecclesiastical, domestic, or secular was immaterial; there was no difference in the treatment of the heraldry nor limitation of its use. The earliest applications of armorial insignia were purely of a personal character, to distinguish a man from his fellows when all were alike disguised in their war harness. These insignia usually took the form of a device painted upon the wearer's shield or attached to his headpiece. Heraldry, consequently, is met with first in buildings, in the form of painted or sculptured shields on the monumental effigies of departed warriors. The value of armorial shields as a mode of picture-writing soon suggested itself when heraldry became a science, and the association of them with architecture formed at once a beautiful form of decoration and a speaking historical record. The wall arcades of the nave aisles, and the tombs of Queen Eleanor and William de Valence, in the abbey church of Westminster, furnish the earliest and most charming examples of this combination. Another admirable thirteenth-century example is the gatehouse of Kirkham Priory, Yorkshire. In the new nave of York Minster, of about the same period, various benefactors to the church are commemorated, after the Westminster fashion, by their shields of arms, thirty-two in all, sculptured, two to a bay, in the spandrels of the pier arches. A somewhat similar arrangement occurs at St. Albans in the beautiful decorated bays of the nave, built after the partial fall of the south side in 1323. In the north of England there were numerous fourteenth-century buildings showing heraldic decoration with the architecture—for instance, Bothal Castle, Alnwick Castle, Hilton Castle, co. Durham, Lamley Castle, the Lion Tower at Warkworth, and Micklegate Bar, York. The presbytery and choir of York Minster contain in the spandrels of the pier arches a series of sculptured shields similar to those in the nave, and the great arches of the central lantern tower are also adorned with large and fine examples of the sculptured shields of arms of the builders and others. Taken as a whole, the fourteenth century, except perhaps in Yorkshire, was not very prolific in buildings decorated with heraldry; but it produced a magnificent series of monuments, many of so elaborate a character as to form distinct features of the churches wherein they stand. The more notable examples were enumerated and illustrated by the author of the paper. The so-called Perpendicular style was very prolific in heraldic ornament and decoration, which was especially seen in East Anglia, where almost every large church of the period is lavishly decorated with heraldry. Several examples were described. Fine displays of heraldry existed in many of the ornate fireplaces of the fifteenth century, notably at Tattershall, in Lincolnshire, and the Bishop's palace at Exeter. The fifteenth century, like the fourteenth, was rich in heraldic monuments, and brought into fashion those beautiful stone structures that combine the monument with the chantry chapel, of which examples exist at Tewkesbury, St. Albans, Salisbury, Winchester, and elsewhere, one of the finest in design, as it is most remarkable in construction, being the bridge-like structure in Westminster Abbey church, in memory of Henry V., whose tomb stands beneath it. Much of the architectural heraldry of the first part of the sixteenth century is simply a continuation of that which preceded

it. In large and costly buildings, however, the increased richness of the architecture was accompanied by a corresponding outburst of heraldic display, as in Henry VII.'s Chapel at Westminster (in particular the bronze doors), King's College Chapel, Cambridge; St. George's Chapel, Windsor; and Hampton Court. Selecting a few typical architectural features, such as spandrels, bosses of vaults, &c., Mr. Hope proceeded to show the influence the introduction of heraldry had had upon their ultimate development, citing numerous existing examples. In conclusion, the author discussed, by the light of medieval examples, the artistic treatment of heraldry in its application to architecture, shields, crests, supporters, and various other features being dealt with in detail. The lecture was illustrated by a large number of lantern slides and coloured photographs of stall-plates of Knights of the Order of the Garter in St. George's Chapel at Windsor.

Mr. J. A. Gotch, in proposing a vote of thanks to the lecturer, said that he had been much struck with the very interesting series of views which had been thrown upon the screen by Mr. Hope. The later examples exhibited had pleased him, on the whole, more than the earlier ones. That was largely due to looking at the subject from the decorative point of view. Of course, the earlier heraldry, the more heraldic it was, in a certain sense—that was to say, the nearer the stream was to its fount the purer it was. The older the shields and devices were the simpler they were, but for pure interest of design, as apart from merely stating the fact, it seemed to him that some of the shields of a later period struck him as being most beautiful and most ingenious. There were not only the heraldic facts portrayed, but it was done in such a very charming way, and they had not only the alliances and interesting history given, but the actual skill and ingenuity of the designer, and the evident love with which he did his work, displayed before them. So with that tomb in Henry VII.'s chapel. He did not think that all the illustrations thrown upon the screen there was any more charming example than that of the arms of England in bronze work. A more elegant supporter than that greyhound he did not think one could ever see, and the elegant way in which the arms were displayed, with the whole of the field voided, was most ingenious, because of course, as a rule in drawing heraldry, the various badges were drawn entirely separate; but in order to have them supported when in the shield; all these things had to be shown, and the ingenious way in which that was done without confusing the charges was certainly most interesting. Then, if one might be allowed a bit of criticism on the designs of men who used to design far better than we could at the present day, one would perhaps venture to say that in some of the Tudor work at King's College Chapel, for instance, the badges seemed to a certain extent a little bit coarse and out of scale with the charges on the shield, because the badge itself was perhaps as large in area as the shield. Then there was one thing which he thought one could gather from the series of views thrown on the screen, and that was as to the great advantage there was in studying heraldry, not only in the flat but in the round. He thought they could learn something with respect to the charges and so on in heraldry perhaps better by having to model the shield than simply drawing it, because then one got to know, in a measure, how the shield must have been constructed, and therefore how the charges which a shield bears were logically placed one in relation to the other. Mr. Hope said a good deal about the freedom there was in heraldry, and that certainly appeared to him to be one of the great things at which modern designers ought to aim. Certainly great freedom was taken by the old designers, but that freedom was entirely lost in the last century and the century before that. Mr. Hope said that the only shape of a shield devoted to one purpose was the lozenge which was devoted to ladies. It was a curious thing, in considering the origin of heraldry, viz., that these were badges or insignia which were worn by the knights enveloped in cumbersome armour, that ladies should ever have thought of indulging in heraldic badges. He supposed for some time after its inception heraldry took a little departure from the strict course which it ought to have followed in its pure developments, and became not only useful but also decorative, and the ladies seized every opportunity that was presented to them of applying such decoration to their already decorated persons. One very curious instance of the use which ladies made of heraldic devices

was in Spain, in which ladies who were unmarried displayed a shield in which one half was devoted to their paternal coat, and the other half was left blank on which to put the arms of their husbands. Those, we were told, were called the arms of expectancy. Apart altogether from the decorative point of heraldry, architects especially should find it exceedingly useful from the amount of light it threw upon history. Very often the only clue one had to the date of the building lay in the shields with which it was adorned, and so, altogether apart from the pleasure one had in fine drawing, its historical use was a great point. On one of the slides some shields were charged, not with arms at all, but with letters and figures, and that was an interesting thing to notice. Even in medieval times the shield was of a shape which would be devoted entirely to heraldic bearings, one would think, but it was used in that instance to carry letters and initials.

Mr. J. J. Stevenson seconded the vote of thanks. On one point in Mr. Hope's lecture he was in doubt, viz., in regard to that gentleman's remark that heraldry began in the thirteenth century. He (the speaker) thought it was as old as the human race. Heraldry must have begun long before letters. It was simply a picturesque manner of writing one's name, and belonged to the same class of things as signs of public-houses and so on, invented for the sake of people who could not read. We had a modern example of old heraldic things in the case of modern merchandise signs. Then another thing might be looked at in that light. He could never understand why it should be called bumptious and upsetting and presuming to put up one's family sign, but we must take care that what we did put up we had a right to put up. But in reference to that, and the modern coat of arms, there was the difficulty of the helmet. We did not wear helmets nowadays, or we might put a crest on a top hat. But how could people's names be represented on a plate, or a shield, or anything else, without putting up a helmet? He desired to make heraldry a practically modern thing. It certainly ought to be a modern thing. He did not in the least see that we should not keep up that beautiful old picturesque way of writing our names in that way. As to the origin of crests that was rather an archaeological question, but when one looked at crests one saw they were of enormous size. The crest of the Black Prince in Canterbury Cathedral was a real leopard. He thought every architect ought to know that the mere form of the shield was no matter of importance whatever—it was a matter of mere fashion. In fact, those marks were often put on a coat—at least, we often heard of coats of arms, and in coats of arms they would not take the form of a shield but be simply dispersed over it. Mr. St. John Hope had referred to St. John's College, Cambridge. He (the speaker) was fortunate enough to be the discoverer of the chimney in the other college, which Lady Margaret built, viz., Christ's College. On it there were marguerites for Margaret, and the name and title, and a lot of little things about a couple of inches square, all over the chimney piece. There was one remark he would make on the whole, viz., that he thought if heraldry was merely a way of writing one's name he did not see why people should be taxed for doing that.

Mr. Hugh Stannus said that Mr. Stevenson had mentioned the shrinking from using coats-of-arms on the part of clients as being an assumption of too much; and he had found the same feeling; but when a man was of ancient blood or good family, then it was a pity he did not allow it to be stated. And when a man was "a new man," even then he might have a coat-of-arms, on proper application to the Herald's College. With regard to the helmet, he was always in favour of using it over the shield, with the wreath and mantling falling from it. The whole, when complete, was much more beautiful for decorative treatment. All heraldry was a conventional method of stating a certain fact, and if the conventional method of putting the arms on a shield were adopted he saw no reason why the helmet and its accessories should not be shown. The use of the helmet further gave an opportunity for having a boss or lump coming over the flat shield; and this bossing was the very essence and life of relief-work. With regard to the main question, he thought architects might look upon the subject from two points of view. First of all, Heraldry was introduced to give information, to tell a story as to who were the personages who lived there, who erected the building, who was buried there, or who had been the benefactor generally. That, of course, was the Storiational side of Heraldry.

It was useful to give some statement or story, and to us now it was often the only means of learning dates and names. From the second point of view—that of decoration (and architects had to look at it decoratively more than as matter of Storiatio)—there were certain definite principles which governed its introduction. We wish to tell the story; but also to tell it in an artistic manner. He thought that when heraldry was introduced in architecture, then of course it must be subordinate to the principles that govern architecture; and those would be such principles as would require that the shield and all its accessories should show a sense of the shape in which they were enclosed, whether a frieze or spandrel or any other panel; and that, further, they should have some sense of the surface on which they are applied. In the ordinary case of work in relief, Diapering made the surface a tone lower, by reason of the shadow cast upon the ground from the projecting parts. Therefore it was necessary, when a man desired to emphasise the changes, that he should diaper the ground. The folds of the mantling also “force-up” the flat shield, by contrast. That was entirely independent of the question of colour, because probably architectural or external heraldry would be considered as a matter of relief rather than of colour. He told a little story that Mr. St. John Hope had somewhat derided modern heraldry, as he had seen some in Mr. John Clayton’s studio, and also by Mr. T. R. Spence, and there was some good work by Pugin, which, in his judgment, was quite as fine as any heraldry that ever was done in the old times. Of course they had not done it “off their own bat,” so to say, but by study of the old work; and he ventured to think that by the careful study of the examples of the old work, modern architects, as a body, might hope to emulate, and perhaps to equal it. This, however, could only be done by earnest and loving study.

Mr. J. D. Crace said that in reference to the question of the abuse of the crest independent of its surroundings, it was interesting for a moment to consider what relation the crest and mantling and the helmet had to each other. The crest was probably stitched or fastened to that which became the mantling. All that was bound to the helmet; the cloth was bound to it by the wreath or chaplet or coronet, as the case might be, and the helmet was the solid body on which the cloth with the crest attached was bound by the wreath. That was why it was seen in the seals exhibited on the screen, flying behind as the knight rode rapidly forward. A great deal of the freedom which Mr. Hope had fortunately brought before the architects was due probably to a very thorough knowledge of the general principles of heraldry, and of the meaning of the insignia of heraldry. Freedom was a dangerous thing to adopt by those who had not gone through the mill of real education. We saw that in art every day, and it was displayed more completely than one cared to think. Those magnificent examples of the gateways of King’s and St. John’s Colleges at Cambridge, and the still finer examples of those magnificent blazons or heraldry devised outside some of the great gates in Spain, where heraldry was carried to a wonderfully rich perfection, and where they formed the decorations of such noble spaces as the great spaces between two round towers of the gateway, where there were areas of 15 or 20 ft. square, covered with the shields and supporters of the sovereign who was represented—brought those great spaces covered with ornamentation with a meaning worthy of attention. It was well to bear in mind, where a man was anxious to infuse a meaning of some kind into the ornamentation of his building, that it could be done by heraldic devices in such cases as municipal buildings or state buildings, or buildings for public purposes, or even in some cases buildings for private purposes. They were each interesting in their own way. He had noticed that Mr. Hope said, in showing them the bronze gates of Henry VII.’s tomb, that it was to be wished that such work could be done nowadays. The speaker did not know whether Mr. Hope had ever seen the beautiful brass gates which formed the entrance between the House of Lords Lobby and the House of Lords, but he thought upon the whole they bore a very wonderfully good comparison even with Henry VII. gates, and they were done forty years ago by Hardman from Pugin’s drawings, and were well worthy of admiration in themselves as showing that there was the practical ability to produce such things if there was only the knowledge to

plan them and the demand for them. It was interesting with reference to the tester for the tomb of Henry IV. at Canterbury Cathedral, which was decorated in colour with heraldic devices and mottoes, to find that that was decorated on three separate occasions, and they could follow very distinctly the three periods at which it was redecorated, and certainly none of them could be later than the time of Henry VIII. That showed that much care had been taken to keep up the character and appearance of that monument.

The Chairman, in putting the vote of thanks, said that architects must look to experts in heraldry if any improvement in modern heraldry were to take place. But architects were fully alive to the importance of this matter in conjunction with their own art. They realised very fully that the poetry and the history of their buildings must always, in point of detail at any rate, largely depend upon the introduction of heraldic devices. One recognised very well in the little almshouses outside the town the value of the small heraldic panel over the gateway, just as much as one recognised the magnificent result in the great castle or the stately church. With regard to modern architecture, they had an excellent example of general heraldic treatment in the Houses of Parliament. The way heraldry had been there introduced, principally by Pugin, over the whole of the building, not only into the architecture, but also the way in which the charges were placed in the shields and the general execution of the detail, was a wonderfully good example of modern heraldry, of which architects might well be proud.

The vote of thanks was then put and carried unanimously.

Mr. St. John Hope, in reply, said he began his paper with the understanding that most of his hearers understood all of what he might call the elements of heraldry, and, as the title of the paper said, he had simply proposed to deal with the associations of it in connexion with architecture. So it did not matter to him whether heraldry began in the twelfth century or whether it originated at a very much earlier period, or whether the heraldry seen on Greek vases was worth while bringing into notice. The question of the use of heraldry by ladies was, of course, a purely archaeological one and not architectural. It no doubt originated when heraldry became hereditary. At first arms were not hereditary and crests were not for a long time, and mottoes were not hereditary even now; but when heraldry became hereditary and every house had its own arms, it was used in slightly different ways by the different male members of the family, because they might be the founders of branches of the house. Then ladies used it, but as they did not found branches of a house but a lady sometimes assisted to found a branch of another house, they did not make any difference in the paternal arms, as did the sons. Even the use of the lozenge was not restricted to the ladies. He had mentioned the case of the monument of William de Valence, where the remaining portion of the bedplate of the effigy was adorned with beautiful enamelled lozenges with the arms of England and De Valence on them. Mr. Stevenson objected very much to the use of a helmet, on the principle that we did not wear helmets nowadays, and Mr. Stannus had reminded him that we did not bear shields, but he would like to remind Mr. Stevenson (what he had already tried to make quite clear) that if they once took the crest off a helmet it ceased to be a crest, because the very word crest means a plume or something erect on the head of a bird or beast, and so the first crests were such things as plumes and the heads of birds. With regard to the size of crests, of course it sounded absurd to talk of a man having a lion for his crest, but a man did not have a full-sized lion, he had only a model of one. That poor dilapidated leopard which surmounts the Black Prince’s helmet at Canterbury was made after his death, and was part of the paraphernalia that was borne at his funeral. It was nevertheless a real crest, made of leather, and covered with gesso work. With regard to the fixing of crests, on such of the few old helmets as we had we found that, in addition to the holes that were made to fix the lining inside the helmet, and the cushion that carried the weight on the man’s head, there were certain extra holes that had nothing to do with the lining and padding, and were obviously made for fixing on the crest. The other holes were generally arranged in pairs, because a lace came through them, which was tied with a little bow outside, but these other holes were distributed regularly round the top, and were no doubt used for fixing the torse and the crest that rose from within it.

Mr. Hope did not consider it came within the scope of his paper to talk of that magnificent modern heraldry in the Houses of Parliament; and, of course, it was obvious to any one how very beautiful the heraldry was. But then, Pugin, who was entirely responsible for it, was a man who was simply soaked with medievalism of every kind, and to draw those beasts and shields and those beautiful badges and so on was as much a second nature to him as it was to the man who carved those beautiful shields in the spandrels of the arcades in the Abbey. Foreign heraldry he had not time to go into, otherwise it was possible to say just as much about the heraldry of Spain or France or Germany as could be said about the heraldry of England; but in discussing the heraldry of one country they were practically describing that of other countries as well because just as there was one prevailing kind of architecture which went through Europe at any particular time, so there was one particular kind of heraldry. The rich heraldry of Spain could, of course, be paralleled in a less splendid degree by examples in our own country; but there was this difference in the heraldry of England and that of Germany or Spain, it did not run riot to quite the extent that foreign heraldry did. The German heraldry was magnificent in itself, and beautifully picturesque, but it seemed to run into extravagances that the English heralds and heraldic artists altogether kept free from. In Spain this was, perhaps, less so than in Germany, and he very much wished that somebody who has been in Spain and knows its buildings would write a paper upon Spanish architectural heraldry, and illustrate it by a series of lantern slides.

The Chairman announced that the next meeting would be held on the 29th inst., when Mr. J. A. Gotch would read a paper on “Heraldry of the Renaissance in England.” The meeting then terminated.

COMPETITIONS.

ASYLUM AT PURDYSHURN.—We are informed on reliable authority that the author of the successful plan for this asylum is Mr. Anthony T. Jackson, of Corn Market. Some eight or nine plans were submitted, all by local architects, as stipulated in the conditions of the competition. That by Mr. Jackson, which bore the motto “Alpha,” was placed first by the assessor, Mr. Sidney Mitchell, architect, of Edinburgh, and the governors selected this plan. We understand that the design bearing the motto “Efficiency and Economy,” and submitted by Messrs. J. J. Phillips & Son, of 61, Royal-avenue, was placed second by the assessor; and the plan marked “150,” by Mr. John Lanyon, M.Inst. C.E., of 111, Royal-avenue, third. Mr. Jackson may practically be regarded as the architect to the Asylum Board, as he has done a great deal of work for them, and is well known to the members.—*Belfast News-Letter.*

CONSOLIDATED INVESTMENT COMPANY’S BUILDINGS, JOHANNESBURG.—The plans for the Johannesburg Consolidated Investment Company’s new buildings in Johannesburg were submitted to public competition in July some time ago. The result has now been declared. Mr. G. W. Nicolay is the successful architect. The new buildings to be erected on Commissioner, Eloff, Market, and Joubert-streets will consist of a theatre, hotel, Turkish baths, and a large number of shops with frontages to the streets named and to the two arcades which run through the block from Market-street to Commissioner-street, and from Eloff-street to Joubert-street respectively.

ARCHITECTURAL SOCIETIES.

NORTHERN ARCHITECTURAL ASSOCIATION.—On the 10th inst., at the Meeting-room, Art Gallery, Newcastle, the annual meeting of the Northern Architectural Association was held, under the presidency of Mr. Archibald Dunn. The Secretary (Mr. A. B. Plummer) read the report of the thirty-eighth session, which stated that since last year seven members, nine associates, and six students had been elected, and the roll now stood:—Members, 51; Associates, 61; Students, 39; Total, 151. The report also dealt at considerable length with the meetings held during the year. The Treasurer’s report showed a balance in hand of 77. 10s. 7d. The reports were adopted, and on the motion of Mr. J. W. Taylor, a vote of thanks was accorded to the retiring President (Mr. A. S. Dunn) for his services during the year. Mr. F. W. Rich was elected President for the ensuing year, and the other officers were appointed.

SKETCHES OF LONDON STREET ARCHITECTURE.—XI.:

HOUSE IN HANS-CRESCENT.

THIS is the corner house of a row of eight houses, all different, which have been erected in Hans-crescent from the designs of Messrs. Read & Macdonald, for the Belgravian Land Company, who have lately made great alterations in the immediate neighbourhood in pulling down slums, widening streets, and rebuilding with houses of good design.

THE CAMERA CLUB.

THE practical applications of photography in the arts are now so important that new methods and apparatus deserve careful attention by our readers. The Camera Club has always been among the first to take up any new invention, and is always ready to give help and advice to enable the inventor to perfect it.

On the 10th inst., a complimentary dinner was given to Mr. R. W. Cox on his retirement from the post of honorary secretary of the Club. Mr. Macbell Smith, the Chairman, after regretting the absence of Captain Abney, their President, pointed out that the Camera Club was not an exclusive body of photographers who demanded a diploma photograph from all candidates, but that it welcomed every one interested, however modestly, in photography, who was duly proposed. Professor Armstrong referred to the educational advantages of the Club, and said that lectures and exhibitions were held, on an average, twice a week throughout the session, and that any one, by looking at their programmes for the last five years, would see how fortunate they were in securing distinguished men to give them papers.

After the dinner the guests inspected the rooms of the Club, and Mr. Ives exhibited by means of his "Kromscopes" some exceedingly clever stereoscopic photographs in colours. Downstairs there are a large number of dark rooms, and we noticed an ingenious arrangement for printing photographs which we believe is novel. A powerful arc lamp is hung eccentrically above a table on which the printing frames are resting by means of an ordinary bottle-jack, and thus the lamp is kept rotating all the time the photographs are being printed. This secures a uniform distribution of light over the print, and enables a large number of photographs to be printed in a very short time, quite irrespective of the weather.

A most interesting demonstration of X-ray work was given by Mr. H. H. P. Fowles, who was one of the earliest workers on the practical applications of these rays. He has been experimenting for a long time to see if they can be employed for detecting differences and imperfections in various kinds of woods. His results, so far, are chiefly negative, but he says that there is a large field for research still unexplored. He showed how specimens of bad jointing in electric wiring could be at once detected by means of a fluorescent screen, and how the same method could be applied for finding defects in cabinet work, such as hidden nails and screws where there ought to be none.

CHEMISTRY OF METALS USED IN BUILDING CONSTRUCTION.

THE fourth lecture on matters connected with building given at Carpenters' Hall was delivered on Wednesday evening last by Professor J. M. Thomson (King's College), the chair being taken by Sir F. Abel. By a series of simple experiments, and by means of the lantern and screen, the differences between metallic and non-metallic bodies were illustrated, and the chief properties of certain metals, particularly iron, lead, zinc, and copper, were elucidated. In one experiment a bar composed of two metals, on being exposed to flame for a few minutes was seen to bend and curl up in a remarkable manner. This effect was due, it was explained, to the fact that certain metals expanded a great deal more than others, and if two metals, with different expansive powers, were compounded, they got, by the application of heat, the curve seen in the experiment. It was necessary to know the differing physical properties of metals in order to apply each to its most appropriate use in structural operations. Among the most important of these properties was tenacity, which copper possessed in a high degree, and in a still greater degree, silver and gold. The softness and want of tenacity were, on the other hand, the properties that made lead valuable. Being soft it could be easily bent into



Sketches of London Street Architecture.—XI. House in Hans-crescent. Messrs. Read & Macdonald, Architects.

any required form, and lead was also of the highest value because it was less readily affected by acids than most other metals. To illustrate the property of fusibility, a metal was shown which quickly softened and became fused in water heated to the boiling point. An alloy might be made of two metals in such a way as to fuse more easily than either metal would fuse separately, a property of which the greatest use was made in type metal. The methods of deriving various metals from their ores were illustrated by pictures thrown upon the screen of furnaces of various kinds, from the simple fusion processes of the bismuth liquation furnace and the lead ore furnace to the improved forms of the modern blast furnace and furnaces for reducing metals by various gases, or by compounding them with other metals and by electrolysis. In one interesting experiment the use of lead in the form of an oxide, in cheapening the process of reduction, was shown in operation before the audience. A quantity of Condy's Fluid, which has the property of being very highly oxygenated, was placed in connexion with a retort containing a small quantity of the ore to be reduced and

under the influence of the flame. It was seen to become gradually more and more colourless as it parted with the permanganate and the oxygen to the fusing metal. The effect of electrolysis was shown in another interesting experiment, in which a bar of iron was made to take up a covering of yellow metal (copper) and a white metal (mercury). The causes of the readiness of iron to oxidise or rust, and the unreadiness of some other metals to oxidise were shown by other experiments. Iron in its most elementary or lowest state was quite colourless and difficult to oxidise. The fact that some sandstones, at first white, would, after the lapse of years, turn brown in blotches, was due to the iron in an elementary form contained in them. The more rapid action of pure water on lead than ordinary tap water was shown in another experiment, the slower action of tap water being attributed to the fact that the lead obtained a covering from water which was not absolutely pure that protected it from further oxidation, while the oxidation was more continuous in the purest water because the metal could get no such covering to protect it. This difference was much less observable with



House of Jacques Cœur, Bourges.—The Entrance. From a Sketch by Mr. M. Starmar Hack.

copper and iron than with lead. One of the last experiments showed the advantage of giving to iron or other metal a coating of zinc or tin, and the cases were pointed out in which tinned metal was superior to metal covered with zinc. The difference in the action of chlorine and noxious vapours such as sulphuric acid was illustrated and explained by the Professor in concluding his lecture.

HOUSE OF JACQUES CŒUR, BOURGES.

THIS celebrated house, built in the second half of the fifteenth century, adjoins the Roman ramparts of the town, three of whose towers have been incorporated in the building.

In the niche over the principal entrance there was formerly a statue of Charles VII., and looking out of the sham windows on either side there still remain the sculptured heads of two servants.

The octagonal tower in the courtyard contains, as do two others on the same side, a spiral staircase. The hearts and scallop shells which appear so frequently in the ornament come from the coat of arms of Jacques Cœur.

M. STARMER HACK.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday, in the County Hall, Spring Gardens, Dr. Collins, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee it was agreed to lend the Stoke Newington Vestry 6,000*l.* for paving works; the Greenwich District Board 1,900*l.* for the construction of an underground convenience; the Newington Baths Commissioners 7,000*l.* for the erection of baths and wash-houses; and the St. Pancras Vestry 90,460*l.* to enable them to pay off existing bond debts on special paving trusts.

The Chemist to the Council.—The General Purposes Committee brought up the following report, the recommendation being agreed to after some discussion:—

"We have to report that Mr. W. J. Dibdin has, in a letter dated March 2, 1897, expressed a wish to resign his position as chemist to the Council. Mr. Dibdin states that he has for some time past been desirous of engaging in private practice, and as the resolutions passed by the Council from time to time deny him that privilege, he has therefore been compelled to consider his position, and finds that he is well advised in tendering his resignation. We feel sure that it will be with considerable regret that the Council will lose the services of so valuable and able an official. We understand that Mr. Dibdin does not desire that his resignation should take effect until about three months' time. We recommend—That the Council do accept with regret the resignation of Mr. Dibdin of his appointment of chemist to the Council, and that the resignation do take effect as from June 30, 1897."

The Works Committee.—The consideration of



House of Jacques Cour, Bourges.—An Angle of the Courtyard.
From a Sketch by Mr. M. Starmer Huck.

said one of the complaints made against the Committee was that they had not reported on works completed up till the end of November. That was what the Committee wanted to do, but the Council refused to allow them to carry the report up to that date. Mr. Boulnois complained of the meagreness of the report, but it seemed to him that it was too full for many members to read, judging from the nature of their criticisms. They were constantly being told that they had made a loss on certain jobs, but when they made a profit nothing was heard of it. On the last two workmen's dwellings they made a profit of £1,500, but none of their opponents wanted to refer to that when they could point to a job on which there had been a loss. This sort of treatment seemed to him to be very unfair.

The amendment was carried on a show of hands, and on a division it was also carried by 55 votes to 54.

Combined Drains.—The following adjourned report of the Main Drainage Committee was brought up, and the recommendation was agreed to:—

"In connexion with the question of the liability of Local Authorities to repair combined drains, reference has frequently to be made to the records in the custody of the Council of the proceedings of the various Commissioners of Sewers which existed between December, 1847, and December, 1885, prior to the constitution of the Metropolitan Board of Works. In contested cases between Local Authorities and owners of houses having combined drains, it is necessary to ascertain whether any applications were received for permission to lay down such drains, and whether such applications were sanctioned and confirmed by the Commissioners. We are informed, however, that the applications are very imperfectly indexed, and that to find one that may be required often entails a great deal of labour and inconvenience. In view of the difficulty thus experienced several of the Local Authorities have urged upon us the desirability of having a proper index prepared. After carefully considering the matter we are of opinion that the request should be acceded to so that the applications may be readily referred to. It is estimated that the cost of the work will not exceed £500, for which expenditure provision is made in the estimates for the ensuing financial year. We recommend:—That the Council do sanction the expenditure of a sum not exceeding £500, in connexion with the preparation of an index of the applications referred to."

Improvements.—The Improvements Committee recommended, and it was agreed:—

"That the estimate of £2,500, submitted by the Finance Committee be approved, and that the Council do give its consent to and do contribute on the usual conditions one-half of the net cost of the widening of Upper Richmond-road, near Union Church, proposed to be undertaken by the Wandsworth District Board, and shown upon the plan approved by the Improvements Committee on December 15, 1896, such contribution not to exceed the sum of £2,550." And

"That the estimate of £1,233, submitted by the Finance Committee be approved, and that the Council do contribute on the usual conditions one-half of the net cost of the proposed widening of High-street, Plumstead, between Nos. 1 to 34, as shown upon the plan forwarded by the Vestry of Plumstead on January 22, 1897, such contribution not to exceed the sum of £1,233."

The Water Supply Question.—On the recommendation of the Water Committee that the engineer be instructed to proceed with the plans and sections of the Wye portion of the Welsh scheme of water supply, and that they be authorised to incur an expenditure of £1,500, for this purpose during the financial year,

Mr. R. A. Robertson moved that it be referred back. He said in view of the recent action of the Government and the House of Commons they were not within measurable distance of going to Wales for an additional supply, and, therefore, he did not think it advisable to spend any large sum in surveys. If many years hence they had to go to Wales, the reports now obtained would be obsolete. The Welsh water was very soft and was impregnated with lead, and he believed the people of London had come to the conclusion that there was no need for going such a long distance to find a supply. If the water of London was properly treated, there would be no better supply of water for the Metropolis, especially if it were softened and purified by the lime process.

Dr. Longstaff seconded the amendment.

Mr. Idris said there was urgent need of going on with the surveys, for other towns were asking for power to obtain water from Wales, and were spoiling the area suggested for London. It was because London was always so behind other towns that the ratepayers had to pay so much. —

Sir John Lubbock, M.P., supported the pro-

the adjourned report of the Works Committee, of the half-yearly return of completed works, was then resumed. The Committee submitted a list of nine jobs, the estimate for which was £23,218*l.* 2*s.* 8*d.* and the actual cost £25,696*l.* 0*s.* 4*d.* Six other works, for which certificates had not been obtained, were reported to have cost £33,971*l.* 13*s.* 1*d.*, as against the Managers' revised estimate of £32,030*l.* 5*s.* 6*d.* The total value of work executed in the six months was £149,000*l.* Taking the whole of the works carried out by the Committee since its formation, there was a profit to the Council of £6,566*l.* 5*s.* 8*d.*

Last week Mr. Porter moved, and Mr. Cohen seconded, to refer the report back with instructions to the Committee to prepare a fuller and better report.

Mr. Boulnois, M.P., said the whole report was meagre and unsatisfactory. An analysis of the work of the Committee showed that the experiment had been a failure. He should like to see the department abolished, but he was afraid from the tone of the many Councillors that his desire

was not likely to be realised within a reasonable time. If the department was not to be abolished then he hoped the Committee would confine their care to such work as might be profitable.

Mr. J. Burns, M.P., pointed to the big profits made in the jobbing works as counterbalancing the loss on other jobs, and complained of the unfairness of some of Mr. Boulnois's criticisms.

Mr. E. White said the report was inaccurate and misleading. The ratepayers had to pay £5,000 more for inferior work than they would have had to pay for good work if contractors had been employed. As to the jobbing work, if an account were rendered for labour only a loss would invariably be shown. The profit was on material supplied by the department to the different Committees. As to the loss on the Shelton-street dwellings of £2,751*l.*, a further sum of £144*l.* would have to be added for pavement works.

Sir J. B. Maple, M.P., said the Committee ought to submit a balance-sheet on the capital account of the department.

Mr. Ward, late Chairman of the Committee,

posals of the Committee. The amount was small, and it was important that they should learn all they could about these areas. He thought, however, that the Committee were somewhat inconsistent in their action.

The amendment having been negated, the recommendation was adopted by a large majority.

Horton Asylum Foundations.—The Asylums Committee reported as follows:—

"We have to report for the information of the Council that in response to our invitation for tenders for the above based on a schedule of prices, we received the following:—

	£.	s.	d.
Leslie & Co. ...	54,059	6	7
W. Cumliffe ...	52,699	10	5
C. Wall ...	53,791	17	0
H. Wilcock & Co. ...	51,190	11	8
J. Shillit e & Son ...	57,215	5	5
S. Kavanaeh ...	57,339	12	0
Lawrence & Sons ...	57,658	6	6
J. Jackson ...	58,663	13	4
H. Lwatt ...	59,480	9	0
Pedrette & Co. ...	63,622	14	2
B. Cooke & Co. ...	65,350	1	8
Kirk, Knight, & Co. ...	65,571	0	0
Martin Wells & Co. ...	67,200	0	0

and that Messrs Leslie's tender being the lowest, we have accepted the same, and instructed the solicitor to complete the contract. It may be within the Council's recollection that the plans of this asylum are a duplication of the Heath Asylum, Bexley, the foundations of which were estimated to amount to 32,732l. It may, therefore, be stated in explanation of the difference in amount that the site at Bexley has a subsoil of gravel and sand, while the character of the Horton site is such that the architect considered it necessary to give instructions for the quantities to be increased by 40 per cent., representing a sum of 13,022l. A further explanation of the difference in the estimated cost of the two works is the increased cost of bricks, estimated at 4,800l."

The Council, having transacted other business, adjourned at 7 o'clock.

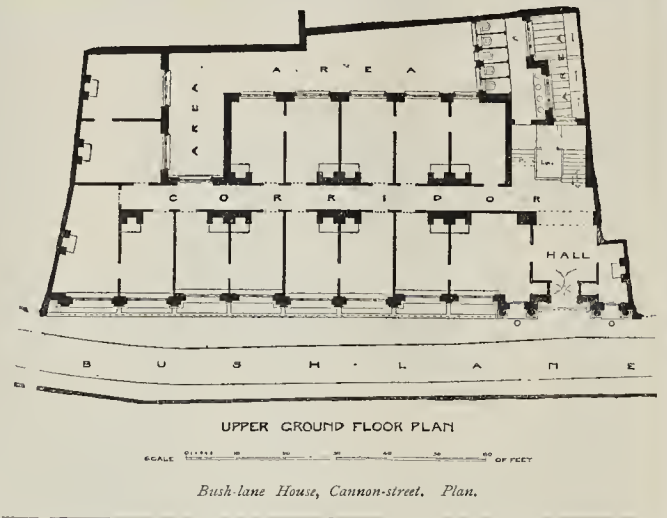
Illustrations.

ST. WULFRAN, ABBEVILLE.

THIS church, like Beauvais Cathedral, is but a torso; if completed, it would have been a cathedral of the first rank, and one of the most beautiful. It was commenced in 1488, but the work was interrupted in 1539. A choir was added in the seventeenth century. The earlier work includes the façade and a nave 31 metres long, and the same in height. The central door is covered with sculptured scenes from the life of the Virgin, presented by a rich shopkeeper of Abbeville in 1550. The three western portals, once populous with statuary, are crowned by lofty, pierced gables, above which is an open parapet. The great western window is not a simple rose, but a rose resting on a group of lower lights. Higher up is another open parapet, and then the gable of the nave, with three colossal statues of the Virgin, St. Wulfran, and St. Nicholas. Higher still rise the upper stages of the towers, pierced with long double windows, and terminating in an open parapet 53 metres from the ground. The inner western angles of the towers are flanked by turrets. A staircase turret runs up the southern tower, and is the only weak point in one of the finest façades in France. A drawing of the south doorway, by Mr. H. Wilson, appeared in the *Builder* of September 19, 1891.

ST. RIQUIER, SOMME.

THIS church, now parochial, was once attached to the famous abbey of St. Riquier, which gave the Church twenty-seven Popes, 200 Cardinals, and more than 500 Bishops. It is a work of the latter part of the fifteenth and of the sixteenth century. Its west portal is a veritable recondo. In the tympanum is a Jesse-tree; above, the Holy Trinity, represented as at St. Wulfran, Abbeville, and surrounded by colossal figures of the Apostles. Above are three statues representing the crowning of the Virgin. Between the tower-windows is a statue of St. Michael, with Adam and Eve on one side, Moses and David on the other. The tower is flanked by charming octagonal turrets for staircases. The side portals are covered with Renaissance arabesques. The church is in the shape of a Latin cross, with apse, ambulatory, and a chevet of eleven chapels. The church contains much fine woodwork, and Byzantine reliquaries. St. Riquier lived late in the



Bush-lane House, Cannon-street, Plan.

fourth century; in later times the offerings at his shrine amounted to more than 80,000l. per annum; hence the richness and the profusion of the sculptured ornament.

PALAZZO COMUNALE, PIACENZA.

THE Palazzo forms one side of the Piazza dei Cavalli at Piacenza, and its end elevations look upon streets leading into the corners of the piazza. At the rear is a court, two sides of which have windows similar in detail to those of the front.

The building was begun about 1280. The lower portion is in red and white limestone; the remainder is in brick and terra cotta.

It will be noticed that the windows all vary in detail, and the two ends of the building also differ.

The illustration is from a drawing by Mr. M. Starmer Mack.

SKETCH AT BURGOS.

We devoted an article and some photographic illustrations to Burgos Cathedral in the *Builder* of January 25 of last year. We are glad to supplement this by Mr. Hack's excellent sketch of the two towers rising above the houses, which shows them from a different point of view from our former illustrations.

The west front was begun about 1220. The open spires were added, it is said, by John of Cologne in the fifteenth century; they are 300 ft. high. The central lantern, an octagon on plan and 180 ft. high, is carried on four circular piers. It was finished about 1567, the architect being Juan de Vallejo.

No. 1, CONDUIT-STREET.

THIS is the front elevation of the proposed new shop building at No. 1, Conduit-street, W. The ground floor will be used as two shops, whilst the first and second floors are planned for a series of trying-on rooms (the shop being a tailor's), and the upper part of the building as workshops.

The materials to be used in the front are Farcham red sandfaced bricks with Ancaster stone dressings, and the roof will be covered with Westmoreland green slates. Mr. H. Huntly-Gordon is the architect.

BUSH-LANE HOUSE, CANNON-STREET, E.C.

THIS is a block of professional and commercial offices, situated one door from Cannon-street, and occupying a ground area of about 6,000 ft.

The building has a frontage to Bush-lane of about 115 ft., and the elevation has been carried out in red bricks, with Portland stone cornices, caps, bases, and sills.

The entrance feature, however, which forms the subject of the illustration, and which is conspicuous from Cannon-street, has been carried out entirely in Portland stone.

The building comprises lower ground and upper ground floors, first, second, third, and fourth floors, and contains ninety-six rooms on

the various floors, which are served by a stone staircase and by a Waygood passenger lift.

On each half-landing there are extensive ranges of water-closets and lavatory basins.

The whole of the floors are fireproof, and each room, with one exception, on each floor, has separate access to the corridor, as illustrated by the plan published.

The entire building is lighted by electricity.

The amount of the contract was 18,000l. The contractor was Mr. H. Lovatt, of Wolverhampton; and the architect, Mr. Delissa Joseph, of London.

NEW ROOM AT "THE WOOD."

THIS is a sketch of the interior of a new room forming part of some additions to an old house on Sydenham Hill known as "The Wood," now the residence of Mr. Alderman Newton. This room is 30 ft. square and about 18 ft. high, and is intended to be used as a billiard-room and also for music. It is lighted by two large windows on the east and west sides. Opposite the fireplace is a gallery approached on either side by stairs, the gallery communicating also with a group of rooms on the first floor.

The ribs of the ceiling, the cornice, wall-nings, stairs, gallery, and overmantel are of dark oak, executed by Messrs. Waller & Co.; the stone and marble fireplace was carried out by Messrs. Farmer & Brindley; the general building work was done by Messrs. John Allen & Sons. Mr. C. H. M. Mileham is the architect.

DRAWINGS FOR THE ROYAL ACADEMY.

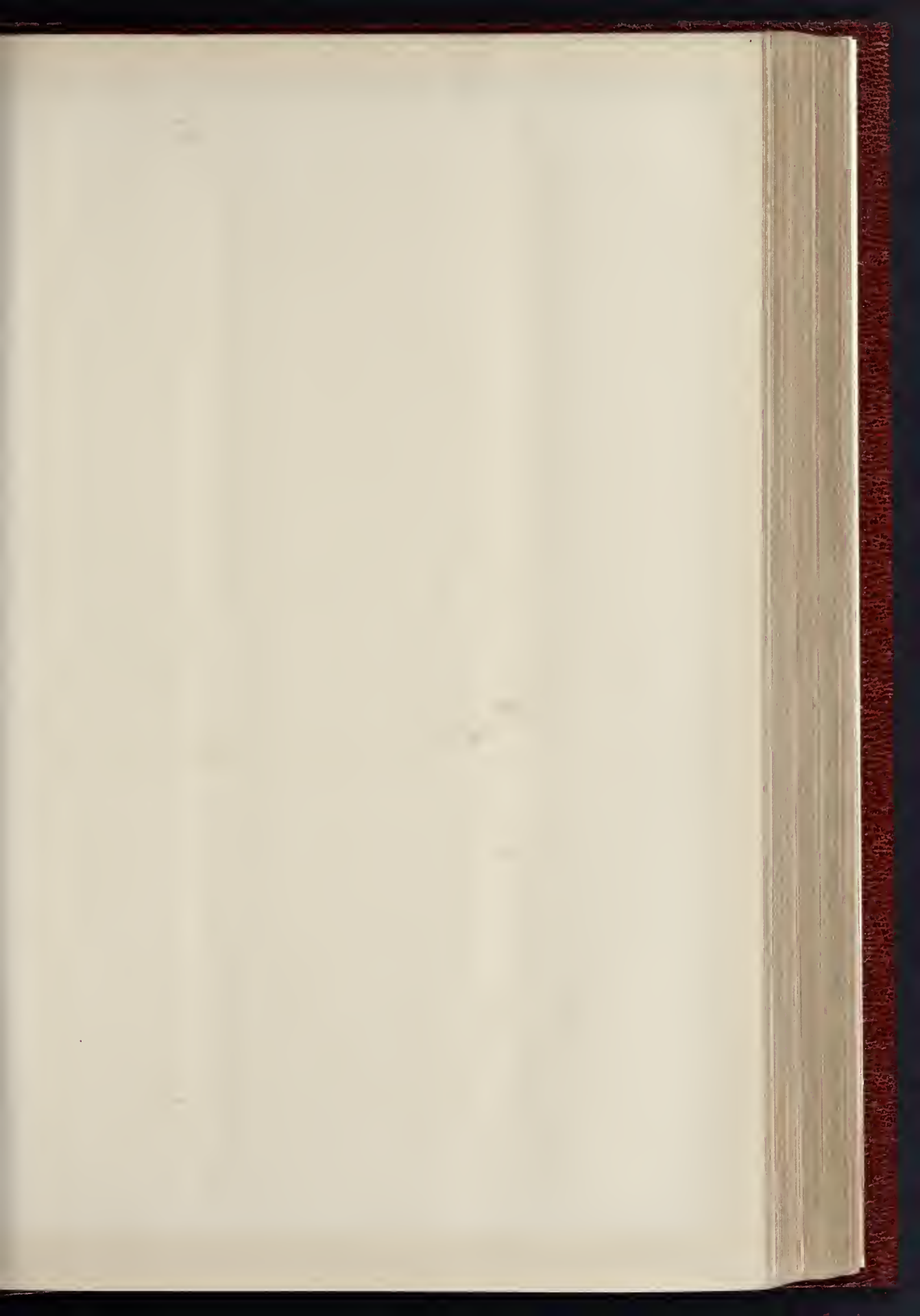
As before, we shall be glad to take charge of and deliver at the Royal Academy any drawings sent to us in time to be photographed before the day of delivery, with a view to subsequent publication in this journal and in the "*Builder* Album of Royal Academy architecture."

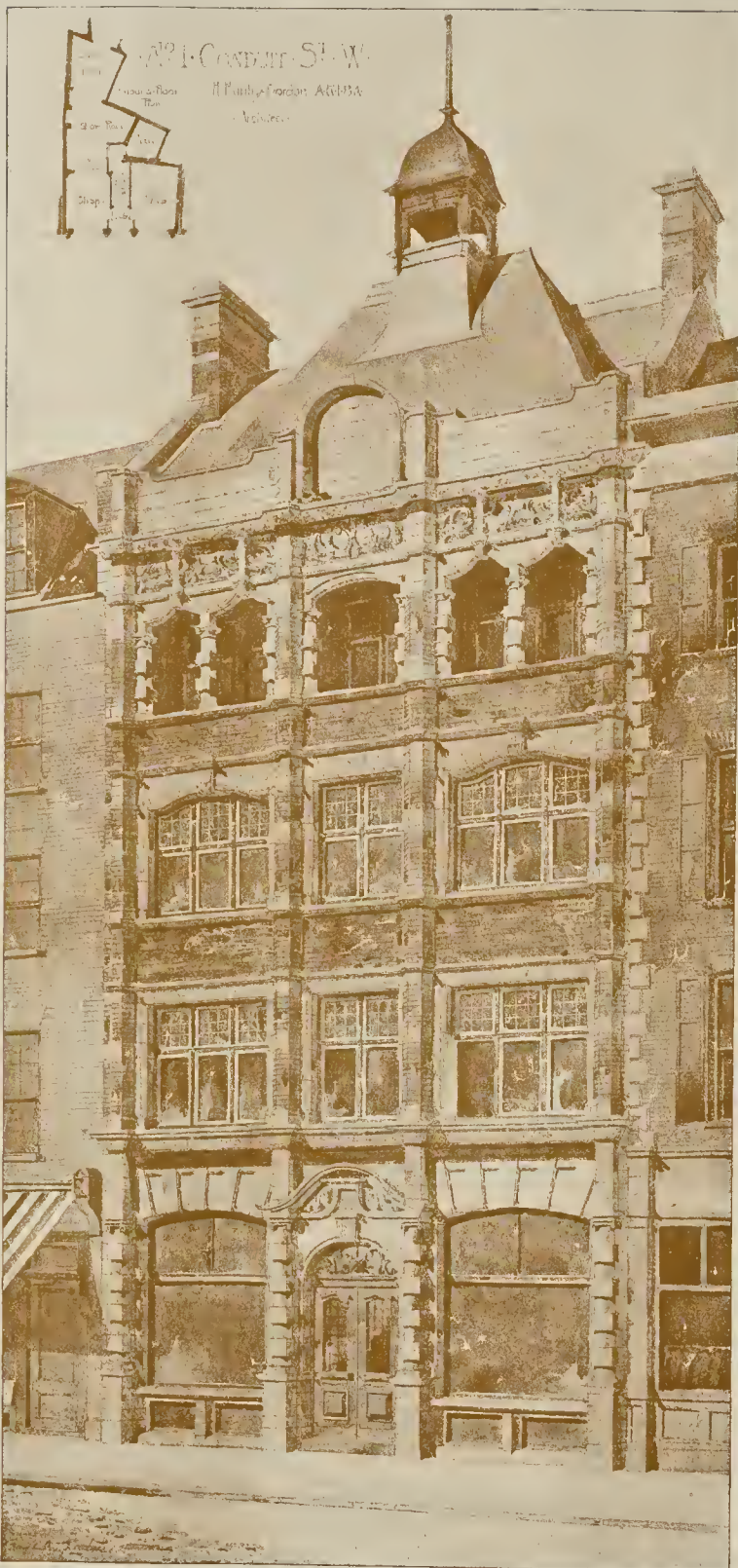
We cannot accept any drawings sent to this office later than Saturday morning March 27, before 12 noon.

Architects sending drawings are asked to give special attention to the following requirements of the Royal Academy:—

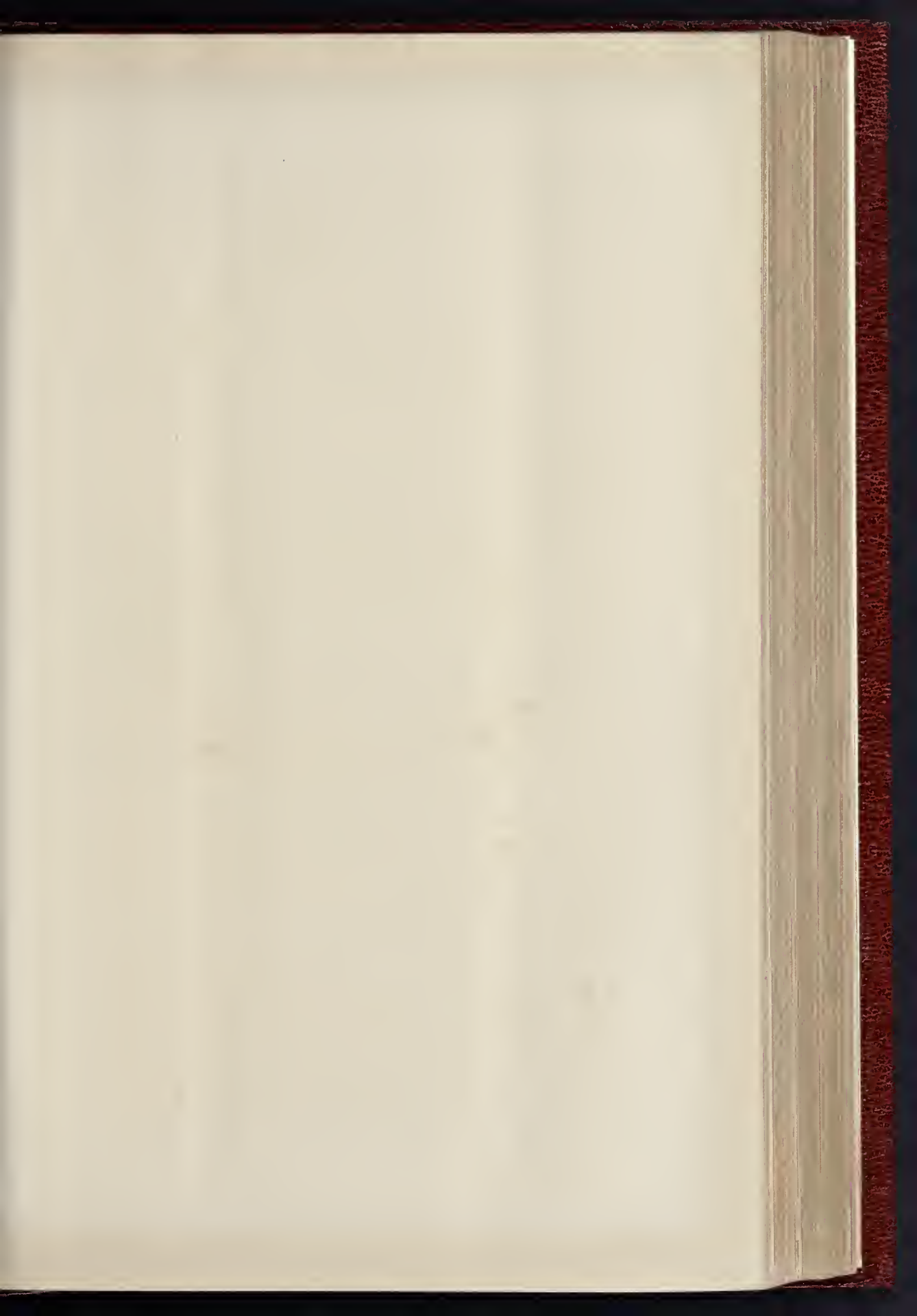
1. All frames must be gilt.
2. Every drawing must have a label on the back, giving legibly the title and the artist's name and address.
3. Every drawing must have a similar label attached to the frame by a card so as to hang over in front.
4. Every drawing must be accompanied by a letter addressed to the Secretary of the Royal Academy, and signed by the artist, containing the artist's name and address, and the title or titles of the drawings sent. If more than one drawing is sent they must be distinguished by numbers, and the corresponding number must be repeated in the labels fixed to each drawing.

N.B.—We cannot undertake to supply or affix labels when omitted by the oversight of the sender.

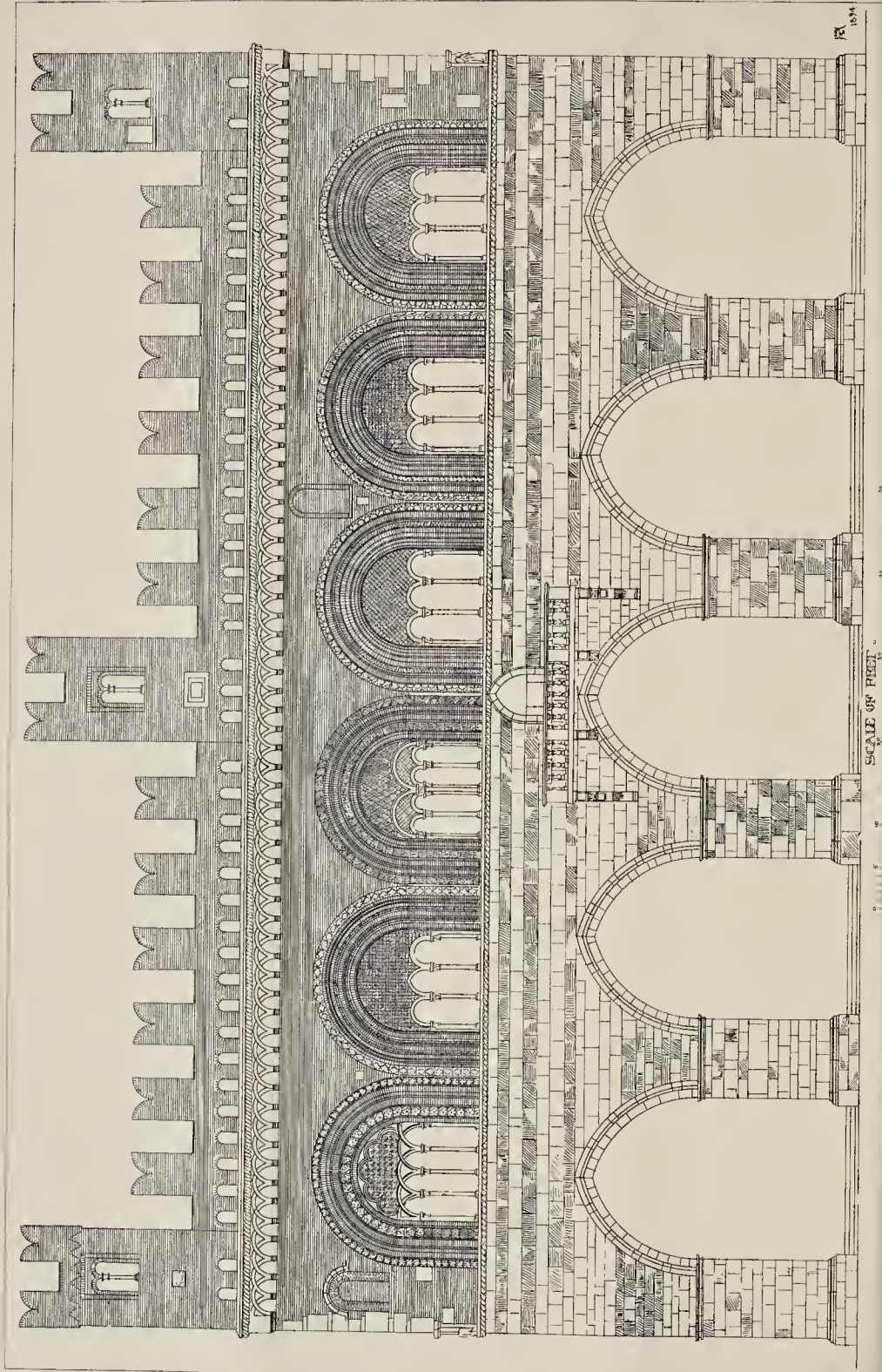


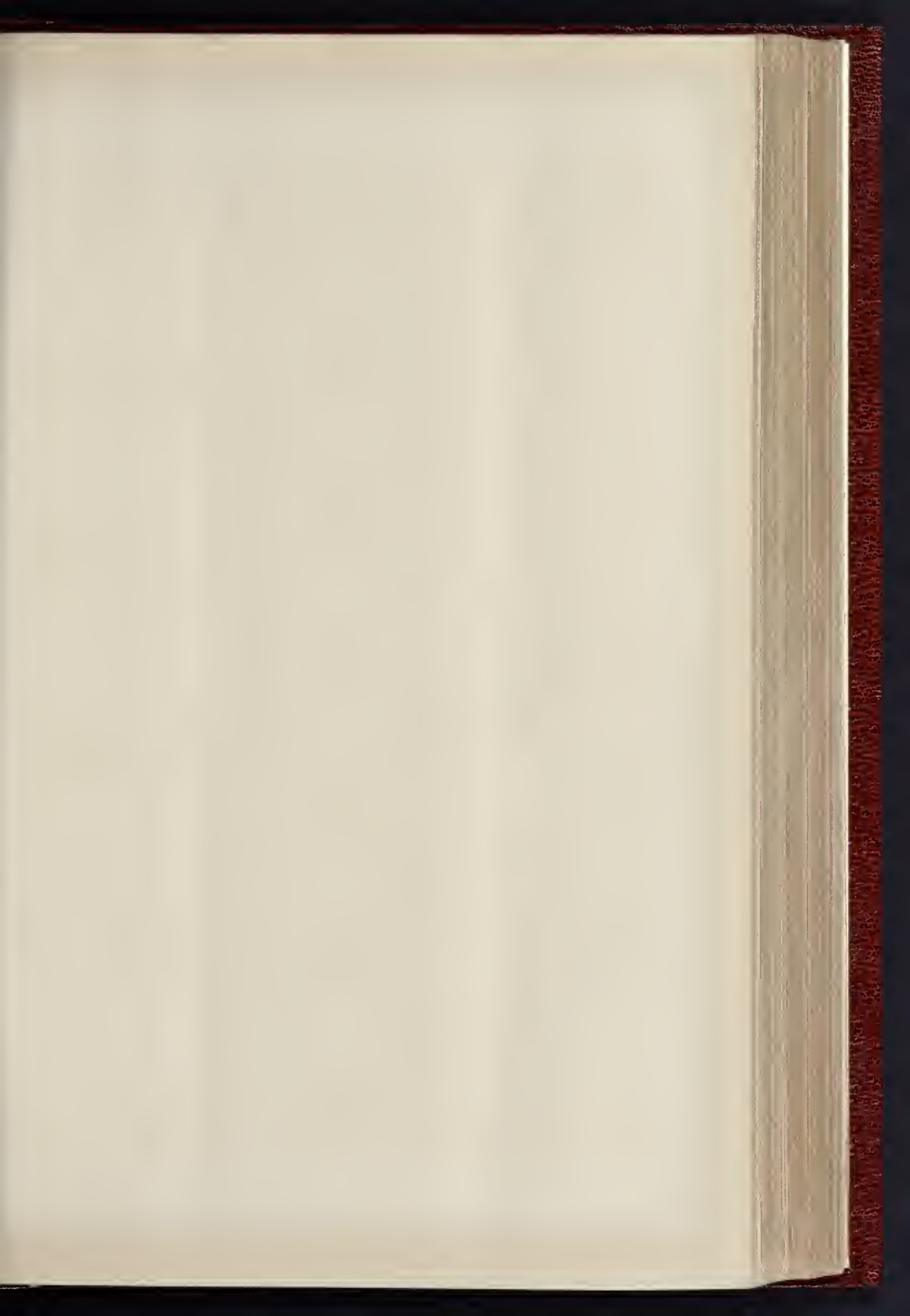


INK-PHOTO, SPRACUE & CO. 1 & 5 EAST HARDING STREET FETTER LANE, E.C.



THE BUILDER, MARCH 20, 1897.



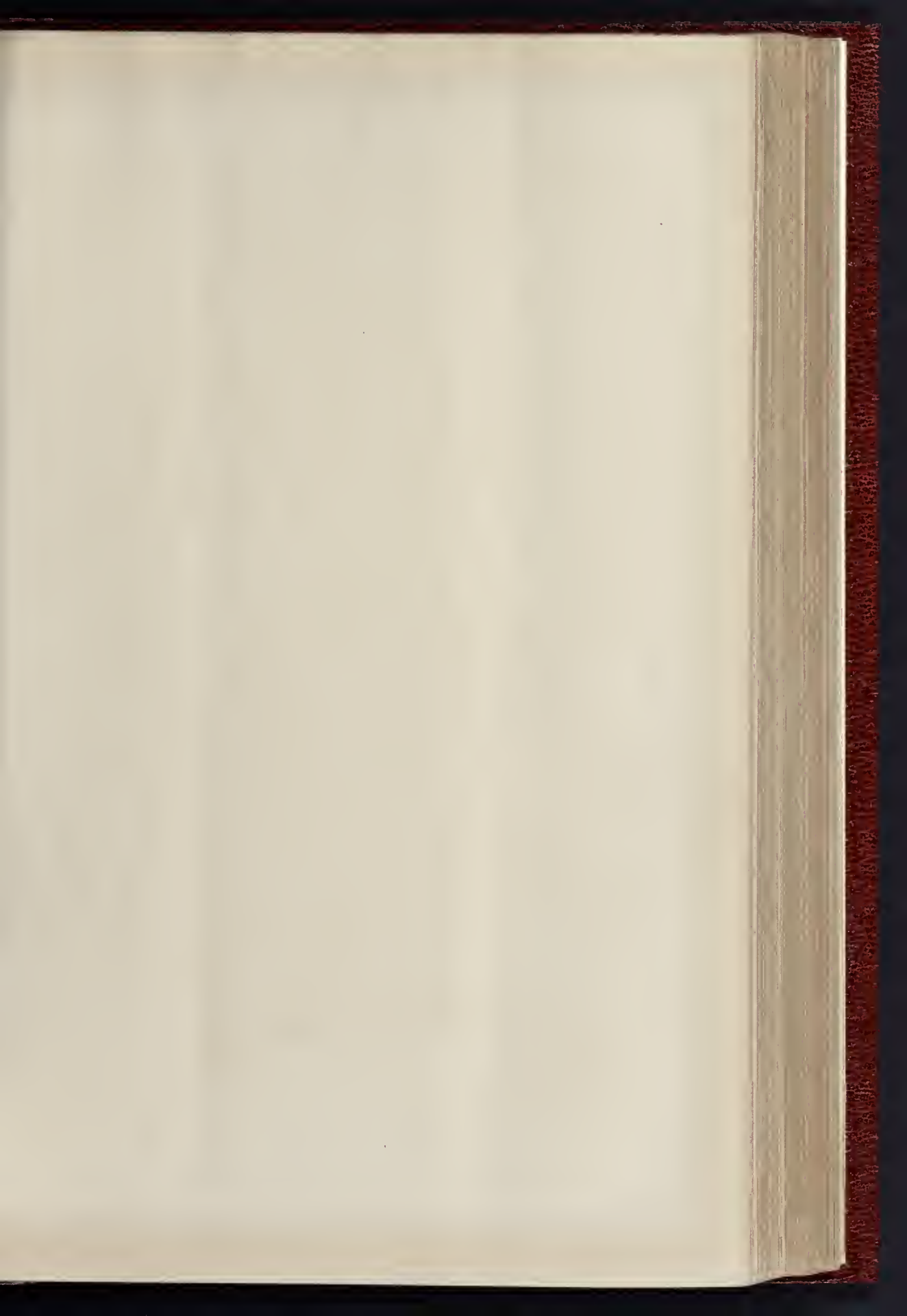




1/4 PHOTO GRAPHIC & 1/4 EAST HARDING STREET FETTER LANE E.C.

ST. WULFRAN, ABBEVILLE.

(In illustration of Professor Atchison's Royal Academy Lectures.)





SKETCH FOR NEW ROOM AT "THE V



INK-PHOTO SPRAGUE & CO. 8 & S. EAST HARDING STREET FETTER LANE, E.C.

ENHAM.—MR C H M. MILEHAM, ARCHITECT.



INK PHOTO SPRAGUE & CO. 24 D EAST HARDING STREET FETTER LANE E.C.

ST. RIQUIER, SOMME.

(In illustration of Professor Aitchison's Royal Academy Lectures.)



PHOTO-LITHO SPRAGUE & CO. 445 EAST HADING STREET FETTER LANE, E.C.

SKETCH AT BURGOS.—By MR. M. STARMER HACK, A.R.I.B.A.



INK-PHOTO SPRAGUE & CO. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

BUSH LANE HOUSE, CANNON STREET—MR. DELISSA JOSEPH, F.R.I.B.A., ARCHITECT

ARCHÆOLOGICAL SOCIETIES.

LONDON AND MIDDLESEX ARCHÆOLOGICAL SOCIETY.—The second winter meeting of this society was held on the 9th inst. at the London Institution, Finsbury-circus, when Dr. Freshfield occupied the chair. There was an exhibition of Roman and other pottery, &c., discovered during the past month in excavating the new Central London Electric Railway. Among other objects exhibited was a very beautiful and delicate goblet of Venetian glass, which is believed to be the most perfect specimen yet discovered in the City; it has a richly-moulded stem, and is probably sixteenth century work, and was discovered in an old well about 16 ft. below the surface. There were also two money-boxes of glazed buff ware, and a Delft plate beautifully painted in colours of blue, green, orange, and yellow; likewise a Bellarmine jug in glazed earthenware, minus the neck, but the body had an armorial medallion and shield and other devices. A three-legged pipkin, a two-handled tyg or loving-cup, and an engraved brass spur were also shown. All these relics are now located in the Guildhall Museum. Mr. E. H. Freshfield, hon. sec., also exhibited an old beadle's staff-head in silver, which had been lent to him from the Birmingham Assay Office. He said it was supposed to belong to the parish of St. Magdalene, Bermondsey, and would be returned to its proper owners. He read the Latin inscription in it. Mr. Deputy White proposed a vote of thanks to Mr. H. C. Richards, M.P., for his exertions and success in preventing the demolition of St. Mildred's Church, Bread-street, for the purposes of the City and West-End Railway. This was carried unanimously. The Rev. J. D. Mullins then read a paper on "The Parish of St. Stephen, Coleman-street; its Church and Records." The church of St. Stephen was first heard of in 1180, and was no doubt for some years a chapel-of-ease to St. Olave's, Jewry. In 1456 it became an independent parish, and the vicar was paid 117 per annum. Mr. Mullins produced several interesting church registers containing references to the devastations of the Plague in this parish, and drew attention to Dr. Freshfield's book containing exhaustive references to the history of the church since the Plague. This church was destroyed in the Great Fire, 1666, and rebuilt by Wren, as we now see it, in 1676.

SOCIETY OF ANTIQUARIES.—At the ordinary meeting on March 11, Dr. Edwin Freshfield, Treasurer, in the chair, Dr. Windle exhibited a collection of Neolithic flint implements found in the parish of Tardebigge, Worcestershire. Mr. A. Bullied read an account, illustrated by lantern slides, of the discoveries made during the past season in the late-Celtic lake village at Glastonbury.

Books.

A Handbook of Greek Sculpture. By E. H. Gardner. Parts I. and II. Macmillan, 1897.

WE specially recommend this handbook of Professor Ernest Gardner to our readers because of one distinctive feature which marks it out from the rest of the numerous handbooks and histories of Greek art constantly appearing. In his introduction—by far the most valuable part of the whole work—the author devotes a section to the materials and processes of Greek sculpture. These are matters too often neglected by the student, matters also in which the material for study is not very easily accessible. It is no uncommon case to find a student well posted up in the literary facts of his subject, in the statements of Pausanias, the art criticisms of Lucian, and yet ignorant or careless of, e.g., such matters as the distinction between the coarse-grained "island" marble and that which comes from Pentelicus, or again the bluish marble of Hymettus and the local Peiraos stone. Such distinctions as these, easy enough of detection once fairly and squarely pointed out, are the actualities on which the dating and classifying of ancient sculpture must rest, and yet for the simple reason that archeology has so far been treated as the "handmaid of literary scholarship," they have found no place hitherto in student's manuals. In the course of this introduction, Professor Gardner deals further in detail with such questions as the casting of a bronze statue, and the use of pointing from a finished model—questions usually relegated to the professional sculptor. How needful this sort of knowledge is is shown by the simple fact that an important fragment of the west pediment of the Parthenon lay for three-quarters of a century in the British Museum, undetected by generations of archaeologists, till a sculptor's eye restored it to its right position. Archaeologists need not and cannot become practical sculptors and architects, but, until they take the trouble to acquire some knowledge of the technical proceedings of both, they not only ignore valuable evidence but run the risk of writing nonsense intolerable to the expert.

We wish that we could say the remainder of Professor Gardner's book was half as interesting or as original in method as his Introduction, but, once the History fairly begun, it becomes heavy reading. It is, however, best to recognise at once that all the various faculties needed to make up the ideal author on a subject so composite as Greek sculpture cannot be found in one man. The author who delights in the details of technical procedure is pretty sure to flag in interest when he comes to the interpretation of monuments. The Introduction is so valuable that no student can afford to leave himself without the book, but in the "History" proper he will not find much that is new, and still less that in point of treatment is fresh or stimulating. We regret that Part II. was not delayed another year, which would have allowed the author to include, as he had originally intended, the sculptures from Delphi. The reliefs from the Treasury of the Siphnians and from the Boetians, not to mention the bronze statue of "Hiero," are so remarkable, in some respects so novel, that, once published, all books in which they are wanting must fall out of date. Professor Gardner thinks that pending their full publication by the French authorities it would be "rash to include them in a Handbook like this." In this he is true to his general principle; he has "attempted to confine himself to such facts or theories as have already met with general acceptance among archaeologists, or such as seem to rest upon evidence that cannot easily be shaken by new discoveries or future controversies." This confines the book within very narrow, if perhaps prudent, limits, and it certainly does "provide the student with a framework into which he can easily fit all the knowledge that he may acquire from subsequent reading and observation."

Beauty and Art. By ALDAM HEATON. London: W. Heinemann, 1897.

The book published under this attractive but rather high sounding title is not an essay on the higher æsthetics, but merely a small collection of essays or lectures on some points in connexion with decorative art: "Taste," "Beauty in Form and Colour," "Decoration of the House," "Fabrics," and "Furniture and decoration of the eighteenth century," being the subjects of the several chapters. The title of the book is therefore rather misleading; it suggests a treatise of a much more serious and philosophical kind. There are many things in it that one quite agrees with, but they are not new for the most part.

The most original point in the book is that which Mr. Heaton makes in regard to the contrast between a surface of a certain general colour in nature, and the same colour (so-called) as it is generally seen in manufactured materials; or rather, he is original in his method of illustrating the subject. He takes as an example from nature the bell-gentian as "about as crude a piece of violent colour" as one can find in nature. He examines this flower by small squares at a time, by means of a card pierced with the slits for the purpose, and shows that "in this startlingly blue flower not one half is coloured as a careless observer would suppose the whole to be. . . . The exceeding blueness of a gentian arises from the fact that all these greyish and partially blue and green tints lead up to the fierce blue of the lip; it is a splendid instance of the force of gradation, the blueness of the blue being all the bluer to our eyes because of the dullness of the other tints." Then he points out that a lady who has made up her mind to a bright blue dress buys the whole quantity of one tint.

The same examination is made of some other natural colours, with the view of showing practically that in nature colours are always gradated; the lesson being to avoid raw and crude expanses of colour. We may observe however, that some textile materials, though their actual colour when extended may be all the same, have the quality of making gradated tones when used in folds. One has only to recall Gainsborough's "Blue Boy," and how little blue pigment there actually is in it.

In the chapter on "Taste" we quite agree with the author in his view of the bad quality of French taste generally, and there is probably a good deal of truth in his conclusion that the low level of taste in France is largely due to the influence of mere fashion in women's dress, which extends its baneful influence to other things, and leads people to consider taste in design only as a matter of novelty in fashion. The contrast between the English country house, "inartistic for the most part, but unpretentious" (not always), and the modern French house, is not a bit too strong. The modern French "maison de campagne" is one of the most detestable kinds of erection to be met with in the whole history of architecture (if it can be called by that name).

In the chapter on "Eighteenth Century and Furniture and Decoration" the general reader may find some useful truths in regard to the much overrated name and productions of Chippendale, who has become latterly a fashion with people who have nothing to guide them but fashion.

Spon's Architects' and Builders' Price Book, with Useful Memoranda and Tables. By W. YOUNG, Architect. Twenty-fourth Edition. London: E. & F. N. Spon, Limited, 1897. Pp. lxxi., and 416.

THIS is a rival of "Laxton's Price Book;" younger, indeed, but still old enough to have lost some of its pristine freshness. The "useful memoranda" on "Drains and Sewers" are a generation old, and permit rain-water pipes to be used for drain-ventilation, while they make no mention of iron drains, disconnecting traps, and inspection chambers, flushing tanks, and other details now considered "useful" by sanitarians. The memoranda on "Girders" also reveal their antiquity, larger sections of joists being now rolled than are given in the tables, and more economical forms of girders being used than that shown in fig. 28. Under "Columns," some useful information on cast-iron columns and stanchions is given, but steel stanchions are not mentioned. May we ask what "useful" purpose is served by the inclusion in a "price-book" of the dimensions of cathedrals, illustrations of Gothic mouldings and the Five Orders, and the symbols of saints? Would it not be as well if the space given to these and other extraneous matters were occupied by the prices of bath-boilers, copper cylinders, wet gas-meters, iron drain-pipes and soil-pipes of various weights (glass-lined and otherwise) with bends, junctions, traps, &c., gas-fittings (incandescent, regenerative, ordinary, &c.), blocks of artificial stone other than paving, salt-glazed bricks and sinks, special fire-resisting floors and partitions, and other details of building construction, for which architects and builders may now search the price-book in vain? Surely the quotations for D-traps and small brick drains might now be spared. In the next edition we hope that the disorder which has gradually developed throughout the book will be greatly reduced, if not entirely removed; e.g., prices of enamelled bricks appear in four different places, 173 (not 174, as stated in the index), 183, 184, and 393; and Westmoreland slates at pages 205 and 393. Many of the prices in the book are very high. The "prime cost" of Portland cement "at works" is certainly not 36s. 6d.; this price includes for 10 or 11 bags, for each of which an allowance of one shilling will be made on its return, and even after allowing this, the price is too high.

Our intention is not to condemn the book but to improve it. It possesses several excellent features and contains much useful information, but more care in revision must be exercised and greater assiduity displayed in trying to keep the book up-to-date, if it is to be of much use to those persons for whom it is intended.

TRADE CATALOGUES.

MESSRS. LONGDEN & CO. (Sheffield and London) send us their illustrated supplementary catalogue of grates, fenders, &c. Most of these are of an ornamental character, and we have pleasure in recommending them for the general good taste shown in the designs, and the perception which they show as to what can and cannot be done in cast iron work; a praise which unhappily one can very rarely give to catalogue illustrations of this kind. With the cast work there is combined a good deal of hammered work

* On page 163 we are told that "a reliable price cannot as yet be given," but this is one of the sentences that need revision.

in brass and copper, and there is nothing florid or over-done in any of the designs. Architects who wish to select grates in stock may be recommended to this catalogue. It includes also an illustration of a ventilating radiator with air tubes for heating by convection.—Messrs. Messenger & Co. (Loughborough and London), send us their catalogue of conservatories and glass houses generally, with illustrations of a number of houses built by them. The book is, however, more than a mere catalogue, as it contains a good deal of practical information in regard to the construction of conservatories, the points to be specially attended to, &c. Messrs. Messenger appear to abide by the old system of puttied glass, and give their reasons, which are worth consideration, though they may not be entirely convincing.

Correspondence.

To the Editor of THE BUILDER.

CARDIFF ARCHITECTURE.

SIR,—I notice in the *Builder* of the 13th inst., illustrating Cardiff, that the two banks for the County of Gloucester Banking Company are described as being the work of Mr. Pickwell. I beg to inform you that these buildings were carried out by the firm of Jacobs & Pickwell, architects and engineers, and that the designs and the whole of the drawings, specifications, and quantities were done by me. This applies also to all other architectural work done in Cardiff, Penarth, and neighbourhood by the firm of Jacobs & Pickwell. I may add that Mr. Pickwell is a civil engineer. I shall feel obliged by your referring to this in your next issue. B. S. JACOBS.

Hull, March 16, 1897.
* * * The mistake, if it be one, is not our fault. Our representative saw Mr. Pickwell, who did not give any other name than his own in connexion with the buildings.—ED.

COLLECTING AREA FOR A RAINWATER TANK.

SIR,—I wish to know what is the best and cheapest covering for a large area—say 1,000 square yards—with the idea of catching the rainfall on its surface and storing the water for use. In this instance it is intended to assist the supply of water for stock on a farm where water is otherwise only obtainable from a well 250 ft. deep. The labour of raising sufficient water from this well for a large number of cattle is consequently enormous. It is usual in such cases to cover a considerable area of the side of a hill or slope with some kind of pavement, and to collect the rain falling on this in a large tank. The "catch" or area covered in this instance is on the side of a chalk hill. The chalk is on the surface. The best covering I can think of is a layer of tar pavement or asphalt 1½ in. thick; but I am afraid this pavement would destroy itself by its expansion and contraction. The only check to this would be by inserting ½ in. wood slips at intervals of 6 ft. to take the expansion and then this would necessitate making the site of comparatively even gradient. I should be glad to hear the experience or views of any of your readers. I should also be glad to know what would be the best composition of a tar or asphalt pavement such as I propose.

HOMO.

"SKETCHES OF LONDON STREET ARCHITECTURE."

SIR,—I have no wish to encroach on your space, as Mr. Wade has done, with matters of purely personal interest, but it is obvious that I cannot let the matter rest as it is. It is quite true I was a "paid assistant" in his office at the time, but he has omitted to state that I was carrying on a private practice with his consent.

Mr. Wade's statement, "a few months ago I found it necessary to dismiss him," is contrary to the facts, which are as follows:—On October 27 of last year, while I was away from town on Mr. Wade's business, a private letter of mine from a client was opened and answered by my principals, to the effect that the said letter had been addressed in error to their chief draughtsman, and that they would undertake the work. Naturally, I at once gave Mr. Wade notice, on receipt of which he sent me a letter of dismissal.

That I was architect of the house in question is proved by the following facts:—1. I designed and detailed the house entirely in my spare time. As compensation for time spent in necessary supervision during office hours, I obtained 40l. for Mr. Wade from my client. 2. Accounts and certificates for this work were signed by me. 3. In the documents prepared for the purposes of a law suit, which was pending between my client and the builder, I am referred to as architect.

J. LEONARD WILLIAMS.

The Student's Column.

SPECIFICATIONS.—XII.

HOT WATER FITTER.

HERE are two distinct branches of work which come under this heading. First, the supply of hot water to be laid on for use; and second, the provision of heating apparatus, in which the hot water is used simply as a means of transmitting heat. Attempts have sometimes been made to combine these two functions in one apparatus, but the result has never been entirely satisfactory; and it is far better to keep the two distinct, each with its separate arrangement of pipes, &c.

We will therefore give examples of methods of specifying the works for the two different purposes.

In the supply of hot water for domestic purposes there are two opposing systems, under one or other of which various installations are generally classed. First, the cylinder system, which is certainly the safer and most generally adopted; and second, the older tank system. We will commence with the specification of the work required for domestic purposes with the former system.

Hot Water Supply.—The hot water supply to be fitted up on the cylinder system in accordance with the following details, and is to be tested to the satisfaction of the architect before being approved:—

Boiler.—The boiler is to be a welded wrought-iron hot boiler, ½ in. metal, to hold gallons, properly set on fire-bricks to form flue under and at back of same and is to be provided with two manholes, with cast-iron plates and screws. Particular care is to be taken that the manhole covers are absolutely watertight.

Cylinder.—The cylinder is to be a galvanised wrought-iron hot-water cylinder to hold gallons, of ½ in. plate, with wrought-iron manhole plate bolted over the manhole with gun-metal bolts, tapped and screwed with inside strengthening plate (or if preferred an elliptical plate with external iron bridge piece may be specified). The cylinder to be fixed in kitchen in position where directed on strong T iron brackets built into the wall. The cylinder is to be enclosed with ¾ in. polished mahogany lagging leaving a space of 2 in. clear between the cylinder and lagging, which is to be filled with slag wool. The lagging to be secured with brass hasins 1½ in. wide tightened up with screws. Top and bottom of cylinder enclosures to be ¾ in. polished mahogany with rounded nosing.

Pipes.—All the pipes for hot-water work to be wrought welded steam-pipes, each to be fixed to stand 1 in. free from wall and supported on neat brackets of wrought-iron, screwed to blocks plugged to the wall, provision being made for expansion and contraction. No elbows are to be used, but bends on an easy sweep. Branch pipes in all cases to have a bend next to T union. The circulating pipes between boiler and cylinder to be 1½ in. pipes, the main circulating pipes 1¼ in., the supply to bath to be 1 in., and to the lavatory basins and sinks ¾ in.

In fitting pipes to boiler and cylinder special care is to be taken that the boiler is fixed level, and that no pipes project into the interior of either the boiler or cylinder. The boiler is to be tapped and screwed for pipes which are to have back nut screwed on outside. The connections of pipes to cylinder are to have bosses riveted on for screwing to pipe. The arrangement of pipes where connected to cylinder to be carried out as sketched in margin.

Safety Valves.—The boiler is to be fitted with a dead weight safety valve of approved pattern, arranged to open under pressure of lbs. to the inch. (The pressure will be, of course, arranged to suit the head of water in each case.) We now proceed with the specification of work for hot-water supply on the tank system.

Hot-water Supply.—The hot-water supply to be fitted up on the tank system in accordance with the following details, and is to be tested to the satisfaction of the architect before being approved.

Boiler.—The boiler is to be a welded wrought-iron saddle boiler ¾ in. metal to hold gallons; properly set on solid base of firebricks with flue carried up to back of same, and is to be provided with manhole on top with cast-iron plates and screws. Particular care is to be taken that the manhole cover is absolutely watertight.

Tank.—The hot-water tank is to be a galvanised wrought-iron tank, to hold fifty gallons, of 14 E.W.G. thickness, with wrought-iron manhole

and plate bolted over the manhole. The tank to be placed in where directed on strong T iron brackets built into the wall. Fit up the supply to same with cast-iron cistern and cover, size 15 in. by 7½ in. by 10½ in.

Pipes.—All the pipes for hot-water work to be welded steam-pipes, each to be fixed to stand 1 in. free from wall, and supported on neat wrought-iron brackets, screwed and plugged to the wall, provision being made for expansion and contraction. No elbows are to be used, but bends of an easy sweep. Branch pipes in all cases to have a bend next to T union. The circulating pipes between boiler and tank to be 1½ in. pipes, the supply to bath to be 1 in., and to lavatory basins and sink ¾ in. The supply pipe from cold-water cistern to feed cistern to be 1½ in., with full way brass ball valves with copper ball. The pipe between the cistern and hot-water tank to be also 1½ in., and to have the necessary dip below hot-water tank. The overflow from cistern to be 1½ in. with full way brass screw union. In fitting pipes to boiler special care is to be taken that the boiler is fixed level, and that no pipes project into the interior. The boiler is to be properly tapped and screwed for pipes which are to have back nut screwed on outside.

Safety Valve.—The boiler is to be fitted with dead-weight safety-valve, of approved pattern, arranged to open under a pressure of lbs. to the square inch.

We can now take some examples of the method of specifying work for hot-water heating. These may be carried out on either the low-pressure system or high-pressure system.

Heating Apparatus.—The heating apparatus to be fitted up on the low-pressure system in accordance with the following details, and is to be tested to the satisfaction of the architect before being approved.

Boiler.—The character of the boiler will depend upon the amount of work which it is required to do, and may vary from a small wrought plain welded saddle boiler to a large Lancashire or Cornish tubular boiler.

Pipes.—The pipes generally used are either 4 in. cast iron or 3 in. wrought iron. The specifications should stipulate which is to be used, and should specially provide that the size of pipe mentioned, whether 4 in. or 3 in., is to be internal diameter, and that pipes are not to be less than specified diameter. Also the weight per yard run should be given, which may be, say, 30 lbs. per yard for 4 in. cast iron pipes. Cast iron pipes would generally be used only where the pressure is moderate, say, up to 25 ft. head of water, for the sake of the joints.

Joints.—Specifications should state what kind is to be used, whether socket joints or flange joints, such as Jones's improved flanged pipe joints, or Jones's improved expansion joints, which are some of the best up to a head of about 25 ft. of water.

Valves.—Enumerate the valves required; state their position, and describe whether throttle valves, screw-down valves, screw slide valves, or (if wrought-iron pipes) gun-metal valves.

Feed Cistern.—Feed cistern to be a cast-iron cistern (state size, which would vary with the amount of pipe, as it will serve for expansion cistern. Of course, the greater the length of pipe the more expansion must be provided). Feed cistern should have 1 in. supply from cold water cistern with full way gun-metal ball valve and copper ball, and 2 in. overflow with full way gun-metal screw union.

In specifying work for the high-pressure system of heating, the architect must determine whether expansion tube is to be used, which is the better where a very high temperature is required in the pipes, or whether a relief valve is to be employed instead, which admits of the apparatus being worked at a lower pressure, and consequently a lower temperature, and under these circumstances has many advantages. The specification might run thus:—

Heating Apparatus.—The heating apparatus of to be fitted up on the high-pressure system according to the following details, and is to be tested to a pressure of lbs. to the square inch, to the satisfaction of the architect before being approved. The pipes are to be ¾ in. bore welded steam barrel, ft. of which is to be coiled round furnace for heating. The furnace to be built in fire bricks, one and a half bricks thick, domed over at top with ft. super of fire-bars, and the necessary furnace-doors, dampers, flue and soot doors. Specify the size of expansion tube, which will depend upon the amount of pipe. The expansion for a temperature of 300 deg. is 1/10th quantity of water in the

whole apparatus. This amount, of course, must be increased for a higher temperature or decreased for lower. Specify the position of filling tube with its cap, and any stop-cocks required.

GENERAL BUILDING NEWS.

ST. GEORGE'S CHURCH, BLOOMSBURY.—On the 12th inst., a meeting of the parishioners of this church and others was held in the Vestry-hall of the parish, the Rev. A. B. Boyd Carpenter, presiding. From a statement made by him, and endorsed by Mr. C. Fitzroy Doll, the architect who has been consulted, and who has made a thorough examination of the fabric, it appears that the necessity for considerable repair is urgent. The stonework is decayed and dangerous, and the lead roof is faulty and admits water—as may be seen from the inside—in many places. The inside is exceedingly dirty, and whilst repainting it is proposed to add little or much (as funds allow) of what may be called decoration. The cost of repairs and some decoration is estimated at least 5,000*l.* This sum the meeting pledged itself to endeavour to secure. Subscriptions may be sent to the London and Westminster Bank, 214, Holborn, or the senior churchwarden, Mr. T. H. D. Berridge, 49, Rutland-gate, S.W.

PARISH CHURCH RENOVATIONS, KINGSWOOD, BRISTOL.—At a public meeting held on the 18th inst. it was decided to carry out the plans for the full scheme of the Parish Church renovation prepared by Mr. E. H. Lingen Barker, of London and Hereford. The scheme embraces practically new nave, aisles, chancel, organ chamber, and two porches, and new floors and fittings. The floor of the western tower will be utilised as a choir vestry. The accommodation is for 675 worshippers. **WESTMINSTER OF CORPORAION BATHS, ABERDEEN.**—On Monday last the Aberdeen Town Council resolved to extend the bathing-station at the sea beach at a cost of about 6,000*l.*, according to plans by Mr. John Rust, jun., City Architect. The additions include a swimming-pond, 100 ft. long and 40 ft. wide. The pond is to be placed under the present ground level to the south of the existing pavilion, and will be constructed at such a level as to fill by gravitation at high-water and discharge at low-water. The roof will be formed on steel girders and concrete arches, with cupola lights on the top above the level of the ground, and seats round the cupolas to protect them. There will also be twelve additional plunge baths, making twenty-eight in all. A proposition to add a suite of four rooms for Turkish baths was dropped.

BROAD SANCTUARY CHAMBERS, WESTMINSTER.—This block of offices, now approaching completion, is being executed for the directors of the Westminster Palace Hotel Company, at a cost of 10,000*l.* Messrs. L. Whitehead & Co. are the contractors. The fireproof floors have been supplied by Messrs. Homan & Rodgers; the heating and plumbing is carried out by Mr. William Dodds; the electric lighting by Messrs. Edmundson; the lifts by Messrs. Easton, Anderson, & Golden; and the iron-work by Messrs. Starkie, Gardener, & Co.

MISSION HALL, ABERDEEN.—Plans have been lodged with the Burgh Surveyor for mission premises proposed to be built in West North-street for the Belmont-street Congregational Church. Messrs. B. & W. Architects.

CONSERVATIVE CLUB, HEATON PARK, NEAR MANCHESTER.—On the 11th inst. the first sod was cut on the site of a new club-house which is to be erected in the Heaton Park district of Prestwich. The building, which is from the plans of Mr. Lodge, architect, will cost about 1,000*l.*

MISSION CHURCH, VRON, DENBIGH.—A new mission church was recently dedicated by the Bishop of St. Asaph at Vron. The church, which is dedicated to St. Alban, has been built of red brick. It is in the Romanesque style. The east end has a semi-circular apse. The roofs are covered with blue slate, capped by red ridges. Internally the church consists of nave 50 ft. by 26 ft. 6 in., chancel 16 ft. by 26 ft. 6 in. The porch is on the south side, and a vestry, with a sitting chamber under, on the north. A roof screen and roof of pitch pine extends the entire width of the west end of the chancel, and screens of similar design are placed to the north and south side of same, over the latter of which it is proposed to ultimately construct a small organ loft. The chancel stalls are also of pitch-pine, whilst inside the rail the altar is of painted English oak covered with a stone slab, and a small credence table and re-table of grey stone are fixed. The curved roof of the apse is plain, plastered with a view to future decoration. The church has been designed by Mr. Howell Davies, architect, Wrexham, and carried out by Messrs. Thomas Rogers & Son, builders, Brynbo.

NEW OFFICES FOR ABERDEEN PARISH COUNCIL.—The Aberdeen Parish Council have adopted the report of the Works Committee recommending the erection of new offices for the Council in Union-terrace. Plans have been prepared by Mr. A. Marshall Mackenzie, A.R.S.A. The structure will have a frontage to Union-terrace of 68 ft., and the front elevation will be 55 ft. from the street level. In the basement floor charter-room accommodation will be provided, and provision made for cellarage

and heating apparatus. The ground floor is entered from Union-terrace by a flight of four steps. To the right is the chief inspector's room, orphan inspector's office, and clerks' room; while to the left are situated the office of the first assistant inspector, the strong-room accommodation and rooms for the outdoor inspectors, medical officers, &c. On the first floor is a collectors' office, a room for the Sheriff-officer, cloak-rooms, and a store for the clothing required for the outdoor poor, and a small committee room. The Council chamber, which measures 48 ft. by 36, is on the second floor. There are a chairman's room, cloak-rooms for ladies and gentlemen, and a committee room immediately adjoining the Council Chamber. The elevation to Union-terrace will be of grey granite. Exclusive of furnishings the offices are estimated to cost 6,000*l.*

BAPTIST CHURCH, CHISWICK.—A new Baptist church in Annandale-road, Chiswick, has just been opened. Accommodation is provided in the church for 493 adults, or for a mixed congregation of 625 persons, and in the schools and classrooms for 300 children. The buildings consist of church, assembly room, two vestries, and five classrooms, with lavatories, dressings, and the internal fittings are of pitch pine. The architect was Mr. John Wills, of Derby, and the builders Messrs. Steward & Son, of Wallington.

CHURCH EXTENSION, NEMPNETT, NEAR BRISTOL.—On the 10th inst., the parish church at Nempnett was reopened after alteration, &c. The church as it existed before the recent alterations had a chancel communicating with the nave by a pointed arch, and having in its east wall a single coloured window with "The Resurrection" as its subject. The scheme just completed has involved the removal of the chancel with the arch, and has resulted in the creation of a larger chancel, carried up to the height of the nave, but separated from it by a carved roof-screen. Besides this, on the north of the new chancel, has been built a side chapel, or vestry. In the erection of this vestry a large part of the stone of the old chancel has been used; the archway which joins it to the chancel is the old chancel arch again set up. The new chancel is built of local stone. Dundry stone has been used as dressings. Two side lights have been added to the east window, the subject of one being Moses uplifting the serpent, and that of the other Abraham about to offer up his son Isaac as a sacrifice. The alterations have been carried out from the designs of Mr. Buckle, by Mr. John Flower, Diocesan Architect.

OFFICES, LANCASHIRE INSURANCE CO., BIRMINGHAM.—New offices for the Lancashire Insurance Company have just been erected at the corner of Bennett's Hill and Waterloo-street. The architect is Mr. J. A. Chatwin. The site is that formerly occupied by the Inland Revenue Office.

LYCEUM THEATRE, SHEFFIELD.—Plans for the alteration of City Theatre, Tudor-street, Sheffield, have been prepared by Mr. W. G. R. Sprague, of London. One of the chief external alterations of the theatre (which is to be called the Lyceum) will be at the corner of Arundel-street, where a tower will be erected. The main entrance will be at this point, and near will be a crush-room. The frontages abutting on Tudor-street and Arundel-street will be treated with Portland cement. The present exits will be retained, and in addition several others constructed. The construction of the auditorium will be of steel or iron, encased in concrete. The main roof over the auditorium will also be of steel or iron and concrete, overlaid with asphalt, and the new floors will be of similar construction. In the new entrances, exits, and corridors, granite-cement will be used, and the staircases will be of ample width, and arranged so that there will be no necessity for winders. The building is to be fitted throughout with electric light, in addition to gas. Retiring-rooms for ladies and gentlemen, as well as lounges, will be provided on each floor. The pit lounge will be in the basement. The ground-floor will be laid out for the pit proper and pit-stalls, the stalls being approached from the dress-circle entrance. The pit will have separate entrances and exits. The stalls are to accommodate 112 persons, and the pit 550. The circle is to be divided, the front portion being the dress-circle proper, and containing 142 seats. The back part, which will have a separate entrance, will be known as the balcony, and will seat about 160 people. The gallery will be entirely re-arranged. It will be capable of accommodating 650 persons. The private boxes will be made to seat 32 persons. The crush-room and principal vestibules will be at the Arundel-street corner of the building. Outside the theatre a covered glass awning is to be erected at the central entrance, and also at the side entrance in Arundel-street. The cost of the alterations will be about 15,000*l.*

CHAPEL, HAZEL GROVE, CHESHIRE.—On the 8th inst. the new Primitive Methodist Chapel, London-road, Hazel Grove, was opened. The building is of brick, with stone facings. The interior of the chapel is 60 ft. long and 30 ft. wide. A portion has been partitioned off for use as a Sunday school or for meetings. The executors of the late Mr. Wild were employed to carry out the building work, and Messrs. Pierce, of Stockport, were the architects.

INKPEN CHURCH, HUNGERFORD, BERKS.—The ancient church of St. Michael and All Angels at Inkpen, which has been in the hands of the

restorers for over twelve months, was recently reopened. The works have been carried out by Messrs. George Elms & Son, contractors, of Benham, Newbury, under the direction of Mr. Clapton Crabbe Rolfe, architect, of Oxford, and formerly of Reading. The new carved oak roof screen has been constructed almost entirely of oak grown upon the estate at Inkpen. This work is by Messrs. Harry Hems & Sons, of Exeter.

WESLEYAN CHAPEL, MOUNTSERRREL.—The memorial stones of the New Wesleyan Chapel at Mountserrrel were laid recently. The church is placed 30 ft. back from the road, and is 52 ft. by 31 ft. 4 in. inside and 38 ft. 7 in. across the transepts. It will seat 265 adults, or a mixed congregation of 350 persons. In front there is an outside porch. At the rear there is a chancel and an organ chamber. There are also porches connecting the church with two vestries. The church is built of brick, and the front is faced with granite. The schoolroom is at the rear of the church, 40 ft. by 26 ft., and will seat 200 children. There is also a class-room and infants' room, and provision for extension by the addition of nine rooms. The architect is Mr. John Wills, of Derby, and the builders are Messrs. Scurr, Jowett, & Co., of Barrow-on-Soar.

NEW SCHOOLS, BIRKENHEAD.—At the last meeting of the Birkenhead School Board Mr. T. W. Cuthbert, of Birkenhead, was appointed architect for new school buildings to be erected in Well-lane, at the south of the borough.

HOSPITAL, ARMAGH LUNATIC ASYLUM, IRELAND.—The new detached hospital at Armagh Lunatic Asylum is planned to accommodate one hundred and fifty patients under special treatment, together with the necessary attendants and staff. The general arrangements of the buildings are, viz.:

—A central block, arranged for administration, with apartments for officer in charge; visitors' rooms (male and female), a dining-room in the centre, with kitchen, servery, scullery, stores, &c., &c. From this central block there are corridors, 17 ft. wide, extending right and left to the wing buildings, which are at the east and west extremities. From the north walls of these corridors are communications with the bathrooms, lavatories, linen closets, storerooms, shoerooms, and sanitary conveniences; also a stair to each wing, leading to the dormitories and rooms on the first floor. The wing buildings are situated at the extremities of these corridors and day-rooms. Extending towards the south are infirmary day-rooms and dormitory combined, for the reception of patients who are too weak to move from their beds. Extending towards the north of the wing buildings are a number of single rooms, a padded-room for each wing, and an associated dormitory on the ground floor for epileptics. At the extremities of each of these male and female wing buildings there is a small separation hospital ward, with nurses' quarters, &c., all isolated from the rest of the buildings. Armagh limestone has been used for external walls and ashlar works. All the outside walls have brick lining, and a hollow space between the main wall and the brick lining. The staircases are all fireproof and with concrete steps, fitted with Mason's treads. The ventilation and heating is arranged by Musgrave & Co. on the plenum system. The buildings have been carried out by Messrs. McLaughlin & Harvey, of Belfast—from the plans and under the supervision of Messrs. J. J. Phillips & Son, Belfast.

NEW CHURCH, DARNCONNAH, AVRSHERE.—The new church at Darnconna, in Achninleck Parish, has just been opened. The church has been built from designs by Mr. R. S. Ingram, Kilmarnock, and is in the Gothic style. The outside walls are of Ballochmyle red sandstone, while inside white Kilwinning stone has been used. The interior has an open timber roof, and is heated by means of hot-water pipes. There is accommodation for about 300 worshippers. A manse adjoins the church. The whole building cost about 3,000*l.*

SANITARY AND ENGINEERING NEWS.

WATER SUPPLY, MILVERTON.—These works were opened on the 1st inst. They were designed by Messrs. Taylor & Crimp, of Westminster, the contractors being Messrs. Tabor & Hinchcliffe, of Cambridge.

SKELTON AND BROTTON SEWERAGE.—At a recent meeting of the Skelton and Brotton Urban District Council it was reported by the engineer that the scheme of main sewerage and sewage disposal had been completed by the contractor, Mr. J. Carrick, of Durham, within the time allowed by the County Court order. About twelve months ago an injunction was obtained from the Court by the Saltburn Urban District Council to prevent the pollution of the Skelton Beck, which flows through the pleasure gardens at Saltburn. After an inquiry by the Local Government Board by the late Mr. W. J. B. Clerke, M.Inst.C.E., whose sanction to a loan of 15,000*l.* was obtained, a start was made with the work which is now completed. The scheme is from the design of Mr. D. Balfour, M.Inst.C.E., of Newcastle-on-Tyne, and comprises about ten miles of 24, 18, 15, 12, and 9-in. freelay and cast iron pipe sewers, with manhole and lamp-hole shafts, automatic flushing chambers, cast-iron valley crossings, &c. The freelay pipe joints are made partly with Hasall's patent water-tight joint, and partly

with gaskin and cement. The work consists of a combined intercepting scheme for carrying the whole of the sewage from the ten villages in the district, which have a population of 10,000, to a point at the top of the cliffs on the coast at Cranedale Spout, where the cliffs, 200 ft. in height, have had a tunnel driven, with a gradient of one in two from the beach to the top of the same, and lined with bricks, in which are laid cast-iron pipes, connected by easy bends to the outfall sewer on the beach, which is carried 700 yds. out to sea. This sewer is of cast-iron, laid in a trench in the rock on the beach and embedded in concrete, cast-iron inspection chambers being placed on the outfall, and indicated by means of cast-iron posts. A large number of float experiments were made to ascertain the proper point of discharge, so that there could be no nuisance from reflux sludge, and ultimately a point to the north-west of Huntcliffe promontory, 700 yds. from the cliff, was decided on, being at extreme low water, and where it is found the sewage at all states of the tide is carried out to sea. The work has been completed for less than the engineer's original estimate.

PAIL & WATER CARRIAGE SYSTEM, CHORLEY.—On the 9th inst. Mr. E. P. Burd, Inspector of the Local Government Board, held an inquiry in the Chorley Council Chamber with regard to an application of the Council for a provisional order for sanction to borrow 10,000l. for purposes of converting the present pail system of closet accommodation to that of the water carriage system, and to so alter or amend the Chorley Improvement Act of 1871 as to enable them to do so. The Town Clerk (Mr. Wills) stated that the total indebtedness of the borough was 116,650l., and the population was estimated at 25,000. He pointed out what had been done by the late Board of Commissioners, who adopted the pail system, and stated that application was made in 1890 to form a control depot for excreta in water, to obviate the vans going through the town, but it was refused by the Local Government Board, who recommended the adoption of the water carriage system. The Corporation, acting upon that recommendation, and under pressure from the County Council, spent 16,000l. in sewage precipitation works. The removal of the pails weekly cost 1,300l. a year, and the same amount to carry on the sewage works, and it was with the object of saving half that and for improving the sanitary condition of the borough that the Council decided upon the conversion. They offered to do the work of connexion with the sewers if the owners of property found the material. Councillor J. W. Stone spoke of the advantage that would accrue to the town. The Borough Surveyor and Medical Officer also gave evidence. Mr. Kellville, solicitor, appeared for a number of property owners, and called evidence in opposition to the scheme, as being one of a most expensive character, and likely to prove ruinous to many owners of old cottages.

SEWAGE DISPOSAL, WORCESTER.—For the premiums offered by the Worcester City Council for the best scheme of sewage disposal for the city, there are twenty-two competitors who have sent in designs and plans, and these are now under examination by Mr. Chatterton, the assessor appointed by the Council.

LOCAL SEWERS, LONDON.—The Main Drainage Committee of the London County Council have sanctioned, subject to a condition recommended by the Engineer, the construction of local sewers as follows:—Hampstead: 750 ft. of 12-in. pipe sewer in proposed new road, between Haverstock Hill and Lawn-road. Fulham: 950 ft. of 12-in. pipe and concrete sewer in proposed new road, to be called Fitz George-avenue, between Auril-road and North-end-road. Plumstead: 80 ft. of 9-in. pipe sewer in Kirk-lane, 230 ft. of 12-in. ditto in Palmerston-road, and 200 ft. of 12-in. ditto in Plum-lane. St. Saviour's: 420 ft. of 12-in. pipe and concrete sewer in Park-street.

FOREIGN.

FRANCE.—The ancient church of St. Pierre on Montmartre is to be demolished in a few weeks, on account of the dangerous condition of the building. It is to be replaced by a new church, of which M. Baudot will probably be the architect. The New Salon will open this year, at the Champ de Mars, on April 23, and close on June 30. The old Salon will open on April 25, at the Palais de l'Industrie. A certain number of the painters who call themselves "Symbolists," most of whom have already taken part in the "Rose Croix" exhibitions, have organised, at the Georges Petit Gallery, a special exhibition under the title "L'Électrique," among the members are MM. Assolant de Bontevre, Maurice Chabas, and Darras. The sale of Chinese and Japanese *objets d'art* from the Goncourt collection has realised 236,676 francs. The total amount realised from all the departments of the sale was 1,162,952 francs. At Versailles the Salle des Etats Généraux, which has been closed for many years, has just been reopened to the public. There have been placed there, among other works, the "Combat de la platière" by De Neuville, and the "Charge de Reischolien" by M. Aimé Morot. There is also to be seen there a picture hitherto unknown to the public, representing the interview between Napoleon and the Emperor Alexander on the Niemen.

The exhibition of models for the monument to Pasteur which is to be erected at Dôle is now open in the foyer of the theatre there. Fifteen designs have been sent in. The bell-tower of the church at Montprimal, near Bourdeaux, has been blown down in one of the recent gales. The Department of Fine Arts has addressed a circular letter to all the Prefects of Departments in reference to the repair of works of art which have been placed by the State in the various provincial museums. As a good deal of mischief has been done by incompetent repairs or restorations, the Department from this time will take all such work under its own direction; the municipal authorities and curators of museums are to confine themselves to notifying to the Government what repairs are wanting to any works in their charge. The French Government is about to establish a railway in Madagascar.—It has been decided that the statue of Beaumarchais, the work of M. Clausade, is to be inaugurated on April 27, the anniversary of the first representation of "Mariage de Figaro." The monument erected at St. Maurice to the memory of Delacroix is to be inaugurated in May next.

GERMANY.—According to the report of the Association of Ground Landlords at Berlin there has now been a considerable increase in the building activity throughout the capital, whilst the number of houses and tenements standing empty has decreased. There has been too large a supply in comparison with the demand for tenements during the last few years, but this has now been remedied.—The national memorial to Emperor William will be practically ready for the celebration at the end of the month.—The new General Post Office at Berlin is now almost complete, the galleries to be devoted to the Post Office museum are also ready for the hands of the builders. The collections will be housed in a large central hall surrounded by galleries. Plans and elevations of the leading post-offices throughout Germany will be exhibited.—The new "Potsdamer" bridge at Berlin is to be taken in hand at once, and the plans have been laid before the Emperor.—The new models for the Helmholtz monument are now exhibited at Berlin. The selection for the commission rests between the sculptors Herter, Otto Lessing, and Janensch.—Further important improvements are to be made on the west façade of the Royal castle at Berlin, and Professor Otto Lessing has been commissioned to execute a number of historical semi-reliefs for panels which are empty at present.—The memorial church to Emperor William, which was inaugurated in Berlin with considerable ceremony, was not complete on that occasion. Various pieces of sculpture are now being prepared, and these will be put in position shortly. Among the more important works will be statues of Luther and Melancthon, by Professor Otto Lessing.—The *National Zeitung* of Berlin has published an important article on competitions for monuments, as the many competitions for memorials and monuments are giving rise to serious complaints among artists generally. Sculptors in Germany consider that the expense connected with the preparations of large-sized models is quite out of proportion to the premiums generally offered, and it is proposed to increase the number of premiums considerably above the three or four now generally given. Elaborate street decorations are to be made in connexion with the festivities which will take place at Berlin on the anniversary of the Emperor William's birthday, and the City Architect, Herr Ludwig Hoffmann, has been entrusted with the supervision of this work.—A number of improvements are to be made on the thoroughfare to be taken in hand is from Schoeneberg to Steltzig. A broad avenue is to be formed with a roadway 65 ft. wide. The cost of the improvement is 20,000l.—The Arts and Crafts Museum at Berlin is repeating its very practical arrangement of organising a special exhibition of objects obtained during the last six months.—A number of minor competitions have been opened in connexion with the Horticultural Exhibition at Hamburg, which will be held this year. Premiums will be offered for the best designs for garden furniture, verandah fittings, flower-boxes, &c., with the view of encouraging better taste in connexion with gardening.—Altona, near Hamburg, is to have a new museum, and a number of premiums have been offered in connexion with the competition to be held for the design. There will be four premiums of 150l., four of 100l., and two of 50l.—We understand there will be a machinery exhibition at Munich during 1898, and a competition has been held with a view of obtaining suitable designs for laying out the grounds and erecting the necessary preparations on the banks of the River Isar.—Government are already being made by the German Government for a thoroughly representative collection at the Paris International Exhibition of 1900. One of the first committees formed is that of the Arts and Crafts section, and all the leading men connected with the Arts and Crafts movement have been elected to serve, including Baurath Ihne, Baurath Heydn, Baurath Kyllmann, and Herr Hoffacker, among Berlin architects.—The premium known as the Schinkel Studentship has been awarded to Mr. Hausmann. There were sixteen candidates, and the subject was "A County Hall." Three designs were also honourably mentioned. The

subject of the Engineers' Competition arranged under similar auspices by the "Arkitekten Verein" was "A Local Railway," and the premium has been awarded to Mr. Schimpf.—Active preparations are being made in Berlin for the ceremonies which will be held during the next few days, and particularly for the celebration on the 22nd. Nearly all the public bodies are commemorating the event in some particular form, and the Academy of Arts will hold a special public meeting on the 20th, on which day the Art Exhibition, representing the work of the last hundred years, will be opened. On the 22nd inst. there will be a great popular procession, for which the central feature will be a triumphal car representing "Germania." On the 23rd inst., we understand, there will be a further small historical procession, arranged by the artists of Berlin. The decorations throughout the streets are progressing rapidly under the supervision of the City Architect.

AUSTRIA AND HUNGARY.—A lecture on the new street improvements at Vienna was recently given at the Architects and Engineers' Society of the capital by engineer Riehl, in which the programme of the Improvement Committee was explained.—The old exhibition grounds at Vienna are not considered to be sufficiently extensive for the large number of exhibits which are to be sent in for the exhibition of 1898, and it is hence probable that they will have to be extended, and part of the public grounds of the Prater park will be taken in hand. A considerable building will be building a chapel of considerable dimensions at the central cemetery of the town.—Owing to the closing of the "Hofburg" theatre for alterations, the idea of having a new Court Theatre, devoted entirely to chamber plays, is again the subject of discussion, and it is not unlikely that the Emperor will encourage the scheme.—A number of temporary bridges are being constructed at Vienna in connexion with the laying of the new Metropolitan railway.—It is not unlikely that the Municipality of Vienna will found a new municipal bank for which the necessary buildings may have to be taken in hand shortly. The buildings of the Alland Sanatorium are progressing rapidly, and it is probable that they will be ready by the end of the year.—The Municipality of Vienna has decided not to encourage private enterprise in respect to laying new tramways, as they propose taking all this class of work in hand themselves. It is for this reason that several schemes put before the authorities by private companies have not found favour.—A new suburban theatre is to be erected at Vienna with a view of furthering the party interests of certain municipal politicians, and considerable subscriptions have been raised for this purpose.—One of the large life insurers' accident insurance companies is having some artisans' dwellings erected at Trieste and has voted 100,000 florins towards this purpose. It is the intention of the company to see if artisans' dwellings can be made a comparatively profitable investment in that town.—The well-known Hungarian summer resort Pletyan is to have some extensive baths, which are being erected for the coming season.

MISCELLANEOUS.

LYCH GATE, PENWORTHAM CHURCH, LANCA-SHIRE.—A lych gate has recently been erected at Penwortham Church to the memory of the late Wm. Adam Fildes and his wife Dorothy Ann. The structure is from designs by Mr. A. T. Nutt, architect, Windsor, and has been carried out under the supervision of Mr. W. Morley. It is of Gothic design. The carved work has been executed by Messrs. H. Miles & Son, Lancaster.

THE INSTITUTE OF SANITARY ENGINEERS.—Mr. William Spinks, Assoc. M. Inst. C.E., Lecturer on Sanitary Engineering, Yorkshire College (Victoria University), has been elected President of the Institute of Sanitary Engineers for the ensuing year. The membership of the Institute now numbers over 450.

PROPOSED FEDERATION OF MASTER BUILDERS' ASSOCIATIONS.—A meeting was held at the offices of the Bristol Master Builders' Association, Guildhall, Bristol, on the 10th inst., for the purpose of considering the question of the formation of a federation of the master builders' associations in the West of England and South Wales. Mr. A. Kraus, President of the Bristol Association, who was elected to the chair, said the subject of a federation for the district was first broached to him by Mr. Rider, of London, the Chairman of the National Association of Master Builders of Great Britain, at the last half-yearly meeting of that Association, in a short time ago at Blackburn, and acting upon that suggestion, he had taken the liberty of calling them together that day to consider the matter, and he trusted that something practical would be the outcome of the meeting. After the rules governing a similar federation now existing in Lancashire had been read, a long discussion ensued, in which all present took part, and eventually Mr. James E. Turner (Cardiff) moved, and Mr. E. J. B. Mercer (Bath) seconded, and it was resolved unanimously, "That it is desirable to establish a master builders' federation of the associations in the various towns and localities in the West of England and South Wales." The next resolution put forward was, "That such federation be organised upon the lines of the Lancashire federation." This was moved by Mr. W. M. Blackburn (Newport), and

ended by Mr. H. J. Spiller (Taunton), and carried *in con.* Mr. James E. Turner (Cardiff) then proposed, and Mr. George Humphreys (Bristol) seconded, "That the delegates meeting here to-day port to their associations the principles adopted at its meeting, and that the rules of the Lancashire Association be forwarded to the secretaries of the various associations invited here for their guidance in the matter, with a request to report the views of their associations thereon to the convenor of this meeting at an early date, with the view of another meeting being called as soon as possible." His resolution, on being put to the meeting, was carried unanimously. The meeting closed with a vote of thanks to Mr. Krauss.

COURT OF COMMON COUNCIL.—On the 17th inst. meeting of the Court of Common Council was held at Guildhall, the Lord Mayor presiding. Replying to a question, Mr. Deputy Chairman of the Health Committee, said that the annulment of the Royal Exchange would shortly be decorated by fresco by Mr. Seymour Lucas, A.R.A., depicting William the Conqueror giving the Charter to the Citizens, which the Corporation had commissioned. The Mercers' Company had commissioned Mr. E. Crofts, A.R.A., to paint a panel of the opening of the First Royal Exchange by Queen Elizabeth. Sir Samuel Montagu, M.P., had commissioned Mr. Solomon J. Solomon, A.R.A., to paint a panel of "Charles I. Demanding the Surrender of the Five Members at the Guildhall," and Mr. Carl Meyer had ordered Mr. Sigismund Goetz to paint "The Offer of the Crown to King Richard III. by Cardinal Beaufort." A long discussion it was opened, at the instance of Mr. Alderman Trevelyan, to open the forthcoming loan exhibition of pictures at the Art Gallery at Guildhall on Sunday afternoons.

FONT FOR THE OLD CHURCH, ARROATH.—It is stated that a presentation is to be made to the Old Church in the form of a baptismal font of alabaster, which will be placed in position at an early date. The font is from a design by Mr. Burnett, A.R.S.A., architect of the Old Church.

CENTRAL ASSOCIATION OF MASTER BUILDERS OF LONDON.—Mr. William Shepherd has been elected President of this Association for the ensuing year. Mr. J. B. Greenwood and Mr. Thomas Gregory are elected the Vice-Presidents, and Mr. Charles Wall, Treasurer.

GREEK HISTORY AND MONUMENTS.—Professor Percy Gardner delivered the second of his course of lectures on "Greek History and Extant Monuments" at the Royal Institution last week. He dealt mainly with the Athenian Acropolis as a background of history, starting from the devastation of the Acropolis by the Persians in 480 B.C., and working backwards. The lecturer dwelt on the account given by Herodotus of the Persian occupation, which resulted in the Athenians abandoning their city to the ruthless vengeance of the invaders, to whom nothing was sacred. The evidence of the historians could now be supplemented by the yet more truthful records on rock, marble, and bronze, for recent excavations brought the monuments of old to light and completed the tale of the wreck of all works of interest and value. The Persians and the consequent restoration of Athens, which the Athenians returned they had lofty ideas and plans, and intended to replace the old buildings with grander ones of marble. Modern excavations enabled us to recompose temples, to set up votive images, sometimes even on their own pedestals, and to trace the development of Athens from century to century. When the Persians destroyed the Acropolis they were probably unaware of the existence of any earlier monuments than those which they were destroying. We now know that the history of Athens began at a period that was as remote to Herodotus as his time was to ours. Recent excavations revealed to us successive phases of the history of the capital of Greece. The earliest stratum showed bronze walls, graves, and terra-cottas; the second, Mycenaean pottery and palace walls, and the use of Erechtheus known to Homer; the third took us to the period when the Kings gave way to Athena and the Acropolis was made sacred to the gods. The Greeks gave the name of the Pelagic age to all the early monuments that they could not assign to any definite period. Professor Gardner then attempted to reconstruct ancient Athens at different periods. The first fixed historical landmark was the age of Pisistratus. Before his time the Acropolis was still a fortress. Pisistratus erected a temple, or the Acropolis, in honour of Athena, and some walling built by him on the road up to the temple still remained. The ground plan and style of the Peisistratid Temple are clearly apparent. In the Age of the Tyrants the early temples were little more than a wall. It is still about 600 B.C. that the age of stone began to the age of marble. Pictures of various paintings, the low gables which crowned the fronts of the buildings, were thrown on the screen, and the restorations suggested by archaeologists shown. These showed the fondness of the sculptors for monstrous forms, to which they were more inclined owing to the form of the pediment, which suggested to the artist the display of serpents and monsters. The lecturer then went on to speak of the discovery by Studniczka of the design and part of the substance of the pedimental group erected by Pisistratus

over the doors of the Temple of Athena. Professor Gardner said that within the last few days a young German student had followed up these discoveries, and had reproduced the design of the whole of the figures in the pediment.—*Daily News.*

CAPITAL AND LABOUR.

THE BUILDING TRADE DISPUTE AT BLYTH.—The dispute between the Blyth bricklayers and the master builders, which commenced on January 12, has been terminated. Mr. John Hood, the secretary of the Blyth Branch of the Operative Bricklayers' Society, received a communication from the Blyth Master Builders' Association stating that the demand for a reduction from 95s. to 9d. per hour would be withdrawn. It was in consequence of this demand and a notice of certain alterations in the working rules that the bricklayers came out. The code of working rules remains the same with this exception, that instead of an unrestricted number of apprentices, as heretofore, no more than one apprentice to every four bricklayers will be allowed, the number of apprentices engaged by any one firm not to exceed four.

LABOUR IN THE BUILDING TRADE DURING FEBRUARY.—According to the *Labour Gazette*, employment in the building trades has improved. The percentage of unemployed in unions making returns for February was 2'0, compared with 2'4 in January, and 2'5 per cent. in February, 1896. Six disputes occurred during the month, involving 334 workpeople. Most of the disputes have been settled.

LEGAL.

THE CLAIM AGAINST THE ST. PANCRAS GUARDIANS.

JUDGMENT.

MR. RIDLEY, Q.C., the Official Referee, delivered a considered judgment in this claim on the 17th inst. It will be remembered that the plaintiffs, the trustees of creditors of Mr. William Brooks, a builder and contractor of Folkestone, sued the Guardians of the Poor of St. Pancras, and their architects, Messrs. A. & C. Harston, for a balance of 24,262*l.*, or, alternatively, 24,262*l.*, alleged to be due on a contract for the completion of the St. Pancras work-house. The plaintiffs' case was that some years ago the Guardians resolved to reconstruct the work-house in King's-road, and appointed Messrs. Harston as their architects. The contract for the work was at first taken by Messrs. Kirk & Randall of Woolwich, but disputes arose, and in 1892 that firm requested to be relieved of further work under the contract. Fresh tenders were then invited for the unfinished work, and that of Brooks was accepted for 50,861*l.* The work was to occupy fifteen months from May, 1892, but delays arose, and in November, 1892, the work was stopped. Messrs. Drew Bear, Perks & Co., of Queen Victoria-street, who supplied the ironwork; Mr. H. Tolpitt, of Folkestone, who supplied the timber; and Mr. J. Brown of Cannon-street, who supplied bricks, sued on behalf of creditors for the balance alleged to be due to Mr. Brooks. The net cost of the work executed was stated to be on the first claim 65,479*l.*, plus 10 per cent. profit, 7,203*l.*, making 72,682*l.*, of which 47,800*l.* had been received under the architects' certificates, leaving a balance of 24,262*l.* In the alternative claim the net cost of the work executed was estimated at 65,479*l.* as before, but the 10 per cent. profit was reckoned on the contract price of 50,861*l.*, which with other amounts claimed brought the alternative claim to 24,262*l.* The plaintiffs alleged that Brooks was hindered from continuing and completing the contract by the action of Mr. George Poole, the clerk of the works, who interfered without sufficient cause and condemned materials supplied wholesale. It was also further alleged that the architects were seldom on the works, and that the interference of the clerk of the works caused needless a net loss to Brooks of 2,526*l.*, in addition to 193*l.*, the value of the materials left by Messrs. Kirk & Randall, and not permitted to be used. The defendants generally denied the charges against the clerk of the works, and alleged that Brooks had not carried out his undertaking to complete the work left unfinished by Kirk & Randall. The Guardians further relied on the Public Authorities Protection Act, 1893, as being a defence, inasmuch as the matters referred to in the action occurred more than six months before the action was brought. Messrs. Harston, the other defendants, pleaded that they were not liable, and said that they had received no complaints from Poole with respect to the manner in which the works were being carried out by Mr. Brooks. Upon the conclusion of the evidence called on behalf of the Guardians, however, the learned Referee decided that, as the plaintiffs had failed to make out that Messrs. Harston had been guilty of fraud, dishonesty, or collusion, those gentlemen were entitled by law to judgment; but he reserved the question of costs. Reports of the case have appeared in the *Builder* of November 21 and 28 and December 5, 1896, and January 23 and 30 and March 6 and 13 last.

Mr. Reginald Bray and Mr. A. A. Hudson ap-

peared as counsel for the plaintiffs; Mr. English Harrison and Mr. W. W. Moyses for the Guardians; and Mr. McIntyre and Mr. R. W. Turner for the architects.

The learned Referee, in giving judgment, said that the case was a remarkable one in some respects, first of all in the details which had to be considered, and secondly in regard to the circumstances of the contract itself and all the incidents which arose during the performance of the job in question. In the course of the case the question arose as to what was the position of the architect, and he (the learned Referee) gave his opinion that he could not do otherwise than absolve him from the consequences of the action on the ground that there was no evidence that he had been guilty of fraud, dishonesty, or collusion, and therefore that the action was not maintainable against him. That was still his opinion, and Mr. Harston was entitled to the full benefit of it, but he was bound to say that he felt most strongly that the decisions given by Mr. Harston as arbitrator under the contract were not capable of justification. He accepted, however, Mr. Harston's word on oath that in doing what he did, he acted to the best of his ability as arbitrator under the contract. Mr. Harston had stated that in his opinion it would not have been fair if any other arbitrator had been appointed under the clause contained in the contract. He (the learned Referee) did not understand that. Unfair to whom? Certainly not to the builder. Then was it unfair to the Guardians? Not at all, unless they had a right to expect from Mr. Harston a more favourable decision than they would expect from somebody else who was in an independent position. Then was it unfair to Mr. Harston? Certainly not, unless he was afraid of the judgment of an independent arbitrator on his specification. He left the question of Mr. Harston there and would proceed to direct himself to answer the questions suggested by Mr. Bray, on behalf of the builder and his trustees, and whether or not they were entitled to recover from the Guardians anything beyond the contract price which was stated in the contracts, adding, of course, the payments which might be allowed for extras on the orders given by the architect. It was clear, he thought, that the Guardians were not liable to pay the plaintiffs in respect of damages due to any acts of the arbitrator, unless they interfered in the matter and induced him to give decisions in their favour. If they did that, that would be in a way collusion between the Guardians and the architect, of which, as he had said, there was not any evidence in that case. It was perfectly clear to his mind that the Guardians, through their Building Committee, acted properly in the matter; abstained from interfering with the architect, accepted his decisions, and relied on him. He did not think it was true that Brooks or Pearson never complained to them. That they did not recall it, he would accept, but he thought on the balance of evidence the fact was that they did complain on certain occasions.

The learned Referee referred to the decision of the late Mr. Justice Mellor in the case of *Roberts v. Bury Improvement Commissioners*, given in 1870, and upheld by the Court of Appeal, reported in Hudson's Law of Building Contracts, in which it was held that, where undue interference by the architect in his capacity of arbitrator delayed the performance of the contract by the builder, the builder had no remedy against the employer or the architect except in the case of collusion between them (which was not shown in the present case), but where the duties of the architect were those of agent, his defaults were those of his employer. The learned Referee said that he felt bound by that decision on that part of the case. But Mr. Bray, however, had said that, apart from the conduct of the architect, apart from the fact that the Guardians never interfered, there still might be a liability on the Guardians, if independent of that, either by their default the contractor was not put in a position to perform, or was prevented from performing, the contract, or without that default circumstances had arisen which made it impossible for him to carry out the contract. It might be that things might happen which in the result would occasion a totally different state of things than those intended. Was that so in the present case, and if so was it caused by the default of the Guardians? He had to be a little careful about that because Mr. Harrison had very strenuously contended throughout the case that his clients were without any blame in the matter. It was, therefore, his duty to go very carefully into the matter before arriving at a decision. Having done so, he had come to the conclusion that the most important thing to be noticed was the delay in giving the contractor possession of the site. After carefully considering all the conditions of the contract together, he was of opinion that the contractor had a right to immediate possession of the site. He would not say that the contractor would have had a right to complain to the Guardians in respect of trifling matters as if some of the inmates of the workhouse had still remained, but he thought it was the duty of the Guardians to give immediate possession under the contract. The contractor, however, got possession of the site piecemeal. He got possession of C block at the beginning of July, of B block on two different occasions early and late in August, of H block in August and September, of K block on February

21, 1893, and of A Block either in March of that year or in June—in March according to the defendants' case; in June according to the builder's case. Was it the builder's fault that he did not get possession? On the defendants' behalf it was argued that it was his fault, and that he had nothing to do but to say he would have it, and he would have had it. After referring to the evidence of Mr. Millward and Captain Miller on this part of the case, the learned Referee said that he did not think there was any cause of complaint as to Fearon not commencing the work. Poole's diary said nothing about the default of the contractor in taking possession. Then came the period when the builder was broken and the creditors took up the job. That was on April 10. At that time one would expect the subject to be discussed, as the fifteen months, within which time the work was to have been completed, was far advanced. If, for instance, Mr. Harston really thought that it was the fault of the builder in not taking possession, it was easy for him to say so to the Guardians or the trustees, but he did not do anything of the kind, but wrote a letter to the trustees in which he said, "I am very pleased to hear you have tied over the difficulty." In the present case he (the learned Referee) could not understand how it could be for the benefit of Brooks, Fearon, or the trustees to make delays. If anyone found a man scamping the work and putting in bad stuff, they would think naturally that a man who did one thing badly would do another thing badly, and that they had got a man who did not know his trade. It was therefore important to see what really had taken place. He (the learned Referee) was aware that there were two or three bad bits of wood in the roof of the workhouse, because he had seen them. He was aware that some of the flooring boards downstairs had warped, and would not fit. He thought he saw about six. He also might mention the fact that one piece of brickwork in the wall at the back of Block H—the last bit finished—was somewhat inferior work. He remembered also that in one of the dwelling-rooms there was a sappy board or two, but otherwise the job was a very good job, even that in the rejected columns, of which they had heard so much. He could not help thinking it was a good building for the purpose, and he hoped it would be found so.

The learned Referee said that Poole did not fail in taking objections to materials, but when all was said and done he did not believe he got better bricks on the job by so doing. He thought that where so many objections were taken, and so much material was rejected, that an architect ran the risk that the builder would somehow or other escape observation, and put in some work which would not pass, in order to make himself right in the contract. He, however, did not find that in the present case, although he should have expected that with a too strict architect the work somewhere would become scamped. Was it not a fair deduction to make upon the evidence on that part of the case that it was not Fearon or Brooks who was in default for not commencing the work at the proper time, but the fault of the Guardians, or of those who represented them? The other breaches of contract alleged had all some existence in fact, but none of them appeared to him to be of the same importance as the breach of the condition giving the contractor the possession of the site. The matter of the temporary entrance, the interference by workmen under other contractors made it difficult to complete the job. Again, the allegations as to Poole constantly making objections to the work, and constantly and arbitrarily interfering, made it almost impossible for the contractor to carry out the job. He would not go through the whole history of Poole. He had no doubt that Poole condemned the first consignment of goods which came on the works in order to get a better article by so doing. As to the facing bricks he believed that Poole objected to every brick which came on the job in order to get a better one out of Fearon, and that was his guiding principle throughout. The learned Referee, in passing on to the alleged wholesale marking of bricks by Poole on C block said, that nobody could believe that Poole did not lose his temper on that occasion. Poole, he considered, was one of the very worst witnesses he had ever come across. He was not, however, prepared to hold that for everything Poole did the Guardians were responsible. He did not base the opinion he had formed on the case upon what Poole did, but he based it on the fact that by the deliberate failure to give possession of the site the Guardians had rendered it impossible for the contractor to perform the contract. On a large job like the present, where there were several buildings of magnitude to be erected, it was of the greatest consequence to the contractor that he should carry them on all together and do the work in a particular order, and when he lost that advantage during the first two or three months of the contract he could never regain it. The contractor could not raise his labour or men by going from one place to another as he should have been able to do, the result being that his labour bill was increased. In those circumstances the materials were ordered before they could be used and had to be stored, and by the storage were damaged and rendered subject to rejection. In fact, the work which could have been done cheaply, if done at the right time, would necessarily cost more if done at the wrong time. He

thought in the present case that the breach of duty on the part of the Guardians did absolve the contractor to a certain extent from the provisions of the contract, and in any case he was entitled to say that he was not responsible in respect of that breach of contract. If that state of things was right, the contractor would be entitled, it seemed to him (the learned Referee) to almost the same measure of damages he would get if he said that the contract was at an end, and he would sue for the value of the work done. He did not say it was precisely the same, but he could not make out what the difference was. In the present case there was no evidence on which he could rely to show what the work actually cost. He thought, however, that he might take it that it was very much in excess of the contract price. He did not think that it was less than 45 per cent. above the money expected to be spent on such a contract. That was an enormous sum on such a job. He thought that Mr. Brooks, Mr. Fearon, and the trustees had done their best to get right materials. Some of the materials rejected ought not to have been rejected, and the contractor ought not, therefore, to be visited with any blame on that score. That being so, he thought the decision in the case ought to be in favour of the plaintiffs. But there was one further point to be considered. Mr. Harrison took the point that the plaintiffs acquiesced in the existence of the contract long after the breaches had arisen, submitted to be paid by the certificates of the architects, and as the contractor and the trustees had so elected to be bound by the contract, they could not then come and say that they were not so bound. He did not think that that argument applied. He did not see in what respect the Guardians had altered their position under the contract in the consequence of the architect or engineer, or one. What would they have done if the contractor had acted otherwise? He did not know, and it was not necessary for him to determine that, because it appeared in the report of the case of *Bush v. the Trustees of the Port and Town of Whitehaven*, decided in 1888, and upheld on appeal, that the contractor in that case did the same thing, viz., he accepted the decision of the architect or engineer, and got the money under the contract, and the court held he was entitled to say "I have got all the contract gives me, but I am entitled to something more." He (the learned Referee) thought, therefore, he ought to follow the ruling of Mr. Justice Cave in that case, and for those reasons he was of opinion that there ought to be a judgment for the plaintiffs against the Guardians, and that there ought to be a judgment for the architects with costs. He had thought at one time that although Messrs. Harston had got judgment they ought not to have their costs, but he now thought that would be taking a stronger step than he had a right to take. He had expressly stated what he thought of what Mr. Harston had done; but he thought he should not be right in using the discretion which he had in saying they ought to pay the costs of having been brought there. He thought they must have judgment with costs, but that the Guardians must pay the costs of Mr. Brooks and the trustees. The amount as to which judgment against the Guardians should be entered must remain undecided, because he had not had the opportunity, and he had not endeavoured to arrive at the precise sum. He thought it might require a rather exhaustive inquiry to find out what the damages were, and he hoped that whatever course the parties might take in arriving at a decision on this point, they would not find it necessary to go into another inquiry, but would be able to adopt a course which would not involve the necessity of more money being spent in costs. He decided that the contractor must recover something, and he hoped it would not be necessary to have an inquiry into that matter. If there were an appeal in the matter, the question would not arise unless his decision stood, and in that case he trusted it would not be necessary to have a further inquiry and a further expenditure of money. The learned Referee concluded his remarks by thanking counsel for the great assistance they had given him throughout the case.

Mr. Harrison said that he did not know whether the learned Referee had set aside the contract, or whether he was going to issue an inquiry as to the breaches. If the contract were to be set aside, of course his clients would like a little time to consider what they would do. It could not be a sort of double-edged inquiry where the question of damages was concerned. If the contract were to be set aside the plaintiffs would be entitled to their *quantum meruit*.

The learned Referee said he thought the contract had been set aside; but if not, he could not make out what the difference in the damages was.

Mr. Harrison said that if that was so, and the learned Referee's decision was that the contract was set aside, he should ask him to formulate his judgment, and give his clients a few days to consider it, because, with regard to the *quantum meruit*, he thought the Guardians would like to take that further.

The learned Referee: By all means. I will give you a stay of execution.

Mr. Harrison asked the learned Referee to give his clients his decision in a formal shape.

The learned Referee: I will sign it and send it to the office. Of course I will do that. The shorthand writer will have taken down what I said.

Mr. Harrison: I am not going to ask you to write it out, but would something which I can appeal from at once. We can get the decision very soon.

Continuing, Mr. Harrison said that the contract being set aside was a very serious thing for the Guardians.

Mr. Bray: What I understand your judgment to be is that the contract is set aside, and we are entitled to *quantum meruit* for the work done, and the damages to be ascertained hereafter, and that judgment should be entered for Messrs. Harstons, the architects, as against the plaintiffs with costs. A stay of execution was granted for fourteen days to enable the Guardians to consider whether they would appeal from the decision.

The learned Referee said that he should put in the formal judgment that he thought that the plaintiffs were entitled to substantial damages.

After some further discussion the learned Referee directed that judgment should be entered for the plaintiffs as against the Guardians with costs, the damages to be ascertained hereafter, and that judgment should be entered for Messrs. Harstons, the architects, as against the plaintiffs with costs. A stay of execution was granted for fourteen days to enable the Guardians to consider whether they would appeal from the decision.

POINT UNDER THE METROPOLIS MANAGEMENT ACTS:

CASE IN THE COURT OF APPEAL.

The case of *Apley v. the Lambeth Vestry* came before the Court of Appeal, composed of the Master of the Rolls and Lords Justices Lopes and Chitty, on the 15th inst., it being an appeal by the defendants from the judgment of Mr. Justice Hawkins, in the Queen's Bench Division, in an action brought for a *mandamus* calling upon the defendants to repair and cleanse certain sewage or drainage pipes, which conveyed the drainage of four houses, the question for determination being whether the pipes in question were sewers, in which case the defendants would be bound to repair and cleanse them, or whether they were drains, in which case the owners of the houses would be bound to keep them in repair. By Section 250 of the Metropolis Management Act, 1855, the word "sewer" means and includes sewers and drains of every description except drains to which the word "drain" interpreted as it is in the section applies. The word "drain" means and includes any drain of and used for the drainage of one building only, or premises within the said curtilage, and made merely for the purpose of communicating with a cesspool or other like receptacle for drainage, or with a sewer into which the drainage of two or more buildings or premises occupied by different persons is conveyed; and shall also include any drain for draining any group or block of houses by a combined operation under the order of any vestry or district board." Section 112 of the Metropolis Management Act, 1862, extends the definition of "drain," so as to include "any drain for draining a group or block of houses by a combined operation laid or constructed before January 1, 1856, pursuant to the order or direction or with the sanction or approval of the Metropolitan Commissioners of Sewers." In the present case the houses were built in the year 1838, and the pipes were laid at the same time, and the drainage as then constructed remained till the present time. The drainage authorities at that date were the Commissioners of Sewers of Surrey and Kent. The Metropolitan Commissioners of Sewers were created in 1848 by the Statute 11 and 12 Vic. cap. 112. Mr. Justice Hawkins held that the pipes were not drains within section 112 of the Act of 1862, and were therefore sewers, and he decided that the plaintiff was entitled to the *mandamus* he asked for.

The Court, after hearing arguments by Counsel for the appellants, and without calling upon Counsel for the respondent, upheld the judgment of Mr. Justice Hawkins and dismissed the appeal with costs.

Mr. Macmorran, Q.C., and Mr. Muir Mackenzie appeared for the appellants; and Mr. McCall, Q.C., and Mr. Morton Smith for the respondent.

MEETINGS.

FRIDAY, MARCH 19.

The Architectural Association.—Mr. J. A. Gotch on "Eighteenth Century Work." 7.30 p.m.

SATURDAY, MARCH 20.

The Architectural Association.—Spring Visit to the Building Trades Exhibition, Agriculture Hall, 3 p.m.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at Friern Barnet Sewage Works, 3 p.m.

British Institute of Certified Carpenters (Carpenters Hall).—Visit to the Building Trades Exhibition, Agriculture Hall, 6 p.m.

MONDAY, MARCH 22.

Society of Arts (Lectures).—Professor W. Chandler Roberts-Austen, on "Alloys." II. 4.30 p.m.

Surveyors Institution.—Mr. C. H. Hooper on "Fruit Growing as an Auxiliary to Agriculture." 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Professor W. H. Corfield on "Water-supply, Drinking Water, Pollution of Water." 8 p.m.

TUESDAY, MARCH 23.

Institution of Civil Engineers.—Paper to be discussed, The Modern Gas-Producer's Plant and its Application, by Mr. H. B. Benson, paper on "Some Remarks on the Carbide Architectural, Engineering, and Surveying Society.—Mr. F. H. Newman on "The Development of the Modern Gas Engine."

WEDNESDAY, MARCH 24.

Society of Arts.—Mr. W. B. Eison on "The Transmission of Power by Alternating Electric Currents." 8 p.m. Carpenters' Hall, London Wall.—Mr. J. Wright, lecture on "Practical Plumbers' Work." 8 p.m. Institution of Civil Engineers (Special Meeting).—Mr. G. Sims Woodhead will repeat the Film "James Watson's" Lecture on Bacteriology." 4 p.m. Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection of Disinfecting and Filtering Appliances at J. Deffries & Sons, Limited, Houndsditch. p.m.

THURSDAY, MARCH 25.

Society of Antiquaries.—Mr. C. E. Keyser, M.A., S.A., on "The Figures of Saints found on Devonshire Tiles." 8.30 p.m. Society for the Encouragement of the Fine Arts.—In Conversation, at the Galleries of the Royal Institute of Painters in Water Colours, Piccadilly. 8.30 p.m. Institution of Electrical Engineers.—Continuation of discussion on Mr. H. Benson's paper on "Some Remarks on the South American Company's Cable of Cape Verde, 1893 and 1895." 8 p.m. Sanitary Institute (Lectures and Demonstrations for Sanitary Officers).—(1) Inspection of the Metropolitan Asylum for the Insane, York-road, N. 3 p.m. (2) Demonstration of Disinfectant Meats, at the Parkes' Museum, by Dr. V. A. Bond. 8 p.m.

FRIDAY, MARCH 26.

Institution of Civil Engineers (Students' Meeting).—Mr. W. J. Griffiths on "The Re-signalling of the Liverpool-street Terminus of the Great Eastern Railway." 8 p.m.

SATURDAY, MARCH 27.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at Harrison & Barber's Knacker Yard, Whitechapel. 3 p.m. Edinburgh Architectural Association.—Visit to Middle Church, Church, to East Calder Church, and to Calder House.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

5,679.—CHISELS: F. W. Newman. This invention relates to chisels for cutting the corners in window sash frames, and is intended to prevent the chisel from striking and bending. Inventor makes an iron holder of convenient size (usually about 8 in. x 1 in.), with a tang at one end to receive handle, and at the other a slot of convenient depth through entire width of holder. Into this a thin cutting blade is fitted, which may be further secured by screws, bolts, or rivets. 27,954.—EXTENSION SLIDING CISTERN: J. P. O'Donnell. Inventor claims, in a syphon flushing cistern, the rounding the dome, cylinder, or bell surrounding the end-pipe and a syphon leg or pipe in one existing of the standpipe. Plus projecting from the cylinder and a slither pin, also projecting from the handle casting, form the means, by the usual hook or lever, of raising the cylinder. The two suction pipes give a double means of discharge, which is thereby accelerated, while the cistern is much more silent, and of more certain sympathetic action is secured. 27,955.—VENTILATED WINDOW LIGHTS: J. G. Penry. This invention relates to window glass for upper sashes inventor forms one of perforations between the rows of internal projecting ribs and external projecting bosses. From the natural tendency of the air to rise to the top of these vertical ribs, the inner motion of the apertures, the oblique surfaces of the prism above the perforations will deflect the ascending air in an upward direction. 27,955.—VAULT LIGHTS: J. G. Penry. Inventor claims the combination of a vault light having reflecting surfaces calculated to reflect the light and direct it against the front of the basement beneath, with a refracting light for window in the front of the basement to take the light and refract it in a line somewhere parallel with the length of the basement. 29,459.—GUILLEY, GREASE, AND LIQUID TRAYS: W. Durant. The shell of the tray is constructed as usual with a lip and a strainer. Above the strainer is placed a grid, which is carried by a dished annulus provided with an inlet for the channel pipe. The annulus may be moved so as to allow drainage to enter from any side. An inspection door is provided. This tray may be employed in any situation, the annulus, or adjustable top, obviating the necessity of having an inlet for the channel pipe, specifically constructed for the position in which the tray is set, while the inspection door permits ready access to the interior. 302.—WINDOW SHUTTERS: A. R. Hayward. This invention relates to a shutter consisting of a back plate, a sliding rod, slot, loose tongue, and rivetted pin, so arranged and combined that the window shutter shuts over the turned rod and the tongue drops down in such wise that the shutter can only be opened again from the inside. NEW APPLICATIONS FOR LETTERS PATENT. MARCH 1.—5,386. H. Jardine, Stone Cutting Tools.—Mr. J. Jolly, 14, Collyer Quay, Singapore. 5,411. W. H. Clayton, Ventilator.—G. B. Bevan, Foundation for the Heating of Domestic Fireplaces, &c.—5,439. W. Wilkinson, Paving Blocks, Tiles, &c. MARCH 2.—5,472. W. Webb, Window Sash Cord Clips.—5,432. E. Collins, Securing Door Knobs on their Spindles.—5,435. C. Jones, Glazing Roofs, Skylights, &c.—5,515. F. Ryan and others, Apparatus for Fixing and Building up Windows.—5,529. D. Wallace, Water-closets, Flushing Tanks.—5,543. Williamson, Sash Fastener.—5,547. M. Abbott, Fastener for Windows.—5,575. R. Balaban, Bricks. MARCH 3.—5,593. A. Buckton, Tilette (substitute for earthenware tiles).—5,611. J. Hutchinson, Earthenware Tiles.—5,658. J. Owen, Appliances for House Painters' Pipes.—5,675. A. Wakelind, Sanitary and other Pipes. MARCH 4.—5,714. H. Johnston, Fitting-up Electric Bells.—5,738. A. Clifford, Flushing Tank or Waste Water Preventer.—5,804. W. Boatwright, Chimney Cowl.—5,816. T. Lacey, Fire Heaters. MARCH 5.—5,839. T. Kemp, Drain Pipe Inspection Cover and Frame.—5,858. C. Miller, Combined Door Lifter and Holder.—5,883. W. Osment, Sliding Window Sashes.—5,929. T. J. Sawyer, Saws. MARCH 6.—5,947. E. Evans, Additions to Sink and Kindred Sanitary Pipes.—5,977. A. Gibbins, Door Lock and Indicator. PROVISIONAL SPECIFICATIONS ACCEPTED. 359. J. Pawsey and G. Glasscock, Water Waste-preventing or Flushing Apparatus.—3,372. G. Knowles, Valve Ventilating Manhole Cover for House Drains and Sewers.—5,230. S. Maffey, Flushing Cisterns.—3,453. T. Kihner, Soil, Rain, and other like Pipes.—3,531. Waste or Slop Water-closets, J. Wright, London.—3,684. M. Spear, Supporting and Guiding Sliding Doors.—3,889. F. Saniter, Imitation Tiles on Metal.—3,977. W. Bryson, Sash-fastener.—4,074. P. Robb, Machinery for Sawing or Cutting Wood and other Material.—4,290. J. Jeffreys, Ventilating Fans. COMPLETE SPECIFICATIONS ACCEPTED. Open to opposition for two months. 4,665. P. Funck and L. Schmidt, Preventing Damage Through the Bursting of Water Pipes.—5,270. W. Wilson, Glass, Pans and analogous vessels.—2,419. F. Ziegler, Grindstones.—23,465. W. Eckstein and J. Willmore, Cellar Flaps.—724. G. Crapper and M. Wharum, Automatic Syphon Flushing Tanks.—2,304. W. McDougall, Window Sash Fastener. SOME RECENT SALES OF PROPERTY: ESTATE EXCHANGE REPORT. February 25.—By BAKER & SONS. Hampstead.—21, Priory-rd., u.t. 52 1/2 yrs, g.r. 111. 1s., r. 70s. £710 Harrow, Middlesex.—College-rd., "Oak Lodge, g.r. 74 1/2 yrs, u.t. 33 1/2 yrs, g.r. 41. 1s., r. 261. 400 College-rd., "Lyndhurst," f, r. 301. 800 Station-rd., a freehold house and shop, r. 201. u. 960 Hove, Sussex.—1 to 5, Walsingham-ter., l, e.r. 550. 5,700 By BEARD & SON. Paddington.—43, Ranelagh-rd., u.t. 62 yrs, g.r. 61. 1s. 6d., r. 47s. 430 Bayswater.—123 and 125, Lechliffe-rd., u.t. 62 yrs, g.r. 121. 18s., r. 100s. 600 By J. HIBBERD & SONS. Stoke Newington.—77, Lordship-pk., u.t. 65 yrs, g.r. 124. 1r. 501. 490 Stepney.—11, Antcliff-st., u.t. 31 1/2 yrs, g.r. 31. 10s., r. 261. 225 13, Newbold-st., u.t. 34 yrs, g.r. 41. 1s., r. 261. 220 6, Bromfield-st., u.t. 33 1/2 yrs, g.r. 41. 1s., r. 261. 230 By SEGRAVE, BROWETT, & TAYLOR. Penge.—St. John's-rd., "St. Helen's," u.t. 41 yrs, g.r. 104. 1r. 65s. 450 February 27.—By Messrs. SAUL (at Skenees). Skenees, Lincs.—"Hildred's Hotel," and 1 r. 28p. f, r. Burghe-Marsh, Lincs.: "The White Hart" and "The White Swan" Hotels, with brewery and malt kiln, area 1 s. 2 r. 16 p. f. u. By E. BAILLY & SON (at Retford). Ashham, Notts.—Gamston Wood Farm, 116 a. 3 r. 2 p. f, and G. 1,920 A message, with carpenter's shop and 2 r. 31 p. f. 151 March 1.—By H. V. CHEW. Leytonstone.—Walwood-rd., "Ballinard," e.r. 501. 685 By E. VARLEY. Finchley.—31, Station-rd., u.t. 80 yrs, g.r. 61. 6s., r. 351. 350 Ilford.—Hord-rd., two freehold building plots, 310 Finbury Park.—36, Perth-rd., u.t. 70 yrs, g.r. 61. 10s., r. 341. 285 Stoke Newington.—51, Springdale-rd., u.t. 74 1/2 yrs, g.r. 51. 5s., r. 361. 350 By Messrs. CRONK. Erith, Kent.—19 to 27, Cross-st., u.t. 46 yrs, g.r. 74. 10s. 960 By J. MARRIEN (at Blackpool). Blackpool, Lancs.—Hoo Hill, a freehold building estate, comprising 16 a. 1 r. 30 p. 8,219 March 2.—By DUNCAN & KIMPTON. Victoria Pk.—Chapman-rd., e.g.r. 104, reversable in 80 yrs. 230 By T. B. WESTACOTT. Poplar.—19 to 14, Grundy-st., and 136, Grundy-st., u.t. 43 yrs, g.r. 124. 1r. 162. 16s. 1,185 By WOODS & SNELLING. Bow.—37, Antcliff-rd., u.t. 74 1/2 yrs, g.r. 41. 1s. 6d., r. 281. 345 By C. W. DAVIES. Lalington.—42, Gibson-sq., u.t. 30 1/2 yrs, g.r. 21. 1r. 461. 445 Barnsbury.—53 and 52, Conington-st., u.t. 47 yrs, g.r. 241. 1r. 801. 520 Worthing, Sussex.—Winchester-rd., "Cullbins," f, r. 421. 700 Stoke Newington.—5, Cowper-st., u.t. 34 1/2 yrs, g.r. 41. 1s., r. 281. 250 Wordsworth-rd., "Palatine Works," f, r. 281. 250 45, 47, 49, and 41, Shakespeare-rd., u.t. 62 1/2 yrs, g.r. 134. 1r. 212. 2s. 965 20, 22, 24, Spencer-rd., u.t. 57 1/2 yrs, g.r. 124. 640 1, 101. 14. 610 49, Spencer-rd., u.t. 50 1/2 yrs, g.r. 91. 1r. 461. 16s. 200 March 3.—By BATTAM & CO. Hackney.—59 to 57 (odd), Cowper-st., f, r. 2101. 2,300 By CHESTERTON & SONS. Tottenham.—20, Belmont-rd., u.t. 80 1/2 yrs, g.r. 111. 1s., r. 301. 553 27, Langham-rd., u.t. 80 1/2 yrs, g.r. 61. 10s., r. 301. 200 By F. JOLLY & CO. Bethnal Green.—239 to 241, Cambridge-rd., u.t. r. 651. 2,155 Mile End.—44, Clifton-rd., r. 311. 4s. 290 Old Ford.—14 and 16, Medway-rd., u.t. 52 1/2 yrs, g.r. 81. 500 Whitechapel.—41 and 43, Plummer's-row, f, r. 937. 16s. £1,000 By ALFRED RICHARDS (at Tottenham). Tottenham.—169 and 171, Northumberland-pk., f, 705 420, High-rd. c. r. 301. 670 By A. ROBERTSON (at Camberwell). Dulwich.—318, Crystal Palace-rd., u.t. 70 yrs, g.r. 74. 1r. 281. 215 March 4.—By BRODIE, THOMAS, & CO. City of London.—15, Hammett-st., and 22, Well-st., u.t. 33 yrs, g.r. 1151. 1r. 4201. 1,950 By GREEN & SON (of Hammersmith). Barnes.—69 to 74, Railway-side, f, r. 931. 12s. 660 By NORTON, FRANK & CO. Fulham.—300, Fulham-rd., u.t. 66 yrs, g.r. 151. 1r. 1201. 1,430 By STIMSON & SONS. Blackfriars.—4, Charlotte-st., f, r. 501. 800 Lambeth.—109, Oakley-st., f, e.r. 401. 475 61. 6s. 340 Peckham.—75, 77, 79, and 81, Sumner-rd., u.t. 65 yrs, g.r. 121. 4s. 1,060 22, 24, 26, and 24, Beadnell-rd., f, r. 491. 8s. 425 Stockwell.—25, Andalus-rd., u.t. 78 yrs, g.r. 61. 6s., r. 301. 275 Poplar.—148, High-st., f, r. 261. 325 By NEWTON, EDWARDS, & CO. City-rd.—15, 17, 19, and 21, Graham-st., f, r. 1801. 28s. 2,000 35, 45, 47, 49, and 51, Graham-st., f, r. 1751. 10s. 1,500 24, 26, 28, 30, 32, and 34, City Garden-row, f, r. 931. 12s. 1,065 Stratford.—53, 55, and 57, Wingfield-rd., u.t. 8 1/2 yrs, g.r. 151. 405 Easton-rd.—Crescent near South, 1 s. 1 g. r. 241, u.t. 94 yrs, g.r. 51. 135 Holloway.—520, Caledonian-rd., u.t. 45 yrs, g.r. 101. 10s., r. 631. 455 101, Tufnell-pk., u.t. 67 yrs, g.r. 41. 4r. 400 21, 23, 27, and 29, Hargrave-rd., u.t. 64 1/2 yrs, g.r. 211. 10s. 1,215 Islington.—233, Essex-rd., u.t. 49 yrs, g.r. 61. 138. 9d., e.r. 481. 450 Canonbury.—23, Compton-rd., u.t. 48 yrs, g.r. nil, r. 601. 805 By J. H. BETHELL (at East Ham). Manor Park.—Romford-rd., forty-one building plots, f. 4,105 Colchester.—61, sixty-eight building plots, f. 3,784 By FOOTELL & SONS (at Maidstone). Maidstone, Kent.—92, 148, and 150, Union-st., f, r. 361. 8s. 420 By W. NORSTON (at Ludlow). Ashford Carriole, Salop.—"The Flower's Farm," 33 a. 0 r. 3 p. f. 1,140 By WORSFOLD & HAYWARD (at Dover). Dover, Kent.—120, Smeagate-st., f. 390 6, Beach-st., f. 355 25, St. Radigand's-rd., f, r. 351. 355 23 and 23, Clarendon-rd., f, r. 371. 685 Bow.—128, Grover-st., u.t. 47 yrs, g.r. 41. 1r. 341. 55 By Messrs. ALDRIDGE. Catford.—76 and 78, Brownhill-rd., u.t. 81 yrs, g.r. 124. 1r. 401. 855 12, Telford-av., u.t. 83 yrs, g.r. 71. 1r. 601. 370 March 6.—By STEPHENSON & ALEXANDER (at Cardiff). Saint Mellons, Glamorgan.—"Vandire Hall," u.t. 8 a. 0 r. 2 p. f. 5,500 Three enclosures of land, 9 a. 3 r. 1 p. f. 1,600 By CRAESK & SONS (at Colchester). Colchester, Essex.—Old Heath, an enclosure of building land, 2 a. 2 r. 1 p. f. 210 March 8.—By EASTMAN BROS. Sydenham.—52, West Hill, u.t. 54 1/2 yrs, g.r. 151. 630 Anerley.—119, Genoa-rd., f, r. 351. 415 By NIGHTINGALE, PHILLIPS, & PAGE. East Molesey.—Bridgerd., "The Carnarvon Castle" p-h, f, r. 751. 3,650 Pimlico.—52, Alderney-st., u.t. 35 yrs, g.r. 81. 8s., r. 601. 475 By MULLETT, BOOKER, & CO. City of London.—21, St. Mary-axe, u.t. 76 yrs, g.r. 201. 8s., r. 201. 8s. 3,300 Bloomsbury.—38, Tavistock-sq., u.t. 80 yrs, g.r. 381. 810 Notting Hill.—2, 4, and 6, Basing-rd., and 194, Lancaster-ways, u.t. 67 1/2 yrs, g.r. 241. 1r. 144. 850 25 and 27, Basing-rd., u.t. 67 1/2 yrs, g.r. 321. 1,070 5, 6, and 7, Clarendon-pl., u.t. 55 yrs, g.r. 301. 1r. 1201. 720 102, Portland-rd., u.t. 55 yrs, g.r. 121. 1r. 551. 450 By FRANK LLOYD, NUTTALL, & CO. (at Crewe). Barthomley, Cheshire.—"Oakhangar Hall Farm," 100 a. 0 r. 25 p. f. 9,100 Sandbach, Cheshire.—"Finger Post Farm," 1 r. 8 p. f. 2,210 March 9.—By E. SIMPSON. Hackney.—21, 23, 25, 27, 41, and 43, Chalgrove-rd., u.t. 77 yrs, g.r. 211. 745 New Cross.—14 and 28, Barboro-st., u.t. 76 1/2 yrs, g.r. 91. 10s. 510 By POWERS, ELLIS, & CO. Bayswater.—28, Westbourne Park-villas, u.t. 44 1/2 yrs, g.r. 71. 13s., r. 701. 1,000 By CHANCELLOR & SONS. Twickenham.—Whitton-rd., an enclosure of land, 2 a. 0 r. 11 p. f. 1,500 London-rd., an enclosure of land, 1 a. 1 r. 13 p. f. 1,500 By SALTER, REY, & CO. Wandsworth.—174, 173, 175, and 177, Earlsfield-rd., u.t. 90 yrs, g.r. 281. 1r. 1451. 6s. 980 4 and 6, Basingham-rd., u.t. 90 yrs, g.r. 121. 435 By F. JOLLY & CO. 25 and 27, Hammett-rd., u.t. 90 yrs, g.r. 121. 5s., r. 631. 19s. 370 Kenilworth Town.—37, 39, 40, and 41, Inkerman-rd., u.t. 74 yrs, g.r. 301. 1r. 121. 705 Highgate.—14, West View-villas, u.t. 80 yrs, g.r. 81. 8s., e.r. 601. 955

CONTRACTS AND PUBLIC APPOINTMENT.

CONTRACTS.

Table with columns: Nature of Work or Materials, By whom Required, Forms of Tender, &c. Supplied by, and Tenders to be delivered. Includes entries for Annual Contracts, Sewers, Fire Engine, Dwelling House, Science School, etc.

CONTRACTS—Continued.

Continuation of the Contracts table, listing various construction and maintenance projects such as Sewing, Metallurgy, Victoria Park, Main Drainage Works, etc.

PUBLIC APPOINTMENT.

Table with columns: Nature of Appointment, By whom Advertised, Salary, and Application to be in. Includes an entry for General Assistant at Salford Corp.

Those marked with an asterisk (*) are advertised in this Number. Contracts, pp. iv. vi. viii. & ix. Public Appointments, pp. xviii. & xxii.

Table listing property advertisements with columns for location (e.g., 9, Retar-st., Camden Town), area/price, and agent details.

Table listing property advertisements with columns for location (e.g., Maida Vale, Bernerswood), area/price, and agent details.

Table listing property advertisements with columns for location (e.g., 11, 12, 23, and 25, Fairmead-rd.), area/price, and agent details.

Table titled 'PRICES CURRENT OF MATERIALS.' listing prices for various materials like Greenheart, Teak, Sequoia, Iron-Pig, etc.

NUNNINGTON (York).—For the widening, &c., of a stone bridge. Mr. W. Stead, C.E., County Surveyor, Northallerton:—
W. Blackburn, Broughton, Malton* £728 5 3
* Recommended for acceptance.

PARKSTONE (Dorset).—For alterations to premises, Station-road, Parkstone, for Mr. J. A. Haynes. Mr. Walter Andrew, architect, Parkstone:—
Jenkins & Sons £343 J. H. Wilson* £400
Burt & Vick £315 * Accepted.

PENRYN (Cornwall).—Accepted for the supply of 3,000 tons stone, for the Fast Kerrier Rural District Council. Mr. J. H. Chubb, District Surveyor, Penryn:—
Captain J. Trebilcock, Devoran, Cornwall Per ton. £48.6d.

PETERBOROUGH.—For the construction of a new street, for Messrs. Keeble Bros. Mr. F. H. Cooke, surveyor, Plesgate, Peterborough. Quantities by surveyor:—
J. Guttridge £265 0 Hackley & Son, Grant. J. W. Rowe £40 12 ham (accepted) £400 0
D. Gray £47 5

RUSHDEN (Northamptonshire).—For alterations and additions to "The Rectory," Rushden, for Mr. Fred. Knight, Mr. Arthur Gama, architect, 66, Oakhurst-grove, East Dulwich, London, S.E. E. C. Bayes £179 (No competition.)

SHILLINGFORD HILL.—Accepted for erecting a house at Shillingford Hill, Berkshire. Mr. George Hornblower, architect, London, W.:—
Brasher & Sons, Wallingford £3,300
[First contract.]

SLEAFORD.—For the supply of 2,000 tons broken granite, for the Urban District Council:—
Pattinson & Co., Sleaford 9s. 5d.
" " " " " 7s. 6d.

SOUTHAMPTON.—For taking down and rebuilding Nos. 137 and 139, St. Mary-street, Southampton. Mr. Walter Andrew, architect, Parkstone, Dorset. Quantities by Mr. H. J. Weston, Southampton:—
Exons, of Franklin £1,498 Dyer & Sons £1,170
T. Rishley £1,250 F. Oman £1,160
Burt & Vick £1,175 Jenkins & Sons* £,118
Wright & Son £1,172 * Accepted.

SOUTHEND-ON-SEA.—For structural alterations to the "Cornucopia" public-house, Naine Parade, Southend, Essex, for Messrs. Walker & Son. Messrs. Bailes & Harris, architects, Clarendon-street, Southend. Quantities by Mr. Henry Bushell, 23, New Bridge-street, E.C.:—
F. Dupont £465 A. E. Symes £438
T. Whar £50

STOCKPORT.—For the execution of road works within the borough, for the Corporation. Mr. J. Atkinson, C.E., Borough Surveyor, St. Peter's-gate, Stockport:—
Wm. Bidart & sons £755 12 1/2
P. D. & S. D. Hayes, Stockport (accepted) 701 11 1/2

SUTTON (Co. Dublin).—For the erection of three dwelling-houses. Messrs. A. Scott & Son, architects, 16, William-street, Drogheda:—
P. Mims £4,000 Scott & Co. £3,365
P. Hanna £401 Robert Johnson, Dublin* £,251
* Accepted.

SWORDS (Co. Dublin).—For erection of new dispensary, for the Burdette Board of Guardians. Messrs. A. Scott & Son, architects:—
Frances Gogarty £555 John Reft, Garresown, Thos. Quinn £401 Co. Dublin* £,409
* Accepted.

THIRSK.—For the erection of a stone bridge, Sutton-under-Whitestonehill, Mr. W. Stead, C.E., County Surveyor, North allerton:—
Geo. Kay £695 0 0 Wm. Blackburn, A. Atkinson & Co. £47 7 4 Broughton, Malton* £41 15 1
* Recommended for acceptance.

C. B. N. SNEWIN
MAHOGANY, WAINSCOT, WALNUT, TEAK, VENEER, and TIMBER MERCHANT, Nos. 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, & 17, BACK HILL, HATTON GARDEN, and 29, RAY STREET, FARRINGTON ROAD, E.C.
The Largest Stock of all kinds of Woods in every thickness, dry, and fit for immediate use. Telephone, 63,374 Holborn. Tele. Address: "SNEWIN, London."

UCKFIELD (Sussex).—For the construction of sewage disposal works, for the Urban District Council. Mr. G. Maxwell Lawford, architect, 43, Victoria-street, Westminster. Quantities by Mr. F. C. Hunt:—
B. Cooke & Co. £501 0 0 Joseph Jackson, Forest Gate £568 15 7
J. Piper £30 0 0 Gate £29 17 7
C. Pelham £19 17 7 W. H. Holman & Co. 502 3 0
F. Brunton £50 0 0

WALSALL.—Accepted for the execution of sewerage works, Melbourn-street, for the Corporation:—
H. Holloway, Wolverhampton £338

WALTHAM CROSS.—For the erection of stables, &c., at "Black Prince," Waltham Cross, for Messrs. Christie & Co., The Brewery, Hoddesdon. Mr. Thos. Merchant, surveyor, Hoddesdon:—
J. A. Hunt £417 T. Pollitt, surveyor, £335
J. Bance £35 W. Lawrence, Waltham Abbey (accepted) £319
J. Jentles £34

WEST ARDSLEY (Yorks).—For the erection of farm buildings, Black Gates Farm, for Messrs. Holliday & Sons. Mr. T. A. Burtley, architect, Queen-street, Morley:—
A. Fuines, East Ardsley (all trades except joinery) £144 7
Joinery—Executed by J. Treppiers.

YARMOUTH (Yorks).—For the erection of a constable's house. Mr. W. Stead, C.E., County Surveyor, Northallerton:—
H. Doubrich £245 12 8 J. A. Atkinson & Co. H. & J. Bainbridge £55 7 1/2 Stockton* £578 5 2
H. Craddis & Son £32 12 8
* Recommended for acceptance.

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G.A.H., S.S., J.F.W., W.W., J.W.B. (amounts should have been stated). F. G. (below our line).
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The Builder.

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MARCH 27, 1897.

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The "Uglification" of London.



THE author of "Alice in Wonderland" makes one of his characters point out that, if to make anything more beautiful is to "beautify it," why should not making it more ugly be said to "uglify it?" And certainly no word could describe various works which have been carried out in London and its suburbs, of late years, so appropriately as the word "uglification"—uglification by the addition of hideous objects, and also by the destruction of those which were beautiful. While we wait from month to month and from year to year in the vain expectation of beholding the beautification of London wrought about by the realisation of almost innumerable promised "improvements," it is sad to contemplate the painful fact that the "uglification" of our capital progresses by leaps and bounds.

We do not deny that improvements have been carried out, and when fine buildings have been erected no one has been more ready than we have been to draw attention to the fact. But what we wish to point out is the unfortunate circumstance that while we build up with the right hand we pull down with the left.

The uglification of London is so patent a fact that we can scarcely conceive any one denying it. If so, let such a one go and stand upon London Bridge, and look towards St. Paul's, what will he see? A most interesting and striking view disfigured and half obliterated by a hideous railway terminus. Or let him look towards Westminster from Waterloo Bridge, where another ugly station blocks out the view, and where vast hotels rise up to a preposterous height which imparts no dignity to their design and does not even impress one, except as a dimension, and simply serves to dwarf and diminish the size of everything within sight. Let our spectator then look at the bridges which the last quarter of a century has added, and compare them with London Bridge or Waterloo Bridge, and he will see how in our grandfathers' days they possessed the art of building fine bridges, and how we seem almost to have lost it. What a noble feature

such a bridge as Waterloo or London is when built across a mighty river, but how contemptible, from an art point of view, such a structure may be when riddled about with Brummagem-Gothic tracery executed in cast iron, or adorned with huge granite columns supporting nothing or propped up upon vast gas-pipes stuck on end. Samples of each kind "uglify" our river and spoil the effect of beautiful bridges left to us by previous generations.

Walk through the City, "Tell the towers thereof." Alas! you will find them sadly diminished—twenty-five have disappeared, most of them fine works by Wren. Has not this been a master stroke of uglification?

But let us proceed eastward. We shall find the one interesting object in the interminable row of dull streets is threatened with destruction. Bow Church is certainly not a noble example of mediæval architecture, or a specially brilliant piece of design, but its grey, weather-beaten tower comes upon us like the face of an old friend, and it reminds us that not so many years back here was a pleasant London suburb, with fine substantial houses, dignified dwellings of retired city merchants, surrounded by large walled gardens; all are now gone, and the old church is it appears also to become a thing of the past. The tower, at least, ought to be spared.

And now to proceed to the "West End" of London. Let us just walk through that handsome line of thoroughfare with which London was adorned in our grandfathers' days, connecting the beautiful park at the north of the town with that of the south—Regent's Park with St. James's Park. Now we say advisedly that no greater improvement was ever effected in this city than the construction of that line of street, consisting of Gloucester-crescent, Portland-place, Langham-place, Regent-street, the Quadrant, and Waterloo-place. The Regent-street and Waterloo-place sections were carried out from Nash's designs, and the general idea was excellent; unfortunately it was the fashion of that day to do everything in plaster which ought to have been in stone, but the total effect was very striking, the strongly-marked horizontal sky-lines causing these streets to form a very appreciable contrast with Oxford-street, which always was, and will be, an irregular street. But only consider the various "uglifications" which have impaired this, one of the greatest London

improvements carried out in former days, and for which our day is responsible. To begin with, when Langham-place was built it was not possible to carry it in one straight line with Portland-place, but to prevent the idea of the thoroughfares coming to an end at this spot, Nash placed his church, All Souls, obliquely, and furnished it with a circular portico so as to round off the corner and give the idea of the continuation of the thoroughfare south.

Now, what has been done here of late years? A vast hotel has been erected right at the end of Portland-place, just doing the very thing that Nash had so carefully avoided. What is the consequence? Portland-place looks like a "cul-de-sac," and the whole continuity of the great scheme of our grandfathers' days is ruined. We are not now in any way referring to the design of the hotel in question, but simply to its position. Langham-place is not much altered, but when we come to the Circus (Oxford-street), we notice that all kinds of additions have been made to the houses; here a Mansard roof has been stuck on one house, next door a row of dormers, over the way a wretched iron-cresting, further on a whole new story has been added on to two houses, whereas the one between them is left in its original condition, suggesting a pleasant comparison to a mouth with a tooth knocked out. Where are poor Nash's Classical outlines? But this is as nothing compared to the next item, the greatest crime against London architecture perpetrated in our day, the destruction of Hanover Chapel. How this can have been allowed is unintelligible; that this building, the work of the greatest Classical architect of the century, a most striking design, so happily located, that when we now look at that part of Regent-street we are astonished to find that it was, apart from Cockerell's building, the poorest portion of the whole thoroughfare. It is no new idea that the best things do not receive their full appreciation until they have passed away. Now, when too late, we see how much was owing to Cockerell's fine church. Much is now talked about "originality in architecture," but it is a strange thing that two of the most "original" works of the century should be Cockerell's Hanover Chapel and Augustus Pugin's Ramsgate Church. Neither of the men knew that they were original; both thought they were working according to strict rules of precedent, yet in spite of the severe laws with



Old Bow Church Tower (threatened).



Hanover Chapel, Regent street (now destroyed).



"Uglification" Rampant: a new Suburban street.



"Uglification" in Progress: Woodhouse Park being destroyed.

which they bound themselves down, the gift of originality could not be concealed, and was perhaps the more brilliant from the absence of all striving to attain it. Is it not always so in art? Cockerell and Pugin could not understand one another, and were severe upon each other's work, but in the year 1851 Clarkson Stanfield introduced them to one another; they spent hours in conversation, and each expressed afterwards to Stanfield the same opinion of his former opponent in the same words—"The man is a thorough artist!"

To return, however, to our painful task, a few steps lead us to the "Quadrant," another happy thought of Nash's for the continuation of this fine line of thoroughfare. But the colonnade which gave it half its effect is gone; it was argued that it was a refuge for bad characters, and so the colonnade was destroyed, without, it is to be feared, the beneficial effect on public morals which was supposed to justify its destruction.

At the end of the Quadrant we arrive at what was once a well-planned Circus, still called "Regent-circus, Piccadilly." It should be called "The Labyrinth," for anything more confusing or puzzling it would be difficult to conceive. It would appear as though

a number of buildings had been placed in a bag and then thrown out "higgledy-piggledy," each inscribed with the words "no connexion with next door;" yet this was supposed to be "an improvement!"

Another matter which is very disfiguring to the whole neighbourhood must be touched upon, and that is the absurd practice of painting houses in the same group different colours. It is not uncommon to find two houses which have a pediment in common, the one painted white and the other damson jam colour; and as the junction takes place in the middle of the pediment the effect is remarkable for its independence of treatment, but is certainly far from pleasing.

We would just ask the question, also, why so many fairly good buildings are pulled down years before their site is required—Carrington House, for instance—leaving great shabby hoarded-up spaces. There is one such in Victoria-street, which has been so long abandoned that quite a luxurious growth of blackberry bushes and brambles covers it.

If "uglification" is seen in the City and the West End, this is as nothing to its gambols in the suburbs. In these unfortunate regions, the local builder may, indeed, sing, "I am monarch of all I survey!" Down go beauti-

ful groups of trees, well-built old-fashioned houses, and pleasant groves, to give way to "genteel residences," "depôts," "establishments," gin-palaces, &c. The jerry builder has absolutely invented a new language to describe his operations in these parts, and we fear our dictionaries will have to be corrected for his convenience, because directly these places are built over, the trees cut down and destroyed, and their places occupied by pavements and planted with lamp-posts, they are nominated "Parks," "Groves," "Avenues," "Gardens," &c. It is quite evident that we must reform our language, and we suggest the following, corrections to our future dictionary compilers:—

"Park."—A district covered closely with houses, but without either grass or trees.

"Grove."—A street of shops with plenty of flaring gaslights.

"Garden."—A collection of houses without a scrap of ground attached to them.

"Avenue."—Two rows of houses opposite each other with lamp-posts planted at intervals.

In these desirable regions we find uglification in its most advanced stage—firstly destructive, and afterwards creative. Look at Woodhouse Park, Shepherd's Bush, and

the beautiful groups of trees falling beneath the axe, the pleasant, old-fashioned houses pulled down, and the pretty gardens rooted up; then look round the neighbourhood, or prolong your stroll towards Willesden or Fulham, and contemplate the new streets. Houses turned out by the thousand—the same design repeated over and over again; the same dreadful porch, with its arch formed of thin slabs of stone; the same wretchedly carved caps, with "stiff leaved" foliage; the same bow window, which no one can sit in; the same water-closet turret; the same architrave, cornice, ridge tile, finial, &c.; and last, but not least, the same hateful, would-be "picturesque irregularity," repeated over and over again. Now the constant repetition of *regular* architectural forms may become monotonous, though it does not always do so; a colonnade of classical columns may be of any length without wearying the eye, and their constant repetition often gives an impression of grandeur; but the constant reproduction of any irregular design—such, for instance, as a turret at one corner, or of a gable, or porch out of the centre—is simply maddening.

It might have been thought that "stucco" Bayswater had reached the architectural bathos. Notting Hill, however, revealed a lower stratum; for now, alas, the jerry-builder has discovered the "picturesque" and the "original" in architecture. The old-fashioned builder built up his "compo fronts" and porticos after having studied his "book of classical patterns" and looked through his collection of "moulds," and then he turned out his "neat shop-front" or "desirable villa residence," ornamented with cornice No. 1, "window architrave No. 5," "Doric portico and caps No. 3," and so on. Now, as these things were generally copied from fairly decent classical examples, although of course the effect was dull, yet it was not repulsive. One knew what to expect, and did not take the trouble to look at it; but the ridiculous pretentiousness of the latest kind of small suburban residences must attract your attention, and when the thing is repeated a hundred times over it makes one detest it.

Cannot the modern builder be got to return to his "Classical pattern books," or, if not, will not our architects bring out some "sheets of samples" which will bear constant repetition, and not be either "picturesque" or "original"?

Mr. T. G. Jackson tells us that the jerry-builder is a necessity of the age, and that we cannot do without him even if we would; but surely some means might be found of restraining his "picturesqueness," and confining his "originality" within decent bounds; or is his "freely treated Gothic" and "modified Queen Anne" to pursue its maddening course unchecked? Unfortunately, not only are these structures so ridiculous in themselves, but they utterly ruin the effect of everything else in their neighbourhood. We know a well-designed, quiet Gothic church, which was built a few years back, when it was surrounded by old-fashioned villas, and the general effect was pleasing. But during the last year or so these villas have given way to houses of the "picturesque-original" jerry type, and the poor church is like a good man fallen into bad company.

We may be told—"if you want really to see the beautifications of London, wait until you see the Strand widened; the new public

offices built in Whitehall; the ugly block removed between King-street and Whitehall; the grand new street to Holborn; the new bridge over the Thames; the approaches made to the Tower Bridge; the new front to South Kensington Museum erected, etc., etc." Alas, we reply, we are not immortal! Rome, we know, was not built in a day, and probably if the Romans had spent all their time in quarrelling about "Betterment," Rome might never have been begun. It is really a very humiliating fact that the past quarter of a century has effected less in Metropolitan improvements than any of the three previous quarters, and there seems little reason to hope that the next twenty-five years will effect more than the past has done. The same evils are still at work; the same absurd introduction of political combinations into questions of art and construction; the same local jealousies and corporation squabbles, the same system of delaying all action by unreasonable opposition continue, and are likely to be fruitful of as much harm in the future as they have been in the past. If something is not done, and that quickly, in the way of, at least, *commencing* the numerous promised improvements of London, the present time may leave behind it as a record and memorial that it was—

A PERIOD
WHICH
DISFIGURED THE FINEST THOROUGHFARE IN
LONDON;
RUINED ITS SUBURBS,
MADE A MESS IN ST. JOHN'S WOOD,
CREATED CONFUSION AT ONE END OF PICCADILLY,
AND A DESERT AT THE OTHER;
ERECTED A HUGE BRIDGE WITHOUT APPROACHES!
AND
PRESERVED HOLYWELL-STREET
FOR
THE ADMIRATION
OF
SUCCEEDING AGES!

NOTES.

Vienna Houses of Parliament. AT Vienna considerable alterations are being made in the Houses of Parliament, which were erected from the design of Hansen, as it is necessary to find accommodation for no less than seventy-two new members above the number of 356 originally provided for. According to the new elections this extra number of seats will have to be provided for almost immediately, and, according to an old statute, it is necessary to find sitting accommodation for all members. Of course the hall is not to be altered architecturally, and the modifications will only be in the seats and in the gangways, but it is curious to observe that whilst in this country it was considered an advantage to provide a smaller Council chamber, with a view of not unnecessarily straining the voices of speakers, nearly all Continental countries have elected to have large semicircular halls with a rostrum in the centre for the orator. It appears curious, from our point of view, to increase the sitting accommodation at Vienna, for it is unlikely, excepting on special occasions, that anything like the whole number of members are ever present at a debate.

London County Council Schemes. THE Council will apply to Parliament in the current session for a further Bill relating to their capital expenditure during six months from April 1 next, and to cognate purposes.

The principal projects included within the proposed measure have already been described from time to time in our columns, so it will be unnecessary to say more than that they comprise the following objects:—The provision of sites for a Council chamber and offices, for lunatic asylums, for workshops and a central store, for technical schools, and for stations for gas meter testing-houses and the verification and stamping of weights and measures; the acquisition of the freehold of Fairseat House, Waterlow Park (Highgate), and of White House, Hackney Marsh; the rebuilding of Highgate Archway, and Vauxhall, Isle of Dogs, and Lea bridges; electric lighting on Victoria Embankment, Embankment Gardens, and Waterloo and Westminster Bridges; purchase of tramways; new main and relief sewers, with precipitation works; improvements at Wood-lane, Hammersmith, and Ben Jonson and Blackstock roads, Islington; open spaces; and various schemes under the Housing of the Working Classes Act, 1890.

Street Decoration at Berlin. ONE of the most noticeable features of the festivities at Berlin was the excellence of the general street decorations and particularly of the "Via Triumphalis." It would have been well if some of those entrusted with the arrangement of the Jubilee festivities could have seen what has been done in this respect, thanks to efficient organisation and much voluntary assistance on the part of German architects and artists, who are always ready to help on such occasions. Ever since the sombre decorations for the funeral *cortège* of the late Emperor William I. in 1887 particular attention has been given to street decorations throughout Germany, and we have seen much that was excellent on the occasion of the opening of the North Sea Baltic Canal, the visit of the Russian Emperor to Breslau, and elsewhere. The "Via Triumphalis," in this case, was from the designs of the City Architect, Herr Ludwig Hoffman, and extended along the thoroughfare "Unter den Linden" and to the castle. The central scheme was a stretch of 400 yards in the vicinity of the late Emperor's palace, opposite the monument to Frederick the Great. The scheme included a number of well-proportioned obelisks, and the framing of the more important monuments of this thoroughfare by large painted canopies; on either side of the Guard's house, close to the Palace, there were pillars with many symbols of German military power, whilst nearer the castle there were similar pillars representing Germany's maritime interests. The principal feature opposite the castle was an obelisk 120 ft. high, with decorations symbolical of the German Empire and its various minor States. Throughout the thoroughfare the decoration of lamp-posts and flagstaves was exceedingly carefully managed, and a very stately effect obtained.

American Patents. A NEW patent law comes into operation in the United States on January 1 next. Its object is to prevent delays and injustice to persons who are unable to take out patents because some other man has a patent in what may be termed a process of incubation. By the new Act the patenting abroad by other parties, or the publishing of the invention in any country more than two years before the

application for an American patent will be fatal to the latter. Again, the application on an invention patented abroad must be filed within seven months of the earliest foreign application. The time also for appealing against an order of an Examiner who refuses an application for a patent has been shortened from two years to one year. The Act should be studied by all those interested in patents, and persons who cannot get it readily may obtain a short *résumé* of its provisions in a single sheet issued by Messrs. Thompson & Co., patent agents, of London, Liverpool, and other towns.

It is to be regretted, though it is not surprising, that the interview last week between Lord Penrhyn and some representatives of his workmen has had no result. The actual point of disagreement appears to be the refusal of Lord Penrhyn to recognise a committee as a body representing the workmen in his quarries. This committee, the workmen contend, as we understand, is to be a permanent body, acting as a representative, and in some sense, governing body. That is to say, all complaints from the workmen to the employer are to be approved and to be put forward by it. We are unable to see why Lord Penrhyn objects to this body. If it has not the confidence of the men its composition will be changed, and its existence cannot prevent a workman who may be dissatisfied with it from putting forward his complaints individually. It is clear again that a workman who may have a genuine cause of complaint is much more likely to have his grievance redressed if it is put forward by a committee representing the great body of workmen than if he acts by himself. It is impossible to form an accurate opinion of the merits of the controversy without a close study of the notes of the interview. But from the report of the *Times* correspondent, who appears to have made himself acquainted with all that took place, it seems clear that each side is fighting for a principle, and that no compromise is likely to take place without the intervention of a disinterested party.

A FEW weeks back we had occasion to remark on an international competition for the design of a cathedral at Cronstadt, and to call attention to the advisability of having foreign representatives where there is a committee of assessors. We are glad to see, however, that there appears to have been a very fair distribution of premiums by an essentially Russian jury on the occasion of an international competition for the design of a new municipal theatre at Kiev. The first premium has been given to Professor Schroeter, of St. Petersburg, the second to a well-known German theatre specialist, Mr. H. Seeling. Mr. C. Sada, of Milan, has received the third premium, whilst the architect of the new Stockholm Opera House, Mr. Anderberg, has received the fourth. An extra premium was given to Mr. Weber, of Moscow. It almost seems, in fact, as if there were a kind of conscious intention to divide the premiums impartially among different nationalities. This is at all events better than the usual result of "international" competitions, in which the premiums are generally all given to architects belonging to the nation promoting the

competition. The competition in question was for a theatre of 1,500 seats, costing 450,000 roubles. The jury comprised four Russian architects, two civil engineers, and three laymen of the Corporation.

IN excavating for the foundations of a church at Yzeuse in France (Department of Allier), France, some blocks of stone have been discovered carved with bas-reliefs which are said to represent a "gigantomachia," and which are judged, from fragments of inscriptions on them, to have belonged to a Temple of Minerva. The stones have been "classified" by the "Commission des Monuments Historiques," and the excavations have been placed in charge of Père Lacroix, the well-known archaeologist, in the hope of finding further remains.

ON the occasion of the celebration of the 100th anniversary of the birthday of the Emperor William I. a motion has been put in the Imperial House of Parliament to erect a Pantheon as a memorial to the many soldiers who fell in the Franco-Prussian war. Though this motion found favour in the Upper House, it was considered advisable to postpone its discussion in the Lower House, owing to a strong opposition against the scheme. As we recorded last week, a Pantheon has long been considered a fitting national memorial to the late Emperor, but it is doubtful if the nation as a whole desires a monument in this form especially dedicated to the memory of the Franco-Prussian war.

THIS was the title of a lecture delivered at the Imperial Institute on Monday, by Dr. W. Schlich, C.I.E., Professor of Forestry at the Royal Indian Engineering College, Coopers Hill, in which a mass of interesting and suggestive statistics was given relating to the imports and exports of timber into and from the several parts of the British Empire, &c. The lecture was evidently the result of much inquiry on the subject, and as the task of collecting reliable information is no light one, owing to the extent of the British Empire and for other reasons, Dr. Schlich is to be congratulated upon the completeness of his inquiry. From some tables prepared by the lecturer it appears that the net imports into the Empire for the period 1890-94 were of the value of 14,021,000*l.*, this being an increase in the six years of 2,293,000*l.* The United Kingdom took, of course, the bulk, and the timber imported into Great Britain and Ireland from all sources for the year 1894 was of the total value of 18,423,539*l.* The most interesting feature of the lecture was Dr. Schlich's opinion that at no distant date all the countries that now export timber in large quantities were likely, for several reasons, to require all the timber they can produce for their own requirements, while in some cases they would need to import it, as in some instances they do now, from any country that might be willing to supply. That being so, what will then be the position of the United Kingdom? And what steps can be taken for supplying the home market in view of this probable falling off in the foreign or colonial supply? The lecturer suggested

that the State might do much good by affording assistance for the equipment of a proper forestry school, where scientific forestry could be taught. The Crown forests should also be managed on economical principles, so as to serve as models to private grovers, while monetary advances, at low rates of interest, might be given for the purpose of planting surplus lands, and on certain conditions the Government might buy land and plant themselves. In the lecturer's opinion these and other steps might result in the production of a permanent supply of timber for these islands, as well as in giving work to a larger population, and also keeping in the country large sums of money which now go abroad. With some of the lecturer's conclusions we are inclined to disagree, but most of his statements appear to be well founded.

WE understand that the new Surrey Commercial Docks, works are being carried out by Messrs. S. Pearson & Son, under Mr. J. Wolfe Barry's directions, Mr. W. Bennett being the resident engineer. The operations include an enlargement (845 ft. by 450 ft.) of the old Greenland Dock, and new locks for that dock and the Surrey Canal. The Commercial Docks have their origin in the "Howland Great Wet Dock," built circa 1660, covering about 10 acres, and named after the Howlands of Streatham. Elizabeth, daughter and co-heir of John Howland, brought the property in marriage to the second Duke of Bedford (1695), in whose house it continued until 1763, when it was purchased by John and William Wells. Being at that time the only wet dock on the river, it had long served for the Greenland whale vessels; enlarged in 1807, it was used for the Baltic trade. Two or three years later the old Commercial Docks Company was established by the Act 50 Geo. III., c. 207. The present company's premises consist, we learn, of nine docks, with timber ponds, having a water area of 187 acres, and 260 acres of wharfage. It seems that the first dock was made at the spot (close by Cuckold's Point) where it is supposed had been the entrance into the canal or trench cut by Canute to Lambeth, as a passage-way for his galleys when he besieged London. The canal's actual course has been investigated by various authorities, who are not quite in agreement. Maitland mentions the discovery, by the river on excavating for the dock, of bundles of willow, hazel and other rods, laid endwise and fastened down with stakes.

EVERY year, for five years back, the annual horse show at the Palais de l'Industrie, Paris, has been made the occasion of a contemporaneous exhibition, in the same building, of a series of pictures and drawings in which the horse is the principal subject. The exhibition this year is much better than its predecessors; amateur work has been kept out and the standard considerably raised, and there are some fine works among the collection. Among those that are worth special mention are a sketch by M. Checa; a large water colour by M. Georges Bussion, representing the harnessing of a team; some studies by M. Gerôme, &c. There are also some good studies in equine sculpture.

A very interesting exhibition of animal studies by Mr. John M. Swan is on view at the

Fine Art Society's Gallery. The collection consists mainly of slight sketches and studies made from animals, as a preparation for finished pictures, but on that account they have a special interest, as being the immediate memorandum of the animal's attitude or movement made on the spot. Two in particular may be named as especially fine, the "Tigress Walking" (1), in which the idea of movement is admirably conveyed—one can almost see the undulation of body as the animal walks; and the "Study of a Lioness" (48) lying down, which is remarkable for the monumental grandeur of its lines.

THE ARCHITECTURAL ASSOCIATION: EIGHTEENTH CENTURY WORK.

The ordinary fortnightly meeting of this Association was held on the 19th inst., in the Meeting room of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street, Mr. W. H. Seth-Smith, Vice-President, in the chair. The minutes of the last meeting having been read and confirmed, Mr. F. Bowles was elected a member.

Mr. Howley Sim, Junior Hon. Secretary, then proposed a vote of thanks to Mr. C. J. Phipps for conducting members of the Association over Her Majesty's Theatre, Haymarket, on the 6th inst.

The vote of thanks was cordially agreed to. The Chairman said he wished to express his regret at the absence of their President, who was still in the East. He also announced the receipt of a letter from Mr. John Belcher in reference to the meeting that night.

In the course of his letter Mr. Belcher said that the subject for discussion that evening was one in which he was very much interested, and with his friend, Mr. Macartney, he was preparing for publication some typical examples of what he had termed "Later Renaissance Architecture in England." In fact, they had endeavoured to follow up the work so well done by Mr. Gotch with the early Renaissance, which he had made his special study. No doubt the study of good examples of each period of architecture was beneficial and helpful, as something could be learned from them of the principles which governed true design—seeking out the good and rejecting the bad, for abuses would be found in every period. The later Renaissance was as open to these as the picturesque efforts of the early Renaissance. Without particularising either, he (Mr. Belcher) was not without hope that by directing some attention to the works of the later Renaissance we might correct the extravagant and excessive use of ornament which had vitiated the public taste of late years, and so promote an increased regard for proportion and a greater simplicity and refinement of style.

Mr. Gotch then read the following paper on "Eighteenth Century Work" :—

The eighteenth century saw the final development of that great movement in art which began in the early years of the sixteenth. When mankind had once made up its mind that the masterpieces of Italy were the only examples to be followed, nothing but time and determination were wanted to produce in all the lands of Europe a general sameness of appearance and treatment in every branch of art. In no art was copyism so contagious as in architecture, and in no art was it so injurious. For architecture is essentially a constructional art, a fact which the eighteenth did not realise, and a fact which wants no little reiteration at the present time when there seems to be a tendency to neglect construction for the more attractive accessory arts, and to desert the stately queen for her more lively handmaids. A constructional art, to be healthy and natural, must develop from within, and not from without.

Architecture in the eighteenth century was the Five Orders and nothing more. An old Roman, called Vitruvius, who had been dead seventeen hundred years, was Dictator, and those of his followers who differed from his precepts, although sometimes excused on account of their success, were admonished to be careful how they risked any deviation from the paths of perfection pointed out by him. Gothic architecture was despised and regarded as barbarous. It was not that the votaries of the art preferred a Classic dress to a

Gothic: for them the buildings erected in the Middle Ages were not architecture at all. The "Gothick Order," as they called it, is described by one of them as "the Folly and very Ape of Architecture." Such an attitude of mind is hardly intelligible to us who recognise Gothic architecture as at once the most logical and daring form of construction that man has yet employed. It is hardly less difficult to understand how they can have failed to be impressed with the majestic solemnity of a great Gothic Cathedral; and yet they did fail—even such cultivated men as Evelyn and Addison. The phrase about the "very Ape of Architecture" occurs in a treatise by a lively Frenchman, M. Freart; and, considering the subject, a very entertaining treatise it is. But Evelyn's views were those of a sagacious, unimpassioned Englishman, and are worth quoting at some length as illustrating the standpoint from which the early eighteenth century looked at the subject. In treating of architecture, he says :—

"It is the Antient Greek and Roman Architecture only which is here Intended, as most entirely answering all those Perfections requir'd in a Faultless and Accomplish'd Building; such as for so many Ages were so Renowned and Reputed, by the Universal Suffrages of the Civiliz'd World, and would doubtless have still subsisted . . . had not the Goths, Vandals, and other Barbarous Nations Subverted and Demolish'd them . . . Introducing in their stead, a certain Fantastical and Licentious manner of Building, which we have since call'd Modern (or Gothic rather) Congestions of Heavy, Dark, Melancholy and Monkish Piles, without any just Proportion, Use or Beauty, compar'd with the truly Antient; So as when we meet with the greatest Industry, and expensive Carving, full of Fret and lamentable Imagery; sparing neither of Pains nor Cost; a Judicious Spectator is rather Distracted and quite Confounded, than touch'd with that Admiration, which results from the true and just Symmetric, regular Proportion, Union and Disposition; Great and Noble manner, which those August and Glorious Fabrics of the Antients still Produce.

"It was after the Irruption, and Swarms of those Truculent People from the North . . . when instead of those Beautiful Orders . . . they set up those Slender and Misquine Pillars, or rather bundles of Staves, and other incongruous Props, to support incumbent weights, and pondrous Arched Roofs, without Entablature; and the 'not without great Industry . . . nor altogether Naked of Gaudy Sculpture, trile and busy Carvings; 'tis such as rather Gluts the Eye, than Gratifies and Pleases it with any reasonable Satisfaction: For Proof of this (without Travelling far abroad) I dare report my self to any Man of Judgment, and that has the least Taste of Order and Magnificence; if after he has look'd a while upon King Henry the VIII's Chappel at Westminster; Gaz'd on its Sharp Angles, Jetties, Narrow Lights, lame Statues, Lace and other Cut-work and Crinkle Crankle; and shall then turn his Eyes on the Banqueting-House built at White-Hall by Inego Jones after the Antient manner; or on what his Majesties present Surveyor Sir Christopher Wren has lately advanc'd at St. Paul's and compare them judiciously without Partiality and Prejudice; and then Pronounce, which of the two Manners strikes the Understanding as well as the Eye with the more Majesty, and Solemn Greatness. . . . In this sort have they, and their Followers ever since fill'd, not all Europe alone, but Asia and Africa besides, with Mountains of Stone, vast and Gigantic Buildings indeed; but not Worthy the name of Architecture: Witness . . . what are yet standing at Westminster, Canterbury, Salisbury, Peterborow, Ely, Wells, Beverley, Lincoln, Gloucester, York, Durham, and most Cathedrals and Minsters."

Thus far Evelyn. That Addison had no clearer insight into the nature of architecture will be seen from the 415th *Spectator*, where he says :—

"Let any one reflect on the disposition of mind he finds in himself at his first entrance into the Pantheon at Rome, and how the imagination is fill'd with something great and amazing; and, at the same time, consider how little, in proportion, he is affect'd with the inside of a Gothic cathedral, though it be five times larger than the other; which can arise from nothing else but the greatness of the manner in the one and the meanness in the other."

The fact is that architecture to them was, as already said, the Five Orders and nothing more—to some of them less indeed, since they only admitted the claims of two out of the five grudgingly and of necessity. Architecture, in their opinion, dealt almost exclusively with the external appearance, and they dismiss in few sentences such considerations as the disposition of rooms. Planning to them meant first and foremost the arrangement of their building in regard to its appearance, not in regard to the functions it had to fulfil. Broadly speaking, a well-designed building is as much a product of evolution as natural scenery or the forms of plants and animals. Natural scenery is almost entirely governed by the geological formation of

the district. Plants and animals have assumed their various forms chiefly as the result of the necessities of their growth, which, again, are dictated by the functions they have to fulfil. And so it is—or ought to be—with a building. Architecture is not only the art of building finely, it is the art of building finely in order to comply with certain specific conditions.

This notion of architecture was unthought of by the eighteenth century, brilliant though it was; and so the chief aim of its architects was to dazzle and impress the spectator, not to please and satisfy the indweller. Lord Chesterfield told General Wade, for whom the Earl of Burlington had designed an inconvenient though handsome house in Burlington-street, "if he could not live in it to his ease, he had better take a house over against it and look at it;" a piece of advice by which many a nobleman might have profited.

It has been observed that when people take to writing about art they have ceased to practise it to perfection. So long as it is, so to speak, spontaneous, its followers need no directions; it carries them along, they do not force it. But when its natural vitality is spent, and its followers are no longer borne unwittingly onwards, then spring up more or less gifted observers, who point out the ancient tracks and show how they may be continued; but unless among them be some who know what kind of force went to the making of the tracks, and can kindle the fire to produce the force, all the most accurate and beautiful drawings of those splendid vestigia will not enable one single one to be repeated.

Ever since the beginning of the sixteenth century—that is, for two hundred years before our period—Europe had been studying the footsteps of the Romans. For more than half that time England had thrown herself into the pursuit, and now the patient efforts of many writers were to be rewarded, and it was to be the aim of every generous patron and every architect of ability to make our English buildings as much like those of Italy as they could. Architectural design was to be a matter of rule and compass. What could be easier? The text-books gave the proportions, not only of the modern buildings of Italy—or rather the proportions of the Orders which adorned them—but also of some ancient ones upon which the sacred eye of Vitruvius himself must have rested.

Macauley has observed that during the latter part of the seventeenth century, and the early part of the eighteenth the heroic couplet was so much in vogue, and was brought to such perfection by constant use that every poetaster could employ it with as much facility as Pope himself. So it was in architectural design. The rules were so well known that it required no genius to use them—nobody expected any skill in planning—and so the same dull propriety characterised every building that was put up. Just as in poetry it is not the polished form of the verses that marks the true poet, but the ideas contained in them; so in architecture it is not the correct marshalling of columns, and the "nice conduct" of entablatures that must be our criterion, but the manner in which the whole building satisfies and expresses the wants which it is supposed to supply. Judged by this standard, how many of the designs in Campbell's "Vitruvius Britannicus" would come within the category of true architecture? And yet those volumes contain nearly all the larger houses built in the first half of the eighteenth century. One of his designs Campbell introduces thus: "This design of my invention in the Theatrical stile is most humbly dedicated to Tobias Jenkyn, Esq." The Theatrical style, he tells us "admits of more gaiety than is proper either for the Temple or Palatial style," and in that word *theatrical* lies the key to much of the designing of the period. It is all more or less theatrical, done to impress the beholder; just as in the second half of the century, the laying out of gardens and grounds was contrived with the aim of producing the effects found in the pictures of Claude Lorraine and other landscape painters, down even to the introduction of artificial ruins.

In describing the plan of his house in the theatrical style dedicated to Tobias Jenkyn, Esq., Campbell dwells not on the convenience of arrangement, not on the cheerful aspect of the rooms or any special contrivance for the comfort of the inhabitants, or whatever goes to make a house a home, but on the proportions of his principal apartments. "Here," says he, "is the double and single cube, the hall being 27 ft. by 54 ft. Here is 18 ft. by 27 ft., which is the sequi altera, and 21 ft. by 27 ft., the sequi tertia, and you pass gradually from the larger to the lesser;" all of which may have satisfied the wants and aspirations of Tobias Jenkyn, Esq., but do

not compensate his descendants for the absence of those arrangements which make daily life tolerable.

The needs of daily life went but a little way to model the great houses of that time. Architectural grouping, in order to impress the beholder, often led to dividing the mansion into separate blocks, one for the family rooms and State apartments, one for the kitchens and servants, and one for the stables. The kitchen, therefore, would be hundreds of feet off the dining-room, a drawback against which Evelyn warned his readers, "or else," says he, "besides other inconveniences, perhaps some of the Dishes may straggle, by the way." Sometimes the servants' quarters were located in two detached blocks hundreds of feet apart, balancing the composition, of which the family rooms formed the centre, and joined to the latter by open colonnades. How the service of the house could be carried on with the two halves of the staff separated from each other by a five or ten minutes' walk is not very clear; but of course the mansions were not built for the servants, but a little for the family itself, more for its grand guests, and most for the casual spectator who was to admire the lordly pile as he passed by.

The servants had to put up with what accommodation they could get. Their hall might be a vaulted underground room lighted only by areas, as at Buckland in Berkshire, and their bedroom windows might look out on to the back of the parapet. The butler might have to sleep in a room without any outside wall and no direct light and air. But in those days servants were merely servants, and could hardly expect to be exempt from suffering for architectural effect when their employers were content to suffer as well, though in less degree. And they must have suffered, for, wholly apart from considerations of bad service, the family were often located in a low basement with all the weight of the State apartments over their heads. Their rooms were not contrived to catch the morning sun, or to get a splendid view, or, indeed, for any particular purpose relating especially to them; but they were arranged to fill up the space beneath the great rooms of State, and if they were comfortable, it was more by good luck than good management.

The architects of those days were, in fact, more or less of amateurs, and the kind of architecture in demand was such as amateurs could supply. Pre-eminent among them—at any rate in social position—was the Earl of Burlington; and when we consider this fact for a moment, can we be surprised at the amount of unreal and theatrical design that was produced? Who could expect an Earl to concern himself with the niceties of household planning? No wonder that General Wade received that advice from Lord Chesterfield to take a house over against his new mansion and look at it. Yet all through the century Lord Burlington was looked up to as the greatest patron of art that England had ever produced, and especially of architecture. Horace Walpole extols his taste and his ability, he "had every quality of a genius and artist, except envy; yet, withal, he cannot disguise from himself that Ripley, who was an architect by occupation (or, as they were still called in those days, a surveyor)" "in the mechanic part, and in the disposition of apartments and conveniences, was superior to the Earl himself."

Pope, of whom Lord Burlington was a patron, satirizes Ripley more than once, but then Ripley did not belong to Pope's faction. Pope himself, in one of his epistles, points out a way in architecture which no one seems to have followed, not even the nobleman to whom the epistle was addressed. Writing to Lord Burlington, he says—

You show us Rome was glorious, not profuse,
And pompous buildings once were things of use.

And again:—

Something there is more needful than Expense,
And something previous ev'n to taste—'tis Sense:
Good sense, which only is the gift of Heav'n,
And tho' no science, fairly worth the seven.

Towards the end of the epistle he reverts to the same text:—

'Tis use alone that sanctifies Expense;
And splendour horrors all her days from Sense.

It is rather amusing that a sermon founded on such an excellent text should contain so much that is at variance with it. Nor can we help smiling at the Earl's work should be supposed to embody the principles here laid down, when we remember poor General Wade's house, or the villa at Chiswick, beautiful no doubt in grouping and proportion, but of which Lord Hervey said,

"The house was too small to inhabit, and too large to hang to one's watch." Walpole, who records this witticism, has some remarks on the house which are worth repeating. It is "a model of taste," he says, "though not without faults, some of which are occasioned by too strict adherence to rules and symmetry. Such are too many correspondent doors in spaces so contracted; chimneys between windows, and, which is worse, windows between chimneys; and vestibules, however beautiful, yet too little secured from the damps of this climate. . . . The ground apartment is rather a diminutive catacomb, than a library in a northern latitude." Then he adds a few sentences which throw some light on one of the motives that actuated the eighteenth century.

"The larger court, dignified by picturesque cedars, and the classic scenery of the small court that unites the old and the new house, are more worth seeing than many fragments of ancient grandeur, which our travellers visit under all the dangers attendant on long voyages." There you have it—"the classic scenery," and the "fragments of ancient grandeur," which were to be rivalled by English villas.

It is from the opinions of men who lived in the eighteenth century that we can best gather the motives that underlay their actions, and, therefore, a further quotation from Walpole may be excused:—"It was in this reign" (of George II.) he says, "that architecture resumed all her rights. Noble publications of Palladio, Jones, and the antique, recalled her to true principles and correct taste; she found men of genius to execute her rules, and patrons to countenance their labours. She found more, and what Rome could not boast, men of the first rank who contributed to embellish their country by buildings of their own design in the purest style of antique composition." We have seen one of these men of the first rank, Lord Burlington, and what he did. Another was Lord Pembroke, and he is worth singling out because, according to Walpole, "no man had a purer taste in building than Earl Henry, of which he gave a few specimens, besides his work at Wilton." Now his work at the house at Wilton is about as dull as anything can be, and far behind the "theatrical bridge" as Walpole calls it, which he threw over his river. This bridge is less objectionable than the other "theatrical" work of the time inasmuch as it imposes no special inconvenience on any one, but whether a bridge of this kind is in harmony with English scenery is a debatable question.

Taste, of course, was the great requisite in that age. Lady Teazle endeavoured to acquire it along with other fashionable accomplishments, to her husband's great scorn—what had she, a country-bred girl, to do with elegant expenses and fashion before she married him? "For my part," replies the lady, "I should think you would like to have your wife thought a woman of taste." "Taste!" cries her husband. "Zounds, madam, you had no taste when you married me."

The extravagancies of the second quarter of the eighteenth century sprang from an indulgence in taste apart from considerations of propriety, and it was the often-mentioned Lord Burlington who led to them, partly by his own work and partly by his publication of the designs of Inigo Jones and Palladio's antiquities of Rome. But it only wants a comparison of Inigo Jones's work with that of Burlington and his successors, or a comparison of Wren's with theirs, to see how those two men were really architects, while the others were but amateurs dabbling in what they did not thoroughly understand, and into the details of which they scorned to enter.

But while we cannot but feel that in the true essentials of architecture they were sadly lacking, yet we must concede that they produced striking results. One of these fine palaces, when it was surrounded by its original gardens, must have been remarkably imposing. Take Blenheim, for instance. If we regard it as a home, we must be disappointed; but as the dwelling of a great noble, living in state and surrounded with all its attendant ceremony, receiving other great nobles with their retinues, and housing them in more magnificence than comfort, in these respects it has much to claim our commendation. There is much excuse for it in the fact that it was a gift from the nation to its greatest son; it had to be splendid at all costs—yet it did not meet universal appreciation even in those days, as witness the lines of Swift:—

"'Tis very fine;
But where d'ye sleep, or where d'ye dine?
I find, by all you have been telling,
It is a house, but not a dwelling."

Great as the progress in architecture has been within the last forty years, it has either been imitative or eclectic. We want it to be neither, for imitation architecture proclaims that we admit the superiority of our predecessors and eclecticism is but the pillaging of former architectures and rearranging the pieces; while what is wanted is either a new creation or a new and superior development, just as man is a superior development of the monkey, or even as the Apollo Belvedere or the Venus of Milo are superior developments of the average man and woman. We have insisted in these lectures on a much more complete and thorough knowledge of the art of construction than at present exists among us; because this is the foundation of our constructive art, and without a solid foundation no permanent monument will stand, but besides this an accurate knowledge of the strains on certain features gives the rough form they, or parts of them, must take; we saw in Byzantine that the abacus of columns had to be deeper and wider to support larger piers and greater weight; that the cap had sometimes to be cubic and only superficially carved to convey the weight to the shaft. The stone rings to connect the lengths of thin shafts together, in Gothic have been turned into ornamental features. Structural knowledge, however, is far from being all that we want. We know we want this knowledge, and we also know that it may be acquired, but we at least equally want, if we do not more greatly want, creative genius, either to create something new and original or to develop that which has gone before, as Nature does, or has done, in all her works. This power however, on the aesthetic side we know not how to attain; all we know is that it is the offspring of deep emotions, high aspirations, and intrepid resolves in the nation, acting on a certain love and skill in the artists. The successful resistance to the Persian invasion caused all the fine arts in Athens to blossom; and if you will consider the circumstances of the Saracen, Gothic, and Renaissance epochs, you will see that the arts were forced into blossom by important national achievements; and that the artists of the period only wanted this stimulus to make them achieve their brilliant successes. As individuals, artists can only contribute in a small degree to such intellectual upheavals. Their business, however, is to be ready for them. We may hope that in a short time every student will have a thorough acquaintance with construction and materials, and will have learned the art of moulding to suit the climate. We also hope that each student will strive to develop the shaping of forms so as to captivate the most refined taste, so that when the flood comes that will again float the bark of architecture, so long stranded, they may be ready to man her and steer her to new discoveries and new conquests; so that the twentieth century may be one of the most flourishing architectural epochs the world has yet seen. In that epoch I feel sure that those who were Royal Academy students will not be the least conspicuous.

But when these grandiose ideas were applied to the houses of ordinary noblemen, much as they may have been cherished at the time, those nobleman's descendants find it hard to live in their palaces, and hard to maintain them.

There is not time enough on the present occasion to dwell much on the gardens that surrounded these great houses, but they were an acknowledged part of the general design, and now that they have in most cases disappeared, the vast houses lacking their support seem more wanting in common sense than they otherwise would. Among the illustrations in Campbell's "Virivivus Britannicus," which may be considered as the epitome of the period under discussion, there are not a few showing the lay-outs round the great houses, but they were founded partly on Dutch and partly on French examples. It was, however, probably Versailles that set the example to our English nobility, though nothing was done here on so vast a scale. The Duke of Montagu, who was Ambassador at the French Court for a number of years at the end of the seventeenth century, occupied the first few years of the eighteenth, after his return, in "erecting his seat at Boughton, in Northamptonshire, after the pattern, and as his dimensions would allow, after the very model of Versailles." It must be admitted that Boughton House is a very plain copy or rather reminiscence of Versailles; at the same time, its garden and wildernesses were of unusual magnificence and size, and adorned with numerous statues and a considerable extent of canals and ornamental water, enlivened by jets d'eau quite in the manner of Versailles as recorded in prints.

The house itself, although of a rather plain and sombre cast, is interesting as an almost unaltered example of an eighteenth century mansion, simply though richly furnished. Its floors are polished, its walls panelled in large panels surrounded by a bold bolection moulding, the doors are lofty and set in thick walls, the chimney-pieces are simple and massive, and surround wide and deeply recessed open fireplaces. The ceilings (verry many of them) by that rather dull painter, Verrio; still, they impart a large amount of character to the place. Here and there is a panelled room, or a fine chimney-piece of a hundred years before, showing that the house was not erected entirely new by the dual ambassador. The walls are hung with ancient portraits and pictures, and the floors are full of ancient furniture. Through the heavy sashes one looks out on to the undulating park, and the long and lofty rows of trees which form part of the celebrated avenues. There are attics innumerable scattered in every direction, and approached by staircases where the handrail is mitred round the plain square newels, and twisted balusters join it to the swelling string. Through these attics you may go, and down a different staircase, to find yourself in a room that you thought was a furlong off on the other side of the house. Altogether an interesting place, and one that gives a good idea of the haphazard arrangement of a large eighteenth century house.

At any rate Boughton House was a home which did not inhabitate all the year round—even the state rooms; which is more than can be said of any of its contemporaries. Nevertheless, with all their drawbacks these places were stately. The plans look gorgeous on paper, and so do the sections showing the internal decoration. The effect of the places themselves is, perhaps, rather depressing on the ordinary person, the grandeur a little too obvious—there is no such feeling of homeliness as in the many panelled rooms of the early seventeenth century; but when all is said, and fact remains that the architects of the latter time had a very definite aim in what they did, and they achieved it.

When we leave the mansions of the nobility, and come down to the houses of the squire or the well-to-do merchant, we find ourselves in a much pleasanter atmosphere. They have a quiet dignity about them which is decidedly restful and attractive, especially those of the first quarter of the century. In later times the portico idea became too prevalent, which consisted in affixing to the front of an otherwise plain house some variation of the columned front of an ancient temple. But the earlier houses, with wide corniced eaves, simple horizontal strings dividing the rows of sash windows, and combing with the quoins that emphasise the angles; these will no doubt long continue to form the model for houses of similar use and capacity. It is just a question whether this is quite the type that suits the present age; for our wants seem to grow always more complex, and to require a more plastic style than one depending for its effect on strict symmetry and unbroken horizontal lines.

If we cannot take a wholly sympathetic view of the purely architectural work of the eighteenth century—at any rate, in its more notable examples—neither can we forget that we are indebted to it for much that is suggestive in the work that embellished the architecture, especially in wood and iron. The ironwork of that period has never been equalled in England, and it lends an air of distinction not only to great houses like Drayton, in Northamptonshire, but to little suburban villas at Hamptonstead. The joiner's work of the time is full of suggestions. The sash-window alone was enough to revolutionise architectural treatment, and the far-reaching effects of mitred mouldings are impossible to follow. Through all the changes of two centuries these two facts have remained with us—sash windows and mitred mouldings—and there seems no immediate prospect of their being superseded. The work of the plasterer was not so admirable as that of the joiner. He had become too expert, and was able to perform prodigies of modelling and high relief, which finally undid him, and he and his art perished together.

If we are to seek inspiration from the work of the eighteenth century, we shall find it in two directions. First, in the grand schemes of house and garden combined, and in the general grandeur of treatment bestowed upon the great houses of the time. Not that we are to copy either blindly; but it is very desirable to realise how much the house and its surroundings depend upon each other; and equally desirable to learn how a grandeur of manner may be acquired. Secondly, in the sober and simple houses, where the plain-

ness of the general appearance is sometimes unexpectedly broken by the quaint treatment of a door or a chimney, and where the joiner's work is full of homely lessons.

It is often from the vernacular architecture of the country that we can get the most useful hints; whereas it is the palatial architecture that gives its stamp to the period, and goes to furnish the text-books. The one is for show first, and use second; the other is for use first, and show second. The palatial architecture of the eighteenth century was surely given to us more as a warning than as an example; but it is worthy of attention, just as all phases of architecture are which have acquired any hold on public affection, and we are not likely, in view of our present methods of study, to fall into that attitude of mind towards any style which Evelyn exhibited towards Gothic. If we bear in mind that architecture must develop from within, and not from without, we shall never again become the slaves of a foreign and a dead hand as our forefathers were in the eighteenth century, but we shall go forward, as we are indeed at the present time going forward, on different paths perhaps, and at different rates of speed—sometimes not without sharp divergence of opinion as to the propriety of particular steps—but always towards the same goal—the ennobling of our *Alma Mater*, the Mother-Art of the world.

Mr. J. M. Brydon, in proposing a vote of thanks to Mr. Gotch, said that the eighteenth century, in much of its literature, was a century of satire, and Mr. Gotch's paper had been a genuine satire of the architects of that century. It was a question whether a satirist really appreciated what he was talking about, or whether he skimmed over the surface for the sake of turning an epigram or making a neat remark. Some of Mr. Gotch's remarks were excellent, but, if he might say so without offence, the lecturer had skimmed over the surface a little too much. To understand the meaning of what they had heard that evening—of the grandeur of the palaces and the homeliness of some middle-class houses—they must project themselves back into the society and life of the eighteenth century. It had been called the Augustan age in England, and in literature and art, and in arms to some extent, that was perfectly true; and the result of that was the seeking after magnificence which had to be expressed in the houses of the great, who lived in a state which our nobles would find very uncomfortable. The first thing that the nobles and princes of the land demanded was not a home but a palace. It was very difficult to make a palace homely in all its parts, though all their dwelling rooms were not on the basement, as might be inferred from Mr. Gotch's remarks; but still the main parts of the house, as at Blenheim and at Castle Howard and one or two others, were built for display and magnificence, for the maintenance of a great army of servants of all kinds, and all the paraphernalia that went to make up the *mise en scène*. Out of that grew the disposition of their plan, which was also the result of a desire for display and magnificence. Beside that characteristic of the eighteenth century, there was another, viz., the extraordinary commercial revival which took place, one of the results of which was the South Sea Bubble, and various other speculations by which people lost money; but people also made money, and there was created in the eighteenth century what we called the middle class. One of the first things desired by the successful merchant was a suitable house to live in, and consequently some of the smaller and more homely houses, some of which had been illustrated that evening, were built for the accommodation of successful commercial men. If there was one thing more than another that was characteristic of these middle-class houses, it was their homeliness and their comfort; they were eminently "livable" houses. When one found oneself inside such a house, the feeling was produced of a homely country gentleman's house, and that impression was stamped on the building inside and out. In the eighteenth century the buildings produced were often very beautiful compositions. In fact, they were models of proportion, both external and internal. The architects were not, in his opinion, tied to the five Orders—in point of fact, if the Orders were studied, it would be found that they were used in a very loose manner, without the least regard to the proportions of the ancients, except in the stately colonnade or portico of church or palace. In the exterior, particularly, of those houses, the rooms were models of proportion—their length and breadth and height satisfied the

cultivated tastes of the people who lived in them. He thought that proportion was one of the first elements of architecture, and without it architecture would be of a very poor description. The same ideas of proportion were noticeable in the exteriors. Even the palaces, illustrations of which had been exhibited that evening, possessed proportion and well-balanced parts. Sir Joshua Reynolds, no mean critic, had referred to Sir John Vanbrugh as a master of proportion. He knew exactly the necessary size and shapes of the different parts of the house in order to fit the dwellings to the site which was at his disposal. The laying out of the site was of very considerable importance, and, as they had seen that evening, the houses of the period were admirably adapted to their surroundings. He thought that might fairly be claimed to be the outcome of a long-continued effort to make the house in harmony with its site, and that that effort culminated, to a certain extent, in the elaborate gardens which were attached to the houses. Of course, to keep up one of these establishments and its surroundings a great deal of money was required, and he was afraid, without being disrespectful to any of the nobility, that some of these stately mansions were in the hands of people who were not rich enough to properly maintain them, though if the buildings suffered in consequence, that was no fault of their architects. The admirable woodwork, ironwork and plasterwork of the period were excellent studies in design, and also in manipulation—in workmanship. They had all the feeling of the artist workman. In his opinion this work had created a great English school, and to call such work Italian—work that had been the national style for 200 years—was straining the point a good deal. It was just as truly English as the Gothic architecture of the fourteenth century, which prevailed here, in contradistinction to the foreign Gothic of the same period. He somewhat objected to Mr. Gotch's use of the word "theatrical," especially in regard to the bridge at Wilton. If any one saw that bridge with the foliage, &c., about it on a summer day, he would feel that such a term was misapplied. The bridge had been copied by Wood, of Bath, but even the copy of the bridge had something of the English feeling and an absence of "theatrical" style. As to Lord Burlington, the age was one of letters, and no gentleman of culture was considered to have his education complete unless he knew something of art and, most of all, of architecture. He wished that modern education embraced the same subjects, for he felt that if it did the architecture of the country would be improved, because a demand would arise on the part of cultured clients for a higher order of art. The learned patron of architecture did not exist to-day, and the consequence was that there was no one to fashion and correct the public taste. In regard to the Villa at Chiswick, it was not a house to live in continually, but a place where its owner could spend a few days of quiet. It faced the river, and exactly expressed its purpose of a riverside house.

Mr. E. W. Mountford, in seconding the vote of thanks, said that Mr. Gotch's paper was one of the most interesting he had ever heard, and it showed that Mr. Gotch had read a great deal on the subject. He felt that they would all agree with Mr. Gotch rather than with Mr. Brydon in regard to eighteenth century houses. He did not profess to have such a knowledge of the period as Mr. Brydon possessed, but he might say that the houses of the period did not appeal to him, except from the outside. The palatial rooms were very grand to look at, but they must have been very uncomfortable to live in, and in some of the examples the extraordinary height of the rooms, even where there was no particular grandeur of architecture, must have made them very uncomfortable residences. He was thinking of a house at Easton-Neston, in Northamptonshire, which was attributed to Wren, like a good many houses he never saw. The family rooms were on the ground floor, but the smaller rooms, where the occupants generally lived, were made the same height as the others, the average height being about 18 ft. A room of that height did not suggest comfort. As to Blenheim, architects were told they ought to admire it, but he was bound to say that he did not admire it altogether. The whole atmosphere of the place was excessively aristocratic. He quite agreed with Mr. Brydon that the smaller houses of the period were very comfortable. It was his lot to spend his younger days in a house built in the early part of the eighteenth century, and a most comfortable house it was. The rooms were all panelled, and the doors had only two panels.

An air of quiet simplicity was a characteristic of most of the smaller houses of that period. They had one or two failings, one being the occasional mistake of the architects in keeping the roofs below the parapets. That was an architectural mistake which often occasioned much trouble in snowy and had weather. They were very well planned, as a rule, and frequently were exceedingly beautiful, though towards the end of the century the deterioration began which culminated in this century.

Mr. H. Lovegrove said that the illustrations which accompanied Mr. Gotch's paper were admirable, but Mr. Gotch had not referred to small houses in streets at the end of the eighteenth century. One thing about them was the paneled walls, the joinery of which was of excellent description. What usually struck him was the smallness of the rooms of the houses. The front room on the ground floor, which was used as a dining or a drawing-room, usually had one portion of it taken up by a great chimney breast, and in the back-room a large portion was occupied by an angle fireplace, and the rooms were very lofty as well as very small. The execution of the plasterwork was very good. He was interested very much in thinking of their meeting that night to discuss such a subject, for some thirty years ago, in the days of the pupillage of some of them, the study of such a subject was altogether discouraged. They were told to read Parker and Kickman rather than to give attention to the subject. But one could not help thinking now that the interiors of the houses of the period suited the vernacular joinery and furniture better than modern Gothic.

Mr. H. W. Pratt said that they were indebted to Mr. Gotch for pointing out the advantages and disadvantages of the palatial and the more homely styles of the eighteenth century. One thing had struck him, and that was that the middle-class people did not attempt to ape the nobles in a palatial style in their residences, and that was a tendency which we did not follow, for nowadays there was an inclination to imitate the palatial style of building in our smaller residences. He thought we might take a lesson from the eighteenth century, and maintain that characteristic homeliness of treatment which, combined with taste and simplicity, was really very charming. In looking at the excellent illustrations which Mr. Gotch had brought before them that night he could not help thinking that some of the rather grand buildings which they had seen, however much they might be called "theatrical" in style, and, however much they might fail in the matter of convenience, really represented a wonderful mastery of plan and grouping, apart altogether from convenience. Some lessons might be learned from such examples in that respect, however much we might condemn them in others. The architects of the period combined something which should make us call them certainly more than amateur designers or architects. As Mr. Gotch had said, no one could imagine the effect which some of these enormous buildings and their lay outs would present, unless we used a balloon for the purpose of inspection; for the immense space occupied by the buildings made it impossible to realise the whole idea of the plan. It was external architecture really, and in studying the disposition of these buildings the modern architect must learn carefully what to follow and what to avoid.

Mr. Howley Sim, in supporting the vote of thanks, asked Mr. Gotch if, in the course of his researches, he had discovered the date of the first sash window. It seemed to him (the speaker) to mark a very important epoch in the history of architecture, for the whole of the style seems to have depended upon it. He thought that the character of the people of the time had been overlooked in previous studies of the eighteenth century architecture. They were not a people in a hurry, like ourselves, and they had plenty of time to think about and carry on their avocations. Absolute convenience in the matter of quick service, and in the disposition of their service rooms, was not considered of the same importance as it is now. The modern idea was convenience in the house first of all; in the eighteenth century it was only the second object sought after. Then, pleasure was gained by a house of tolerable convenience which called forth admiration. With regard to the study of the style, he did not think that it should be reproduced to any extent now, for it did not express our wants. As had been said, a great deal of beauty was to be found in the ironwork, plaster work, and joinery. As regards the joinery, half the charm of joinery disappeared when it was turned out by machine, instead of

by hand, as it was to-day. But, of course, we could not give up machine-made joinery, as it would be absurd to go back to hand-worked mouldings, for instance. Had the eighteenth century had the opportunity, no doubt they would have used the machinery for the purpose. He would like to ask Mr. Gotch another question: What was the earliest example of mitred mouldings?

The Chairman, in putting the vote of thanks to the meeting, said that it was a curious enquiry as to the great difference of opinion in regard to the Gothic and Classic styles. The revolution of feeling in regard to the two styles in the two periods represented by Evelyn and Pugin respectively was extraordinary. He could account for it in no other way than Mr. Gotch had, viz., that both parties, but especially the eighteenth century party, had lost sight of the fact that architecture was a constructional art. The great fact for the architect of to-day to remember was that he was living in an age when common sense was required above all things. He did not know that anything had struck him more when at Vicenza than the steady deterioration noticeable in Palladio's work. It seemed to him, the speaker, that when an architect adopted a style such as the Roman, considered that to be perfection, and went on copying in that style, he deteriorated very rapidly. If Palladio's architecture had been founded on common sense principles, and such principles as guided the great *quattro cento* architects of Italy, a very different result would have been seen, for the man had great judgment and a great sense of proportion.

He, the speaker, had been dealing with a very good example of an eighteenth century house, Hare Hall, near Komford. The house was not palatial, but was planned on the usual palatial style. The whole of the ground floor rooms were less than 8 ft. 6 in. high, and the first floor was devoted to the state apartments. The attics were the only bedrooms, and the windows in them were placed so high that one could only just look out. The house, which was built about 1763, was faced with Portland stone. On the other side of the road, in grounds of about the same size, was Gidea Hall, which was a perfect type of the early eighteenth-century house, built of a kind of brindle brick and dressings of a brighter red brick, with carved stone cornice. One defect it possessed was a flat roof. He had been recently speaking to a successful business man who had employed the same architect on several occasions, and for which architect he had a very high opinion. In the opinion of his business friend, that architect always succeeded in making the sides of a house as beautiful as the front. His buildings were excellently planned, and his houses were always comfortable. It struck him, the speaker, that common-sense results of that kind were what appealed to the public, and would do more to popularise architecture than anything else. Machinery, he thought, was likely to be of use in regard to the production of circular work, at almost the same price as straight work, and this was an important consideration. In some of the old houses of Lincoln's Inn-fields, and elsewhere in London, the staircases, plaster-work, ironwork, and chimney-pieces, were of very beautiful workmanship indeed.

The vote of thanks was then put to the meeting and carried unanimously.

Mr. Gotch, in reply, said that he feared he had not done justice to the eighteenth-century work as a whole, but he had been dealing with the text-book architecture of that period. When we came to examine the work of the eighteenth century, and especially the big work, defects and shortcomings were revealed, and, whatever might be said in favour of the grand treatment of architecture, he should still maintain that the groundwork, the bedrock on which architecture rested, was utility. It was no good to say "here is a beautiful house" which, no matter what the proportion or the design, when examined as a house, was a complete failure. In so far as it did not satisfy the purpose for which it was built, to that extent it was a failure. A thing to be a work of art must fulfil the purpose for which it was designed and for which it was wanted. If it were claimed that these large palaces were merely for show he would agree, but as dwellings they were failures, and as failures they were considered by many people who lived at the time of their erection. He could sit down and write another paper on eighteenth-century work which would contain very little but praise, and he would take as his theme the smaller houses of the time, where there was no great effort made, where people did not want state and grandeur, but where they wanted homely comfort. As a rule that was achieved, but a curious fact was that

the names of the architects of these houses had vanished. In regard to Mr. Brydson's exception to the use of the word "theatrical," the word was Walpole's, who was a contemporary. He was afraid he could not give the date of the first sash window, or of the first mitred mouldings, but he thought the sash window made its appearance somewhere about Charles II.'s time (about 1675), and the mitred moulding preceded that by about fifty years. Mr. Gotch then drew attention to the various drawings which were exhibited, which included the collection of drawings made by Lord Burlington, from the Devonshire Burlington collection in the Institute Library—a collection very little known. From some of these drawings it was perfectly evident that the convenience of disposition of the house was not considered at all. A collection of rooms, none of which were named, were grouped to look well on paper, and with the object of their making an harmonious exterior. As far as he could discover, that was as far as Burlington and his school devoted themselves to "scientific" planning.

The Chairman announced that the next meeting would be held on April 2, when Mr. T. G. Jackson, R.A., would read a paper on "Architecture in Relation to the Crafts." The meeting then terminated.

ARCHITECTURAL ASSOCIATION

SPRING VISITS:

BUILDING TRADES EXHIBITION.

THE fourth visit of the current session was paid to the Building Trades Exhibition at the Agricultural Hall, by the kind permission of Mr. H. Greville Montgomery, and a large number of members availed themselves of the opportunity of inspecting it.

The occasion was much appreciated by the members attending, as being a distinctly valuable opportunity for comparing the specialities of the various firms, which is practically only possible on some such occasion when they are collected together under one roof, and a vast amount of information could be obtained in a short time by a little careful study.

To students this applies with particular force, as it was possible to see models of a whole system of drainage, together with all the actual parts, and then compare it both as regards general principles and details with an adjacent arrangement; a form of study which may have been new to students even when the exhibits themselves were not novel. In the same way the various patents and methods of fire-resisting construction of floors and partitions could be compared and the drawbacks and advantages duly noted; whilst any information as to sizes, strength, and cost could be easily obtained.

A hearty vote of thanks to Mr. Greville Montgomery terminated the Visit, which, though slightly differing from the usual proceeding of inspecting a building in progress, was amply justified by the exceedingly valuable and interesting information which was placed at the disposal of the members.

THE BUILDING TRADES EXHIBITION.

THE Lord Mayor, accompanied by the Lady Mayoress and the Sheriffs, opened the Building Trades Exhibition on Saturday last week, at the Agricultural Hall, Islington. The ceremony took place in the eastern gallery, and amongst those present were Sir Arthur Blomfield, A.R.A., Mr. George Frampton, A.R.A., The Technical Attaché to the German Embassy, Mr. Charles Barry, Mr. H. H. Collins, Major Leslie, Major Isaacs, Mr. Douglas Matthews, Mr. Lewis Angel, Mr. T. M. Rickman, Mr. E. Benedict, Mr. Thomas Blashill, Mr. J. Belcher, Mr. Shadbolt (Master of the Masons' Company), Professor Banister Fletcher and Mr. H. Greville Montgomery, the manager.

Professor Banister Fletcher, Chairman of the Consultative Council, in proposing a vote of thanks to the Lord Mayor for attending that day and opening the exhibition, said that the interest the Lord Mayor took in technical and handicraft education was not a recent growth. In explaining the origin of the handicraft competition which would commence at the exhibition that day, he said that such competitions were started five years ago experimentally. It was thought that open competition free to all would stimulate men to better work, that it would be of advantage that those not so advanced in practical knowledge should thus have

an opportunity of watching day by day the work done, and that both would be advantaged by seeing during their resting time the best materials, appliances, and inventions connected with the trades, and also the works of art lent for the exhibit by the Science and Art Department, by the Corporation of London, by City Companies, and others. The medals and prizes included those given by the Worshipful Company of Carpenters and also that of the Joiners. The number of competitors was more than double that in the last competition, which itself had more than double that of its predecessor. As there was every prospect of the number continuing to increase now that the competitions were well established and had proved a success, and were appreciated by the men, monetary help would be needed to enable them to continue this valuable and growing work.

Sir A. Blomfield seconded the vote of thanks, and said that as an architect he was greatly interested in every matter connected with the advancement of technical education of the trades and crafts associated with the building trade.

The vote of thanks having been unanimously agreed to,

The Lord Mayor, in reply, said it was most desirable that people should have fit, proper, and commodious houses to live in, and above all that the sanitary arrangements therein should be complete. He thought there was little doubt that the decrease in the mortality of the human race was nearly as much attributable to the advances made in sanitation, and to the manner in which the regulations were carried out, as to the enormous strides of science, not only in therapeutics but in surgery, and the whole art of healing. It was curious that, whereas nearly everything was but a mere reproduction of the inventions of the Egyptians, Greeks, and Romans, there had been designed in England a structure more remarkable than any known in ancient history. This was the Crystal Palace. When it was determined to hold the Great Exhibition a discussion arose as to how it should be housed. Joseph Paxton submitted a design of glass and iron, which was not only thoroughly original in idea, but, having been successfully carried out, was a monument to the imaginative genius of the building trade in Great Britain. The more such an exhibition as that at the Agricultural Hall could be fostered the more would people help to beautify the city of which they were so proud, and the more would they make their homes sanitary and comfortable.

Mr. Thomas Blashill proposed, and Mr. E. Benedict seconded, a vote of thanks to the Sheriffs, and, this being agreed to, Alderman Sheriff Ritchie replied.

The company then proceeded round the building, and inspected some of the exhibits.

A luncheon was given subsequently, Mr. H. Greville Montgomery presiding.

Professor Banister Fletcher, in proposing the toast of "The Chairman," said that Mr. Montgomery had very wisely rejected extraneous exhibits, and, in his opinion, the present exhibition was the best of the kind that had been held at the Agricultural Hall.

The Chairman, in response, said that they did not intend to hold a Building Trades Exhibition next year, but they hoped two years, hence to hold another.

Mr. Arnold Statham then proposed "The Consultative Committee," coupled with the names of Mr. Charles Barry, and Mr. H. Phillips Fletcher, one of the hon. secretaries, both of whom replied.

Other toasts were "The Press," proposed by Mr. Henniker Heaton, M.P., and "The Chairman of the Executive Committee," proposed by Mr. H. H. Collins, and responded to by Professor B. Fletcher.

The Exhibition.

The exhibition is undoubtedly a better one than most of its predecessors, but it still has the defect of being rather a shop for the display of wares than an exhibition for illustrating progress and new ideas in building work and inventions, which is what it ought to be. We still find in various quarters the stands of the same firms in the same place as at last exhibition, and with little difference in their contents from what we saw two years ago. The interval is not long enough. If the exhibition is to be really what it ought to be, an illustration of progress and of new ideas, once in five years is quite as often as it is any use to hold it. There would then be some chance that each exhibition would be of real value. Added to that there ought to be a complete stoppage put on the touting and buttonholing nuisance, which is more prevalent than ever. It is

impossible to look with attention at any exhibit without having a man pushing circulars into your hand and wanting to retail to you all the merits of his exhibit and what eminent architects have said about it, &c., &c. Just imagine such proceedings at, for instance, the Arts and Crafts Exhibition. If the Building Trades Exhibition is ever to take the place which it undoubtedly might take, this kind of procedure ought to be sternly stopped, as the management could certainly stop it if they tried. We may observe also that there is no improvement in regard to the system, or want of system, of arrangement and cataloguing. The catalogue defines exhibits as being in "Row A," "Row B," &c., but these "rows" are not lettered up anywhere in the building, nor is there any key plan attached to the catalogue. It is impossible to know where to find anything that one may see mentioned in the catalogue, or where to find the catalogue description of anything one sees, except by the tedious process of finding the exhibitor's name in the alphabetical index and then turning to the page. It would be perfectly possible to classify the exhibits and arrange the catalogue so that everything could be easily found; it is only a want of system that stands in the way.

In remarking on special exhibits, we may most suitably commence with the class of materials for building comprised under the head of

Stone, Brick, and Terra-cotta.

The exhibits of quarry productions are, for the most part, confined to surveyors' materials, and some well-known firms send small samples of road-metal, kerbs, chips, and the like. The exhibition is decidedly weak in stands of building stone, though stone as a whole is rather better represented than on the last occasion.

In regard to road-metal the Mountsorrel Granite Company and the Enderby and Stoney Stanton Granite Company represented the macadam of Leicestershire, there being several samples also of fine chippings and sand—the finer screenings from the "jaw-breakers" in the conversion of the stone by machinery; the same firms have a few specimens of granite kerbs, setts, and dressed granite. The Glyn, Ruabon, have a small stand on which is shown the peculiar road macadam from that part of North Wales. The material is remarkable as being employed instead of brass for machinery bearings. That particular class of stone is very rare in this country; it may be described as an amygdaloidal trachyte, and occurs as a broad dyke or vein running through Lower Palaeozoic rocks. Darbishes, Limited, have a small exhibit of the celebrated Penmaen-mawr stone consisting of setts, channels, macadam chippings, sand for concrete, flags, &c. It will be remembered that this material is not a granite, but an entaste diorite, and occurs as an intrusive mass, near Conway; from its general appearance it might readily be mistaken for basalt. The old Radnor Company, Limited, of Kingston, Herefordshire, has a stand displaying some small samples of channel stone, &c., whilst the Westbury Iron Company, Limited, of Coleford, near Bath, showed the capabilities of Carboniferous Limestone for road-metalling and asphaltting purposes. Tough blue whinstone from Whitehead, near Belfast, broken for macadam, and chips is shown by Mr. C. W. Cooper. Mr. C. Souton exhibits Cherbourg quartzite from the Montmatre and Le Mottere quarries; that from the former has a crushing strength of 2,908 kilogr. per square centimeter. The stone appeared to break clean, and may be compared with the Hartshill quartzite from the neighbourhood of Nunenton.

In regard to building stones and marbles, the exhibit of the Barton Limestone Company, of Melsonby, via Darlington, was interesting as introducing a stone that has hitherto only been used chiefly for metallurgical purposes and macadam. Now it is polished as marble and is employed also as a general building and engineering stone. It reminds us somewhat of the well-known Hopton Wood stone, but can be readily distinguished by its different tints. It is a Carboniferous limestone composed almost entirely of the stems of crinoids, and the divers positions in which these lay give a characteristic pattern to the material. There are two principal kinds of the stone. One is very light in tint (a greyish yellow) and there is barely enough colour to throw the fossils in relief; the other is light grey also, but the crinoid stems, &c., are outlined in light blue. We much prefer the latter to the former for ornamental purposes. The use of the stone for rockeries and the like is well shown in this new exhibit. The beautiful marbles of Derbyshire were represented by the effective display of Messrs. Twigg & Company, of

Ashford. The dark-tinted crinoid comes out well in the chimney-pieces and balusters shown; whilst the black marble, so different to the majority of stones that are called by that name, are in reality black, jet black, and is one of the most remarkable stones in England. Thin sections of that also show that it is made up of small crinoid remains. The marbles from this locality are noted as not being highly coloured; the prevailing tints are grey, ranging from very light yellowish grey up to the black alluded to, though a little red staining may occasionally be seen. The different sized crinoids found in each variety of marble are characteristic, and give the local names to the materials. Messrs. David & Sant, Limited, of Coleford, Glos., have a good exhibit of Forest of Dean stone; the samples are uniform in tint and take a fine air. The stone supplied is in three tints, viz., blue, grey, and red, and the firm has over fifty quarries. Ketton oolite is represented from the quarries of Messrs. T. C. Molesworth & Co., who state that its absorbing power is about 14 per cent., whilst the crushing weight is 1½ tons per square inch. Mr. J. Rooke, of Weldon Grange, near Kettering, exhibited samples of Weldon stone, which is also an excellent material. Amongst other building stone exhibits were:—Messrs. B. Graham & Sons, of Huddersfield, moulded yellow sandstone from Crosland Moor quarries; Messrs. J. Riddiough & Son, of Bradford, samples from Bolton Wood quarries, Frizinghall; Messrs. Thos. Obank and Sons, Idle, near Bradford, York stone, ashlar and delphstone sawn and worked; Messrs. J. Farrar & Sons, Southwam, Halifax, hard blue stone from Bell Dean quarries, Thornton, &c.; Mr. Wm. Wilson, samples of paving materials from quarries in the neighbourhood of Kilsyth, Stirling. Messrs. Baird & Stevenson, of Carlton-place, Glasgow, show six 8-in. cubes of freestone from different parts of Scotland.

Slates are fairly well represented, but they are mostly of foreign origin. Those from America are exhibited by Messrs. Iles & Co., of Peckham, and Mr. C. H. Broodbank, of Martin's-lane, Cannon-street; the last-mentioned has also many samples of slate from Angers, France, as well as Irish paving and building stone. The house erected by the former firm, lined and roofed with American slate, was very effective, but we cannot say that any of the American material shown takes such fine, straight cleavage as do our best Welsh slates. In regard to tint, what are on view appear uniform and leave nothing to be desired in that respect, and we were particularly struck by the tea-green samples shown by Mr. Broodbank. The Abercrombie Slates Quarry Company, Limited, of Machynlleth, has a good exhibit of both slates and slabs. The "silver-grey" slates especially appear to be very sound, and to be practically free from pyrites.

Of artificial stones there are plenty. The Victoria Stone Company once more show the kind of work they are turning out, and enable us to compare their artificial ashlar and mouldings with those made of Portland and red and yellow Mansfield stones, as well as their application in various kinds of architectural work. The Sandstone Syndicate, of London, has erected a door, way and balustrade in white artificial sandstone which do credit to the material. The Paten, Indurated Stone Company, Limited, of Millwall, has various samples of silicated concrete work. The Imperial Stone Company, Limited, of Greenwich, make a goodly display of their various artificial productions, including a large stone arch, vases, slabs, drain-pipes, &c. The Marble (Moreau-Rae) Syndicate, Limited, of Lots-road, Chelsea, exhibit the capabilities of artificial marble for the purposes of decoration. Examples are shown of its application to stair-cases, dados, mantelpieces, table-tops, balustrading, columns, &c. The "marble" is white limestone, absorbent enough in the first place to take on varnish streaks and colours produced chemically, the whole being subsequently indurated. Although almost any desired tints may be induced to form, and the result is not bad, no one could mistake the material for true marble. "Petrifite," described in our columns a short time since, is one of the novelties of the exhibition. The Val de Travers Asphalt Paving Company, Limited, show several forms of paving blocks; and the applications of Callender's bitumen damp course were illustrated by models.

The brick and terra-cotta exhibits were not particularly novel, and there is very little to say about them, though many leading firms are exhibiting. Messrs. Candy, of Newton Abbot, have a large stand of stoneware, glazed and fire-bricks; Messrs. J. Grayson, Lowood, & Co.,

Limited, of Sheffield, have silica and ganister bricks; and a good show is made by the Worcester Fire Clay and Blue Brick Company, Limited, who have also sanitary clay goods of every description; the National Opalite Glazed Brick and Tile Syndicate, Limited, show the application of an artificial opal for veneering bricks, tiles, &c. Watson's patent Improved Roofing Tiles are on view, and show the effect on roofs produced by longitudinal grooves in tiles, the idea being to prevent rain-water from splashing up underneath or between the tiles when the latter are firmly secured. These tiles, we understand, are made from Broseley and Staffordshire clays. Amongst several other firms exhibiting bricks and terra-cotta are Mr. F. Jewson, of Earith, near St. Ives, Hunts, whose yellow bricks, wire cut, indicate a mean strength of 1785 tons per square foot; Messrs. S. & E. Collier, of Grovelands Potteries, Reading, flower vases, seed pans, brackets, &c.; Messrs. Wood & Ivery, blue Staffordshire bricks; Mr. E. Holwill, Temple-chambers, glazed bricks and tiles; Mr. Mark Gentry, Hedingham, Essex, red hand-pressed and hand-made facings, rubbers, and moulded bricks; the Castle Fire-brick Company, Limited, of Northop, Flintshire; the United Kingdom Terra-cotta Fire and Sound Proof Brick Company, Limited; Mr. W. T. Chapman, terra-cotta works, Cleethorpes, Lincs; and Messrs. Joseph Cliff & Sons, of Wortley, Leeds, who have a fine display of glazed bricks, sinks, dove-tailed bricks, lavatory basins, &c.

Drainage and Sanitation.

In this section several important improvements are shown, and we are inclined to think that this department is one of the strongest in the exhibition.

The Albion Clay Company, Limited, have gone to considerable trouble and expense over their exhibit, which will, however, we think, amply repay them, in that visitors may see some of their important improvements at a glance. From an educational standpoint also, the complete system of drainage which the Albion Company have laid out is also to be commended. This system contains all the latest inventions of the company, and one can see how each is suited to its position and purpose. We may briefly enumerate some of them: The drain-pipes are those known as Sykes' patent joint pipes, made of granite stoneware. The joint is formed of a thick plastic composition, which sets in water, and it set between the socket end of one pipe and the spigot end of the adjoining one. The material is formed so as to screw one into the other, which gives the necessary play should any settlement take place. They are undoubtedly an improvement on an ordinary cement joint.

Sykes' patent sewer-gas interceptor consists of an intercepting trap placed in a chamber and hermetically sealed. Channel pipes are entirely avoided by the use of patent screw stoppers fitted to the pipes in such a way that they can be got at with ease by means of rods. By this system it is impossible for the chamber to fill with sewage and become a foul cesspool, the splashing of sewage and the insanitary conditions of an ordinary manhole which relies on an "air-tight" cover is thus avoided. The one weak point in an ordinary system of drainage is the manhole, and Sykes' patent interceptor seems to have rendered this state of things unnecessary. It is especially suitable for vaults or basements which are used in towns as offices.

Sykes' patent yard gully is of good form and possesses in port quantities of large grate area to take away storm water, small surface of water exposed, and cleansing arm fitted with a screw stopper of the same character as the pipes already described. They are also supplied with back and side inlets to receive rain water pipes.

A very complete exhibit is also made of inspection pipes and blocks. The inspection shoes for rain-water and soil pipes are excellent, and supply a much-needed want. The foot of the soil-pipe at its junction with the earthenware is a place which is liable to get clogged, and to remedy this and enable it to be easily accessible, a block is formed with flat bottom to rest on concrete, the upper part being fitted with removable screw stopper rendered air-tight by having a good fillet of Russian tallow in the socket before screwing up. An ordinary screw stopper inspection for insertion in the drain at different points is also shown. "Sykes' Improved Disconnecting Slipper" has been designed to meet the requirements of the Local Government Board to discharge sink and bath wastes and rain-water pipes 1 ft. 6 in. from the gully in order to prevent noxious gases escaping through the pipes into the dwelling. It is an improvement on the ordinary gully. We

have no space to speak more fully of the exhibits of the Albion Fireclay Company except to remark generally of the care with which the exhibit is planned.

Messrs. George Jennings & Co. exhibit drain-pipes and also the well-known Stanford patent joints.

Mr. George Freeman exhibits a working model of Freeman & Shoesmith's system of close-sealed house-drainage, which, we are informed, has been adopted by the Brighton Corporation. It is an attempt to render manholes less offensive and dangerous by having no channel pipes in them. The pipes are whole bore, covered with cement, and, where necessary, an inspection eye formed by inserting a piece of glass in the pipe, covered with a cement joint. It does not appear so good a method as the screw-stopped mentioned above.

Messrs. Charles W. Ontram & Co. exhibit a patent coupling for water-closet flush and soil-pipes, consisting of a split brass collar and the "Aquarius" wash-down closet, the chief feature of which is that the joint between the soil-pipe and closet is made on the drain side of the trap, and, being well below the trap level, this insures that it is left sound. The outlet of the earthenware trap is surrounded with an annular groove, or recess, into which the spigot of bend or junction is inserted. The joint itself is made by simply pouring in liquid cement until the groove is full. This form of closet adapts itself to any form of outlet, as 8 lb. lead hends with brass collars wiped on are supplied. It seems that the joint would be sound, but there is always an objection, in our opinion, to having a lead pipe within the house, as a nail hole or other abrasion readily admits sewer-gas.

Messrs. Dent & Hellyer have only one exhibit, the "Bi-syphon" four-gallon flush hospital pan and slop sink, which seems to effectively answer its purpose.

Messrs. Joseph Cliff & Sons exhibit some of their well-known porcelain baths and sinks, also white glazed channels and socket-jointed pipes.

Messrs. Broad & Co. show, amongst other things, a sink with tinned copper strainer of a somewhat novel form; a patent locking stopper for intercepting trap; and their impervious Bristol ware pipes, which, it is maintained, are superior to tested stoneware pipes, being made of a closer description of clay.

Haywood & Co. Limited, show various sanitary pipes and connexions, especially their patent lock-joint formed by means of a rebate.

John Knowles & Co. have an important exhibit, and a rather important test of the "Vitrifine" stoneware pipes is published by them. It was made by W. H. Stanger, M.Inst. C.E., on three 6-in. pipes. Two of these burst at an internal hydraulic pressure of 250 lbs. per square inch, while the third stood the abnormally high pressure of 625 lbs. per square inch before it burst.

The "Loco" Drainage Apparatus Company, Limited, have some very useful sanitary fittings, such as baths, lavatories, &c. Of these the self-cleansing overflow pipes seem worthy of note. The system consists of a syphonic arrangement which is attached to the waste-pipe in such a way that when the water in a basin has reached a certain height it automatically empties itself by means of the waste-pipe. The foul accumulation of soapy matter within overflow pipes is thus avoided, and the apparatus seems sufficiently simple to render it unlikely to get out of order. Other manufacturers of the same company we have previously spoken of, especially the "Deflector" bends for the junction at the soil pipes, which seems well adapted to lead the sewage well into the horizontal drain.

The "Loco Cement Badger," for drawing through each drain pipe as laid, in order to ensure the removal of cement "crumbs" from the interior of newly laid drains, is useful. It is provided with a flexible shaft in order to enable it to be pulled round curves.

Messrs. Yates, Haywood & Co., show some of their well-known baths and fittings of excellent manufacture.

Messrs. G. & T. Haigh also exhibit some excellently finished glazed sinks.

The Sanitary Bath Co., Limited, have on view their patent steel clad copper baths, of the same price as ordinary galvanised iron. They have the advantage of requiring neither painting nor enamelling, no wood casings are used for the accumulation of dirt, and it is said—though we do not see that we can endorse the opinion—that it does not cool the water as iron or porcelain does. Surely earthenware is one of the best non-conducting materials for baths.

The baths are certainly preferable in every way to enamelled iron, and the combined bath and lavatory basin should be of use in small houses.

Messrs. Candy & Co. have an important stall of improvements in drain pipes for surface drainage, and we noticed especially their buff vitrified Olympia stable bricks for surface drainage, similar to the buff vitreous stable bricks used by the War Department for cavalry stables.

Messrs. T. Mitchell & Co. have an interesting collection of sanitary improvements. We note especially Cassell's patent wash-basin range for schools, reformatories, factories, public works, &c., where large numbers of people have to wash in a short space of time. The invention consists of a trough in the bottom of which are formed a number of small basins just large enough to admit of immersing the hands freely; a copper pipe passing below is connected to the bottom of each basin by a brass inlet. When, at washing time, the attendant turns on the water supply, it fills each basin and overflows all round the rim into the trough, whence it is discharged by a grated outlet to the drain.

Messrs. Mitchell's drain testing and cleaning appliances are worthy of inspection, as also Chisholm's patent pneumatic system as applied to lavatory basins. In these the water is sustained in the basin by an air-lock formed between two traps. If the water reaches a level within $\frac{1}{2}$ in. of the basin top, it overcomes the air-lock and is immediately emptied, the discharge being syphonic in action; the trap and waste pipe are, therefore, well cleaned out every time the basin is used.

Moule's Patent Earth Closet Company, Limited, have an exhibit of their well-known dry-earth closets. No new improvements are to be noted, but the working models are excellent as a means of explaining the system which is shown as applied to the military depots, schools, light-houses, and coastguard stations; a large number are also fitted to torpedo-boats, as it is found the most sanitary way of dealing with excreta on board ship.

Roberts' vertical rain-water separator, which is exhibited, has often been mentioned in our columns; it still seems to be less known than it should, as it is a most useful contrivance for ensuring a fairly clean rain water supply.

Messrs. Sutton & Company exhibit their patent stoneware channel blocks, which differ from channel pipes in being of thicker section and bedded solid on concrete. The blocks are interchangeable, and the rebated joints enable a solid construction to be effected. They are made in silted stoneware, and are highly glazed with special salt-glazed enamel. The same firm also show Rayner's key joint and double socket pipes, of which there are two types, one with an inner composition and the other without. The pipes are self-centring, and the cement is inserted by means of "pour holes" on the upper side.

Mr. J. Kemp exhibits a working model of what he calls "an improved system of house drainage," in which the object seems to be to do without manholes, their place being supplied by means of pipes being brought to the surface, so that, in the words of the inventor, "the whole of drain can be rodded from water-closet pans, sink gullies, and to and through intercepting trap to main sewer in road from ground surface." We confess we see rather a retrogression than not in this "new and improved system." The long pipes cropping up at intervals along the drain to the ground surface cannot be properly ventilated, and although they are covered by an inspection eye which may or may not be air-tight, the principle is not one which recommends itself to us, and is not an advance in sanitary science. We doubt if any Sanitary Authority would pass it.

Messrs. Geo. Skey & Co. have a good exhibit of salt glazed drain pipes, traps, and interceptors.

Among gully traps of a different type are those shown by Messrs. G. & F. Conzans. They are specially constructed to prevent the back flow of tidal or storm water by means of a movable floating copper ball which seals the pipe if a back flow of sewage occurs. In cases of dry weather where the water in the trap is liable to evaporate, the ball lowers itself to the bottom of the trap and is said to form a seal in this position, though we doubt whether sewer gas would be stopped in such a case. We think that the inventors have perhaps claimed too much in this particular, but it is a useful invention as regards the back flow of sewage.

Durran's "kallio" cistern is an improvement in household cisterns used for drinking water, possessed of an air-tight cover and arranged so that the water is discharged into it by sprinklers,

thus thoroughly covering the sides of the cistern each time. It is certainly an improvement on the ordinary cistern, to which dirt and dust have free access, and in cases where a constant supply is not to be obtained, is almost necessary. With a constant supply, however, it is always best to take drinking water direct from the main.

Mr. A. T. Cooper exhibits a simple and effective vacuum pump for use in unstopping drains.

Windows.

Turning to improvements in windows, we think that the days of the ordinary double-hung sash should be numbered. Up to within five years ago it has withstood all efforts at reform, when the N.A.P. Window Company introduced their system for enabling the outside of the window to be cleaned without risking the life of the cleaner. The N.A.P. are represented at the Exhibition, and we have so lately described their system with illustrations,* that we need not refer to it again. The other systems are many of them founded on the N.A.P. principles, but vary in details.

Mason's reversible window consists of top and bottom sash, which do not slide up and down, but incline inwards for ventilation. Each sash is hung on patent centres, and it can be opened and fixed at any angle by means of a patent sash-fastening with long bar. It might be described as really a casement, with the advantage which a sash possesses for ventilation.

Mr. Laurance Senger shows his system for reversible windows, but he has an improvement by means of which the sashes are locked when closed or in any position, so that they may be left partly open for ventilation with safety, which is an improvement. This is effected by means of levers, placed at the sides of the windows, no sash-fastener being used.

Another good invention of the same character, but different in detail, is that known as "Jones's Fittings." These are easily fitted to ordinary sashes already erected. Part of one inside bead is hinged to allow the bottom sash to be taken out of frame, part of one parting bead is of brass or iron, attached to the pulley stile with pins; the cords are attached to the lower part of sash stiles, and act as centres to reverse the sashes. King Edward's Grammar School at Birmingham and other places have been recently fitted up with these, which appear simple and effective.

An ingenious invention for doing away with weights in sash windows is shown by Mr. W. Foster. In this a spring is attached to the sash, which works up and down on a rack, against which it presses sufficiently hard to hold it in any position.

Whipping's patent is another which we need not further describe.

Among metal casements, the exhibit of George Wragge contains some excellent workmanship in steel, iron, and bronze casements. The designs for fittings—such as handles, &c., are above the average.

Miscellaneous.

There is not very much exhibited in the way of fireproof floors; Picking's interlocking twin-arch floor we believe we noticed in the last exhibition. Potter's fireproof floor, of which we give a small section, has a freelay tubular



Potter's Fireproof Floor.

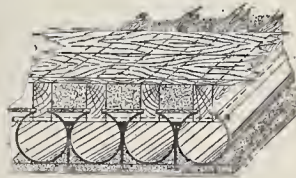
covering to the lower flange of the iron joist, the concrete is carried on corrugated iron bent to an arch form. This is a simple and light floor. We do not remember to have seen before the floor exhibited by the Pease's Tubular Construction Syndicate, of which we give a section as used for concrete and for boarded floors; the bearers con-



Pease's Tubular Floor, with concrete filling.

sist of galvanised troughs of nearly circular section. The same firm exhibit also a very workmanlike portable house, constructed in long panels with a slightly curved section (the convex outward), the panels are of wood-pulp board with

a waterproof covering, clipped into an open-joint tube at the meeting edges; this is worth attention. In this connexion, or because it is close by, we may mention the exhibit of the Granite



Pease's Tubular Floor, carrying wooden floor.

Silicon Plaster Co., who show a remarkable hard and quick setting plaster carried on wire mesh.

In regard to damp-courses, one of the most interesting is that known as "Callender's Pure Bitumen Damp Course." It is a composition of Trinidad asphalt on a framework of jute. It is very pliable, and of course absolutely waterproof. It has been used extensively on the District Railway extension from the Mansion House to Aldgate, the new Waterloo and City Railway, the Tower Bridge, and is also being used as a lining to water reservoirs. It is practically jointless, and is used as an ordinary damp-course in buildings, and also as a covering to existing damp walls. A model of a brick wall standing in water is shown, and is a good illustration of the way in which the water soaked up by bricks is stopped by the damp-course. The material is also used as a covering for flat roofs. Messrs. Anderson & Son, Limited, exhibit some samples of a foundation felt or damp-course, which is made in slabs 2 ft. 8 in. long and of various thicknesses to suit the wall. Its price, 12d. per square foot, should make it as cheap as any damp-course.

In regard to floor coverings, the Exhibition is comparatively weak, but a very good exhibit is the "Perfected" system of wood block flooring (Charteris & Longley Patents) by which each block is held to its neighbour by dovetail rebates and tongues formed all round the lower edges. It is simple, and therefore superior to the systems which depend on dowels, which may be left out by workmen. Some good combinations of different woods are shown in various patterns. Many of the New Zealand examples should come into use. The Cork Pavement Company show some examples of their pavement. It is made of cork and bitumen; its qualities are stated to be non-absorbent, noiseless, warm, and elastic. It has been used for drill halls and churches, and also for roadways, as at Liverpool-street Station. Lyte's Metallic Woven Tread Company show their patent, which we have before described, and which consists of lead run in between iron weaving, and fixed in squares of about 1 1/4 in. in a metallic hacking for stair treads. It has been used at Sloane-square Station, among other places.

Wilson & Co.'s patent "safety" pavement lights are an improvement on the ordinary pavement lights, which are objectionable because of the projecting ironwork. In this case the iron divisions are filled in with lead, which is flush with the surface of the glass. Some roof-lights are also shown. In these the condensation water is led off by small gutters formed in the ironwork supporting the glass, and the glass being of arched form, this enables it to be accomplished easily.

There is a small collection only of locks, and the stand of Messrs. Joseph Kaye & Sons is, as usual, interesting in new inventions and adaptations. Some of the locks and fastenings for exits doors in theatres and the like show improvements, especially in meeting the requirements of the London County Council and other bodies for automatic opening, and the exhibit is worth inspection.

Machinery.

The machinery at this exhibition does not, as such, possess much interest. It consists mainly of brickmaking apparatus, two sets of exhibits of wood-working machinery, a few gas engines, and a portable steam-engine. Oil engines are conspicuous by their absence, which is to be regretted, as, for outlying jobs, we should have thought they would be found very useful in building operations.

Of the gas engines, that shown by A. Dougill & Co., Limited, of Leeds, struck us as worthy of notice. It is a 15 nominal h.p. "Otto" engine, giving 36 brake h.p., and is fitted with Green's self-starter, which appeared to work remarkably well. It is claimed that the governor is very

sensitive, and suitable for electric light service. The absence of the peculiar noise made by the Crossley engines on the ignition stroke is very marked. The "Smithfield" gas engine, made by Thos. Green & Son, Limited, of Leeds and London, drives a small electric light installation with good results, and seems suitable for this purpose. The "Stockport" engine driving the exhibits of Mr. Sidney Butler does not call for any comment.

The one and only steam engine is sent by the well-known firm of Messrs. Ransome, Sims, & Jefferies, Limited, of Ipswich. It is a 20-h.p. portable, and is of the usual pattern supplied by these high-class makers.

There are two exhibits of electric fans, viz., the Blackman Ventilating Company, London; and Messrs. Matthews & Yates, Limited, London. The motor of the Blackman fan seems very cumbersome, and, being placed round the axis of the fan, of necessity considerably impairs the efficiency of the machine. In the Cyclone fan by Matthews & Yates, Limited, the motor is much smaller and less open to objection; but in each case there is room for improvement in detail both as regards appearance and design.

The brick-making plant shown by Mr. William Johnson and others is not of very general interest, and comprises wire-cutting machines, presses—both hand and driven—and also crushers. At Mr. Sidney Butler's stand may be seen wood-working machinery for planing, squaring up, chamfering, thickening, straight and circular moulding, sawing and morticing; a very handy little tool being shown for trying-up and planing.

Messrs. J. Sagar & Co., of Halifax, have machines on exhibit for similar purposes, together with an automatic plane-iron grinder, suitable for knives up to 26 in. long, which should be found a very useful adjunct to planing machines.

Electrical Work.

It is surprising that electrical firms have not taken more advantage of this exhibition, as the few firms who do exhibit have been well patronised. The two rival firms of Messrs. Matthews & Yates, and the Blackman Ventilating Company have attractive exhibits. The Blackman Company exhibit various new types of motors and fans. In their old type the armature spun on the circumference of the fan, and this type is still retained when a small slow speed fan is desired. The objection to this type according to their rivals, and it seems a real theoretical objection, is that the armature obstructs a larger volume of air than if it revolved near the axis of rotation. This objection, however, does not apply to their new type which is a thoroughly satisfactory motor and fan.

Messrs. Matthews & Yates have an instructive exhibit of cyclone "air propellers" and "blowers," actuated by electric motors. They are very efficient and economical, and are now getting well-known. Both firms are prepared to fix fans with alternate current motors in buildings connected with a supply of alternating current, and to guarantee their efficient action. They also exhibit alternating current motors. This is very satisfactory, as efficient single phase alternating current motors are thought by many electrical engineers to exist only in theory. We were disappointed not to see any of the ceiling fans so common in America, as we believe there is an opening for them in this country.

Messrs. Callender & Company's electrical exhibit will well repay study. The Callender-Webber conduit system was one of the earliest as it is one of the best methods used for laying down electric cables. The Chelsea Company used these conduits as early as October, 1888, and although many improvements in detail have been made since, yet the main principle remains the same. Models are also shown illustrating the Callender solid bitumen system, used amongst others by the Charing Cross Company. The methods of making connexion with a concentric main are well illustrated.

The samples of cable exhibited show what great advances have recently been made in their manufacture. Samples are shown of the three conductors of a three-wire supply station contained in one cable, and yet insulated from one another, and of triple concentric cables. We were particularly struck with a sample of "locked coil" armoured cable which is used by the Guildford Electric Light Company. It consisted of a concentric cable insulated with bituminous fibre, then sheathed with lead, and on this there is a solid bed of compounded yarn on which two wide ribbons of mild steel are wound spirally, and it is finally protected by jute yarn well impregnated with a preservative compound. A cable like this could be placed directly in the

* See *Builder* for March 6, 1897, p. 230.

ground, as we understand has been done at Guildford, no skilled labour being necessary except for jointing, and hence there need be very little interruption of traffic, and it is at the same time more economical than the ordinary methods. It would be well if the company published details of the specific insulation of the vulcanised bitumen. To say that it is less than india-rubber conveys very little information, as, according to Mr. Preece, nearly every insulating material has a less specific insulation than india-rubber.

Heating and Ventilation.

In connexion with ventilation and heating there is very little to be seen in the exhibition, and less still that is new.

Messrs. Ewart & Sons have some new forms of ventilators, embracing, however, old principles, but showing good workmanship. The "Crown" ventilator is a very simple arrangement of louvres, and the "Victoria" ventilator is a revolving cowl in which the current is produced by the revolving blades, but abandoning the older form of Archimedean screw.

Mr. Thomas Potterton exhibits his arrangement of hoilers for supplying hot water and also warming the house from the kitchen fire, but that, of course, is not new. He also shows some good safety valves for domestic boilers—the special value of which is the opportunity they offer of examining and testing the action of the valve by means of hollow spindle and cock.

Messrs. Matthews & Yates, Limited, show some fans, both of radial and centrifugal type, with electric motors combined. There is, of course, nothing particularly new in this, but the arrangement and work are fairly satisfactory. The same may also be said of the well-known Blackman Fans.

In stores there is very little that is new. Messrs. Yates, Hayward, & Co. have an improvement on the now usually adopted type of kitchener with lifting fire, in which the lifting arrangement is independent of a rack, and works by a weighted quadrant.

A simple, cheap, and at the same time good, form of safety valve for kitchen hoilers is exhibited by Messrs. Docking & Co., under the name of the "Croydon" safety valve, the essential feature of which is that a metal cone is so arranged as to burst at a desired pressure of from 50 to 65 lbs., and so relieve the tension on the boiler.

Artistic and Decorative.

Among the objects which are of artistic interest there is in the gallery a very interesting series of exhibits. The loan exhibition of architectural drawings is not very large, nor does it include many eminent names; but Mr. J. P. Seddon has a remarkable exhibit, including a number of exceedingly fine drawings and designs, some of which are well known to architects, also a large number of slight but free and clever water-colour sketches, a large fireplace and over-mantel in walnut wood with mosaic panels, &c., of original and effective design in an architectural sense; we do not think the walnut wood goes quite well with the mosaic. He shows also designs for stained glass and some bits of executed glass in Rust's material, which has the merit of presenting rich and varied tints of each colour, instead of a merely flat tint and monotonous colour. The advantage of treating glass in this way is that so much may be done with it without interfering with the surface by any laid-on pigment. There is also exhibited a remarkable cabinet carried out a good many years ago from Mr. Seddon's design, with figure subjects in the panels painted by Madox Brown, Rossetti, and other eminent painters. Mr. Seddon's exhibit also includes some of the decorative details for St. Peter's, Thanet, which was re-opened the other day after decoration from his designs and under his superintendence. Further down, the Carpenter's Company have lent a collection of the models and practical work done by their students. Then we find more architectural drawings (miscellaneous) and a collection of designs and models of the Tower Bridge and of buildings carried out for the Corporation of London—the Council Chamber of the Guildhall, the Guildhall School of Music, &c. South Kensington has lent a small but interesting selection of old work, including a remarkably fine carved wooden frieze and cornice from an eighteenth-century house; a fine lead cistern with raised floral ornament; and downstairs there is also, lent by the Museum, a very fine Classic doorway from a house in Great Ormond-street.

On the other side of the gallery is the most interesting artistic exhibit of all, that of the productions of the Della Robbia Ware Company, of Birkenhead, of which Mr. Harold Rathbone is

the manager and was to a great extent the initiator. This is a most successful revival of an old artistic process, shown in a great many very good designs, and we would draw the attention of architects to the opportunities afforded them here for indestructible and washable sculpture and modelled decoration, with or without colour.

Among the trade exhibits there is naturally not much that comes under the head of artistic interest. The best exhibit in this sense is that of Mr. John White, whose grates and wooden mantels, designed by Mr. Lethaby and Mr. Quennell, have character and originality. Some of the mantels in the collection of Messrs. Bratt, Colbran & Co., who have a very large show at the top of the hall, are good in design and in the colour effect of the tiles combined with them. Among decorative tile work Messrs. Mensaeco & Co. exhibit reproductions of Saracenic detail in wall tiles which are made at Granada of materials found in that neighbourhood, and they have succeeded in giving these a remarkably fine colour and subdued lustre, while we are assured that the colour is so far incorporated in the tiles that it is practically indestructible. Messrs. Pilkington have some one in their firm who has a feeling for delicacy of line and colour in tile design, or they have known where to go for designs; some of their exhibits are exceedingly good in this sense. The Anaglypta Company and Messrs. John Lane & Sons exhibit a good class of wall decorations.

Among materials or processes which lend themselves to decorative work is that of the Mural Decorative Company, who exhibit decoration in what appears to be plaster, but which is a material lighter than plaster and apparently harder and less brittle. The United Asbestos Patent Company show specimens of incombustible material moulded into decorative panels and ceilings with the effect of rather coarse plaster work, as the material does not apparently allow of sharp definition; but for large spaces and for decorations on a large scale this would be no drawback—it might even be an advantage. The Opalite Company and the Opal Tile and Decorations Company are two different firms which exhibit what seems to be practically the same thing, viz.: thin glazed tile surfaces for affixing to walls, giving them the appearance of glazed brick. We should be rather afraid of these thin slabs coming off; it is true that in that case they can be replaced much more easily than a glazed brick. "Emdeca" appears to be an employment of zinc plaques for ceilings and walls in imitation of tiles; the method may be useful in getting a decorative surface, but why imitate tiles? The "Cameo Wood Working Company" treats wood under pressure with steel dies so as to produce the effect of a light-coloured carved wood in low relief inlaid into a darker ground; and though we fear we cannot agree that it produces an effect "quite equal to superior wood-carving," it has its merits. A good deal is done with it for decorative wooden covers for electric wires.

There is little wrought iron work; the general character of that exhibited by Mr. Geo. Wragge is good, and has the merit of being comparatively broad and simple in style. The exhibit by the Expanded Metal Company serves to show that this material combines light appearance with strength, for metal fencing, &c., in an unusual degree.

Illustrations.

ALBI CATHEDRAL.

THE foundations of the present cathedral of Albi, which is dedicated to St. Cecilia, were laid in 1282; and the main building was completed late in the fourteenth century. The whole, as it now stands, was finished in the last years of the fifteenth and the early part of the sixteenth century, when the rich and picturesque south porch, or baldachino, was erected together with the stone rood-loft and choir screen, the stalls, and the frescoes. This varied workmanship renders Albi particularly interesting; in the porch, screens, and rood-loft the influence of the Gothic of Northern France makes itself felt; the statuary and carving in wood and stone are Flemish; the frescoes are Italian. Moreover, the cathedral is not only a church, but a fortress. The great west tower is nothing but a donjon keep. The exterior buttresses rise from a glacis, vertically, in the shape of semicircular flanking towers; these towers are connected by an embattled machiolated parapet. The whole aspect of the cathedral, externally, is castellated;

military, not ecclesiastical. In fact, the cathedral is only one member of a chain of military works which, including also the fortified palace of the Archbishop, extend to the ramparts which crown the escarpments that rise to the north from the Tarn. The fierce religious struggles which ended in the extermination of the Albigenes give the key to this striking exterior as well as to those of such churches as Les Stes. Maries and Esnandes. Internally, the cathedral is Gothic, but it is not the Gothic of England and Northern France. To begin with, the whole church is brick, except the window tracery. Then there are no aisles; simply one vast nave 60 ft. wide. Moreover, the buttresses are almost entirely internal; but inside the church, and it is no small merit of this system of construction, that the principal members on which the stability of the intersecting vaults depends are shielded from the weather. It is Gothic indeed; but it is no derivative of the basilicas of the early Christians of Rome, or of the Romanesque monsters of the eleventh and twelfth centuries. It is simply the basilica of Maecentius or the Hermæ of Caracalla translated into thirteenth century Gothic. These Roman-Gothic buildings of the South of France deserve much more attention than they have received; and it may well be that from study of these, rather than of the trite types of Northern Gothic, our modern churches might gain greatly in freshness and power. At any rate, they are far more suitable for congregational worship than the well-worn basilican plan. Great aisleless churches of this character may be seen also at Comminges, Lodive, Ferrignan, Condom, Caracassonne, Gallac, Montpezat, and Moissac.

The view given in this illustration is of a portion of the interior arcaded treatment between the buttresses, and close to the end of the choir screen, and is reproduced, with the permission of author and publisher, from a portfolio of large illustrations of French architecture issued by Herr Cornelius Gurlitt, under the title "Die Baukunst Frankreichs," and noticed in another column of this issue. The view shows what an amount of rich and delicate detail is combined with the solid and massive construction of Albi Cathedral.

ILLUSTRATIONS OF EIGHTEENTH CENTURY WORK.

THE illustrations on this plate are published in connexion with Mr. Gotch's paper read at the Architectural Association, and printed on another page, on Eighteenth Century work.

The view of Versailles is reduced from an old French print, and is of some interest in showing, though in a somewhat crude manner, the complete laying out of the grounds and buildings at the time they were constructed.

The photographs from Drayton show the picturesque entrance gates, with the very finely treated eagles on the piers, and the elegant entrance doorway from the inner court.

CHURCH OF ST. OSWALD.

INTERNAL EASTWARD VIEW.

THIS was a competitive design for a church on a flat and open site, to be built in brick with Monk's Park stone piers, mullions, and tracery, &c., and to seat, with supplementary chairs (not shown on plan), 700 people. The organ gallery to be placed over the morning chapel, and approached by a stair-turret at south-east angle.

The internal roof was to be a boarded and ribbed wagon vault. Sedan or other grey-green slates were to be used for external covering. The walls to be faced externally with red stock bricks.

The plan was arranged to make the most of the congregational area. The cost is estimated at about £8,000. E. P. WARREN.

THE CROFT, HIND HEAD :

THIS house was built a few years ago near the highest part of the Hind Head. The bricks and tiles were of the district, the former being the many-coloured clamp-burnt ones from the fields of Messrs. Gammon, of Petersfield, who built the house, and who also made the tiles, which are of a soft, rich colour. Drinking water to be obtained from a deep well, the general supply for bath, kitchen boiler, &c., being rain water, pumped up. The architect was Mr. E. J. May, of London.

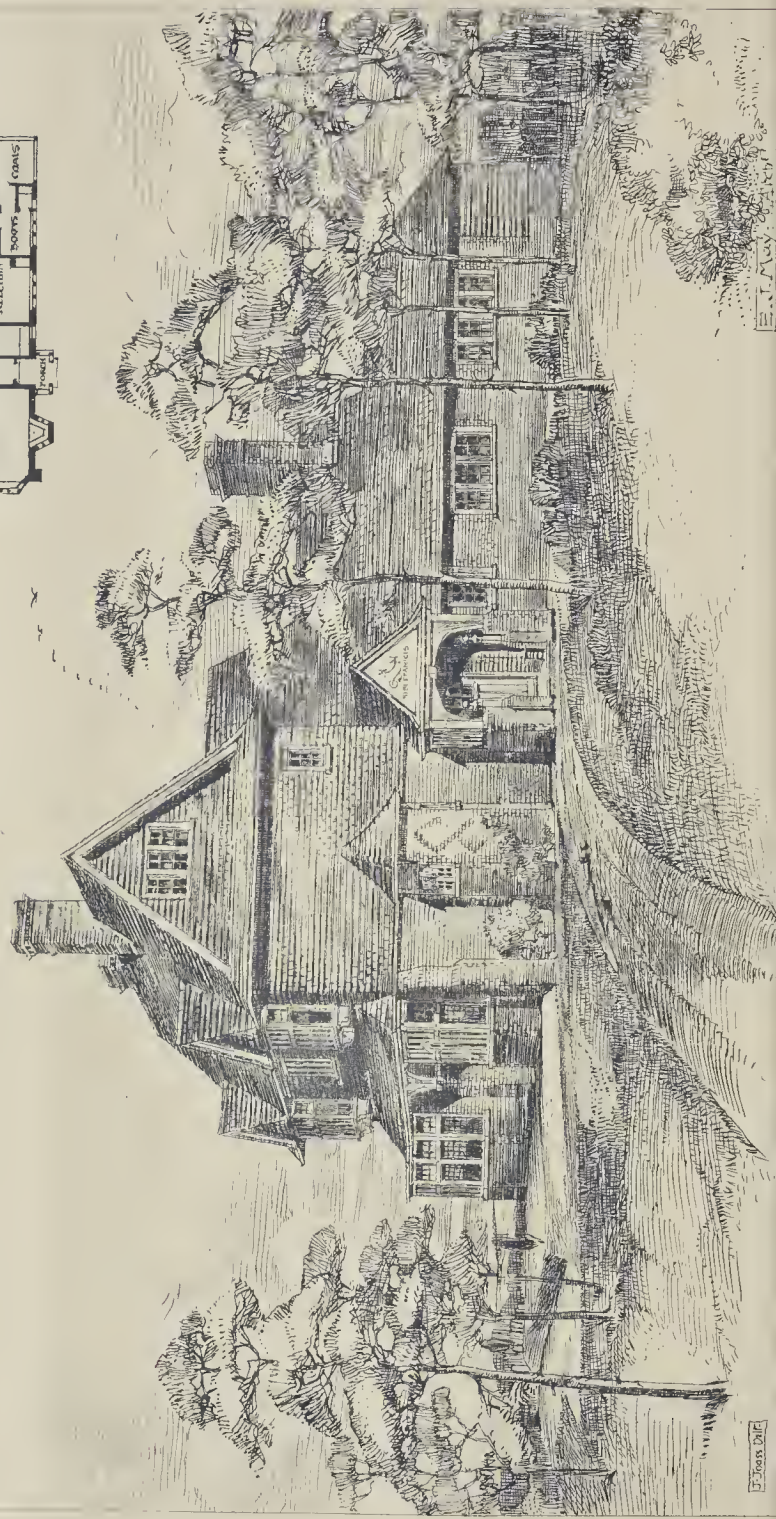
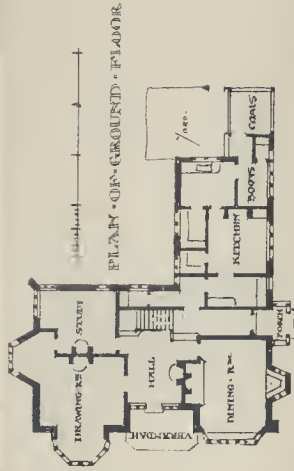
RESIDENTIAL FLATS, GREEN-STREET, W.

THIS building has been erected from the designs of Messrs. Henry S. Legg & Son, architects, of London, and consists of business premises on the ground floor and basement, entered from North



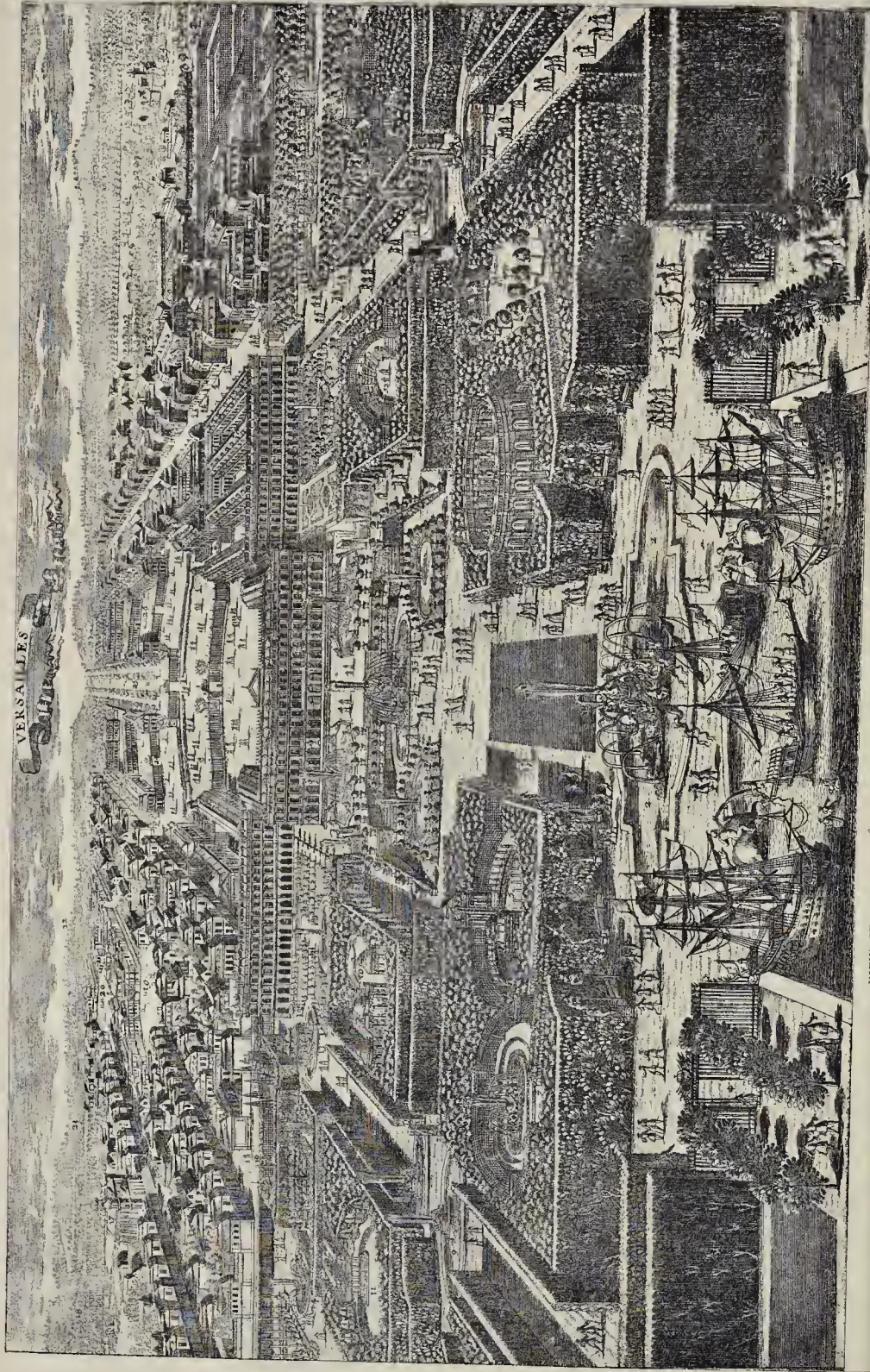
THE BUILDER MARCH 27 1897

THE CROFT HINDHEAD
GRANT ALLEN ESQ.





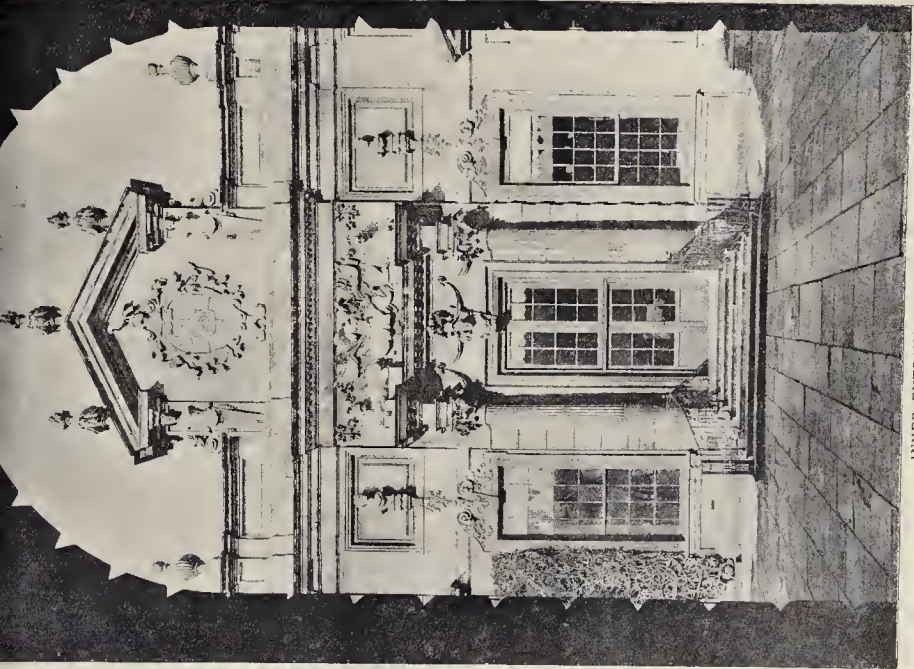
THE BUILDER, MARCH 27, 1896.



VIEW OF THE CHATEAU AND GARDENS OF VERSAILLES (FROM AN OLD ENGRAVING)

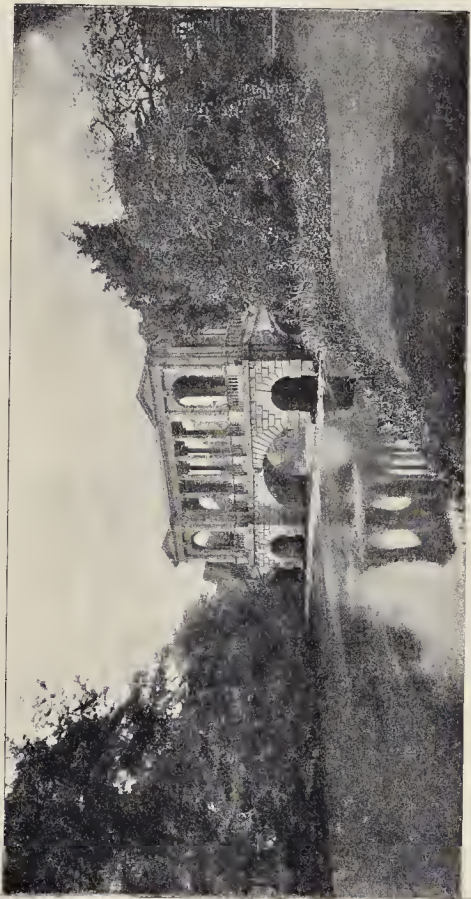


ENTRANCE GATES, DRAYTON.



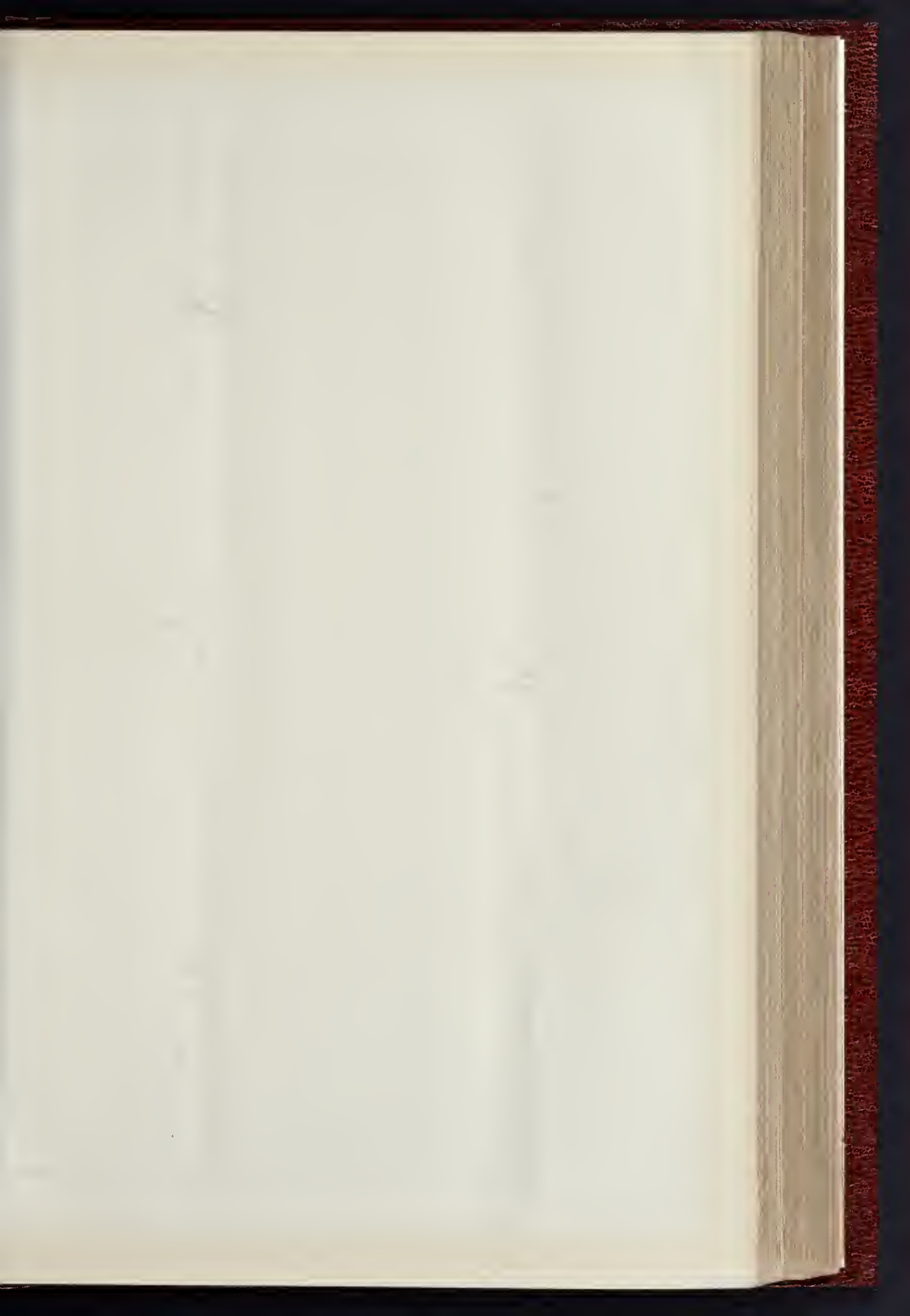
INNER ENTRANCE, DRAYTON.

INK PHOTO SPRAGUE & CO. 4 & 5 EAST WARDON STREET, LONDON, E.C.

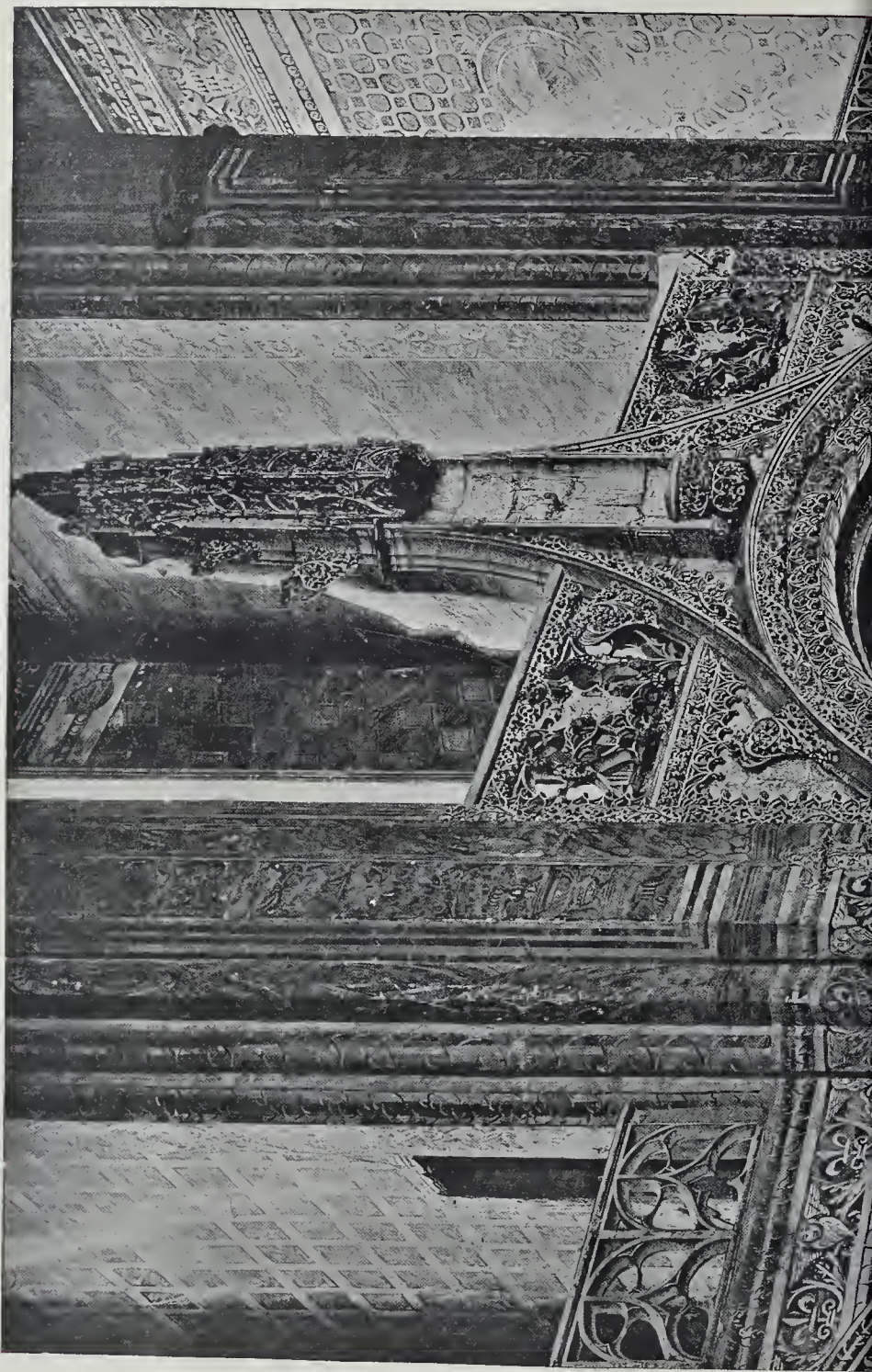


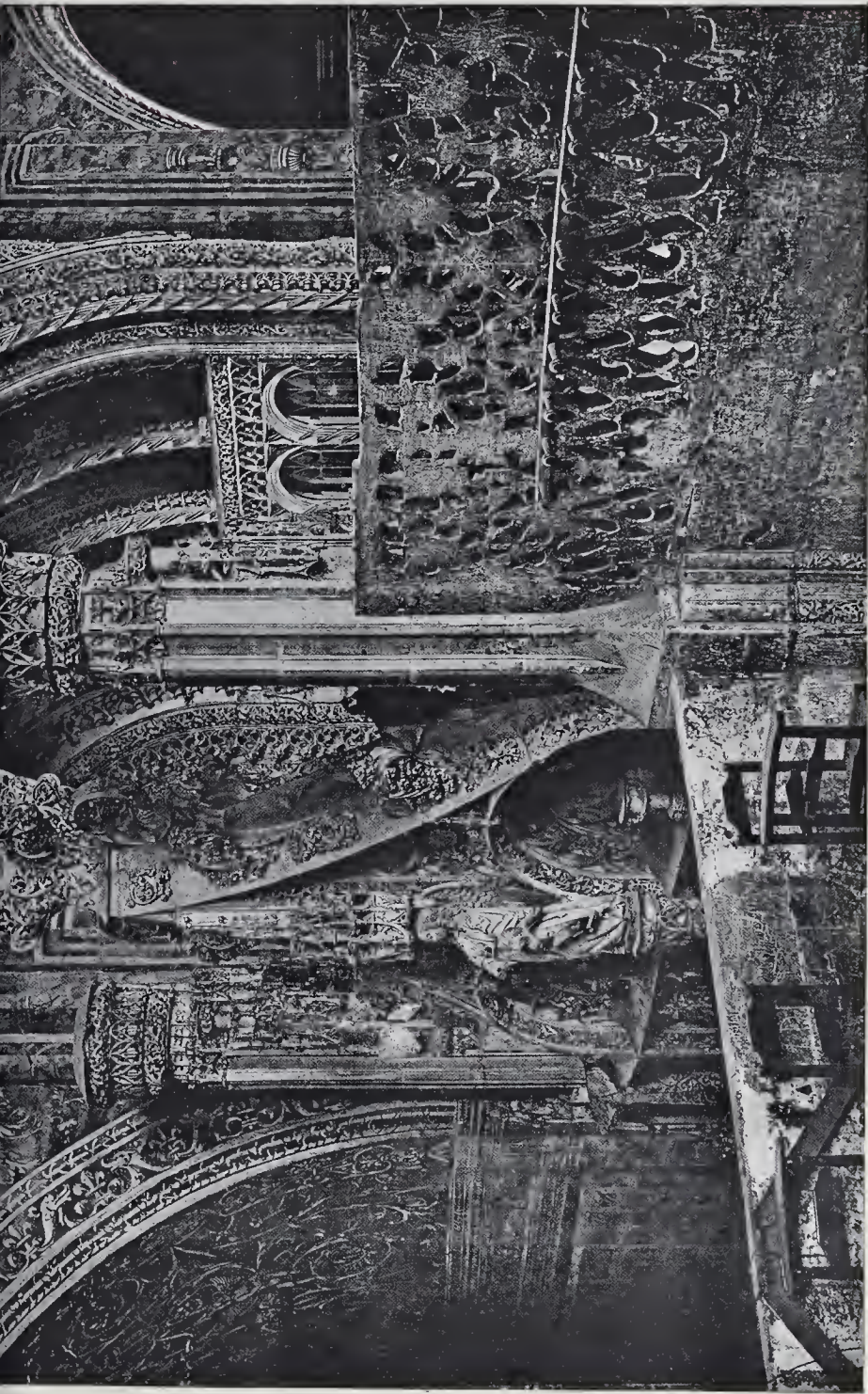
THE PALLADIAN BRIDGE, WILTON.

ARCHITECTURAL ASSOCIATION: SOME ILLUSTRATIONS TO MR. GOTCH'S PAPER ON "EIGHTEENTH CENTURY WORK."



THE BUILDER, MARCH 27, 1897.





ALBI CATHEDRAL: VIEW IN INTERIOR, OPPOSITE END OF CHOIR SCREEN.

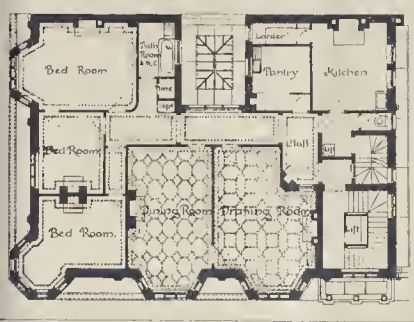


THE BUILDER MARCH 27 1897





COMPETITION DESIGN FOR CHURCH OF ST. OSWALD, FULHAM—BY MR. E. P. WARREN



1896—PHOTO SPHAGNE & CO. 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

RESIDENTIAL FLATS, GREEN STREET, W.—MESSRS HENRY S. LEGG & SON, ARCHITECTS.

Audley-street, and residential flats over, approached from Green-street. Each suite has its servants' rooms on the top floor, with separate staircase. The building is faced with brown Portland stone and red bricks, and the roof covered with green Westmoreland slates. Messrs. Bywaters are the contractors.

DRAWINGS FOR THE ROYAL ACADEMY.

As before, we shall be glad to take charge of and deliver at the Royal Academy any drawings sent to us in time to be photographed before the day of delivery, with a view to subsequent publication in this journal and in the "Builder Album of Royal Academy architecture."

We cannot accept any drawings sent to this office later than Saturday morning March 27, before 12 noon.

Architects sending drawings are asked to give special attention to the following requirements of the Royal Academy:—

1. All frames must be gilt.
2. Every drawing must have a label on the back, giving legibly the title and the artist's name and address.
3. Every drawing must have a similar label attached to the frame by a card so as to hang over in front.
4. Every drawing must be accompanied by a letter addressed to the Secretary of the Royal Academy, and signed by the artist, containing the artist's name and address, and the title or titles of the drawings sent. If more than one drawing is sent they must be distinguished by numbers, and the corresponding number must be repeated in the labels fixed to each drawing.

N.B.—We cannot undertake to supply or affix labels when omitted by the oversight of the sender.

ARCHITECTURAL SOCIETIES.

ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.—The eighth meeting for this session of the Discussion Section of the Architectural Association, took place at 56, Great Marlborough-street, W., on the 24th ult., when Mr. Henry Rose read a paper on "Dodges." Mr. Rose explained that he intended to draw attention to clever expedients in building, not to nefarious practices. The perfection of a "dodge" was its simplicity; a simple "dodge" was often far more effective than a "patent," the real utility of the latter being often very doubtful. Mr. Rose referred to "dodges" of nature and of primitive man, and also described many simple but highly useful ones in connection with building. In the discussion which followed many descriptions were given of "dodges" useful and "dodges" of doubtful utility. A hearty vote of thanks was accorded to Mr. Rose for his paper.—On the 10th inst. Mr. C. V. Johnson read a paper on "The Canons of Architectural Criticism," in which he drew attention to the necessity for criticism, and of rules by which criticism should be guided. Buildings were not to be judged by empirical rules of proportion nor on archaeological grounds. Design should be based upon study of historical principles, not of historical form, and upon the requirements and ideals of the present time. The questions the critic had to ask were whether the plan was in perfect conformity with the requirements of the building; whether the parts were so disposed as to make the most of their artistic possibilities in the way of contrast of masses, of lines, of voids and solids, and of light and shade; whether the construction was truthfully expressed or whether features designed for other circumstances were imported and used in positions for which they were totally unfit, and in which they were unmeaning; whether the design was in keeping with the importance of the building; and finally, whether it was, as a whole, harmonious and in unison. The importance of proportion and of scale were touched upon, and a warning given against criticising details apart from, and forgetful of, the whole composition. Sublimity and dignity were praised and preferred to picturesqueness and grace. Finally, various constructive forms were discussed as to their artistic capabilities, and the author gave it as his opinion that no materials could be said to be inartistic, but that what was at fault was the lack of capacity of using the materials in an artistic manner by the artist himself.—The next and last meeting of the session will take place on April 28, at 7 p.m., at the same place, when Mr. Edward Thornton will read a paper on "Elementary School Architecture."

EDINBURGH ARCHITECTURAL ASSOCIATION.—The Edinburgh Architectural Association visited on the 13th inst. the Parish Church and Calder House, Mid-Calder, by permission of the Rev. J. D. Moir Porteous and Lord Torphichen, under the leadership of Mr. A. Hunter Crawford. The church at Mid-Calder is of early foundation, probably twelfth century, and the present building is of the sixteenth century, with modern additions. Attention having been drawn to the architectural features and the armorial devices, the party, after a thorough examination of the building, proceeded to Calder House. After Mr. Crawford had given an historical description of the house, which partly dates from the thirteenth century, and contains many very valuable paintings, the party was shown through the house by Lord Torphichen, who drew attention to various features of interest, and especially to the paintings in the drawing-room, formerly the large hall. The visit was brought to a close by a vote of thanks, proposed by Dr. Rowand Anderson, to Lord Torphichen and the Rev. J. D. Moir Porteous. St. Cuthbert's, East Calder, was also visited. This ruin is of twelfth century date, and the south wall and two gables are still partly standing.

ARCHITECTURAL SECTION, GLASGOW PHILOSOPHICAL SOCIETY.—Under the auspices of the Architectural Section of this Society, Mr. David Barclay, architect, delivered a lecture recently on "The Architectural Outlook." The lecturer said that former ages had left a legacy of great works in architecture which were possible under the conditions of civilisation then existing. But present conditions of civilisation, while spreading culture and comfort and art surroundings among the people, were not likely to demand, and, therefore, would not give opportunities for creating buildings which would rival those of the past. Facilities for studying the past and for art and science education were greater at the present than at any former period, and a high level of artistic ability was very general, and must tend to a higher average of good work. The highest level, however, would depend on genius—to which education alone did not prove an open Sesame. The conditions of the abused system of architectural competition had reached as low a level as possible, and showed some chance of mending, and in the meantime, and immediate future, there was an abundance of work in which he hoped all might have some share and do something for art that would leave a good impression of the times of the good Queen Victoria. At the close Mr. Barclay received a cordial vote of thanks. At the annual business meeting of the branch Mr. McGregor Chalmers was re-elected President; Messrs. McBean and Carlton, vice-presidents; Mr. William Ilowitt, treasurer; and Mr. Lindsay Miller, secretary.

GLASGOW SCHOOL OF ART.—The fourth lecture of the course on "Hellenic Architecture" was delivered last week by Mr. W. J. Anderson, the subject being "The Culmination in Attica," with special reference to two temples of Athens. The situation of Athens in the bi-polar system of Dorian and Ionian life led to a coalescence of the elements of each, a fact to be read not only in the adoption of each order, but in the details of almost any one example in Athens. In the first place two types were selected for analysis and contrast, the temple of Athene Polias, or the Parthenon, and the shrine of Athene Nike, better known as the temple of Wingless Victory. Of the former, its relation to the older temples, its plan, purpose, lighting, decoration, &c., according to recent investigations of Dr. Dörpfeld, were explained, and Pausanias' description supplemented by various restorations of the interior, with its great image of gold and ivory. The architectural design evinced in the arrangement of the Panathenaic procession was noted, the subjects of the pediment sculptures studied with the aid of photographs and restoring, and the researches of Mr. Penrose into its details, optical refinements, and proportions were summarised.

DEVON AND EXETER ARCHITECTURAL SOCIETY.—In connexion with the Exeter Branch of the Devon and Exeter Architectural Society, a lecture was recently given at the Athenaeum, Exeter, by Mr. Charles Cole, President of the Exeter Camera Club, on "Architectural Photography." There was a preliminary description of the camera, with hints upon its manipulation, especially with regard to the lines and planes of buildings. The lecturer advocated making photography at once a handmaid of architecture, as well as a companion, for it gave the architect immense facilities for studying the buildings of other countries, and delineated faithfully examples of both ancient and modern work. The old

buildings should be kept in mind for those who followed, and surely this was legitimate work for the architect; but they should hand down pictures of how they lived, and what their streets looked like now, together with the dress of the people and street trades and sights. The use of the camera in cases of easement was shown. In regard to sketching and kindred matters, Mr. Cole did not think the camera should take the place of sketch books and pencil, but they might be used in conjunction. To sketch well was for architects a necessity. There was no doubt that some possessed the faculty more than others, and every architect amongst his other acquisitions should have an intuitive love for, and a knowledge of, where to look for the beautiful. He claimed for photography, if used aright, and with an earnest desire to turn out good work, that the operator would naturally turn to picture-making, and therein was a great field of learning. The architect must possess and train the faculty of artistic sight. Pictures were to be found in everything, and amidst most unpromising surroundings. A large number of lantern slides were shown on the screen. A vote of thanks was proposed by the Vice-President (Mr. James Crocker) and seconded by Mr. C. J. Tait.

COMPETITIONS.

CENTRAL FIRE-ENGINE STATION, ABERDEEN.—On the recommendation of the Referee, Mr. Munce, Belfast, the first premium (50*l.*) in this local competition has been awarded to Mr. A. I. L. Mackinnon, architect, Union-street, and the second (25*l.*) to Mr. J. A. Oeg Allan, architect, View-terrace. The buildings in the design placed first will be of granite. The total cost, including accommodation for lighting and weights and measures departments, is estimated at 10,400*l.* The first premium merges in ordinary commission if Mr. Mackinnon is selected as architect of the station.

WORKHOUSE, SHOREHAM.—At a recent meeting of the Steyning Board of Guardians the question of employing an architect in respect of the proposed new workhouse at Kingston-by-Sea was discussed. A report of the committee was received in which nothing was recommended as to the appointment of an architect.—Mr. Woodman moved that architects in practice in the towns of Brighton or Hove be publicly invited to send competitive plans for the proposed new workhouse. Mr. Bates seconded. As an amendment Mr. Washington proposed that Messrs. Clayton & Black, of Brighton, be nominated for engagement. Mr. Grandy seconded. In the discussion which ensued Mr. Woodman withdrew his resolution, and Mr. Washington's proposition became the motion before the Board. As an amendment to this, Mr. Woodman proposed that the services of an expert be sought. On being put five only voted for the amendment, Mr. Washington's proposition being carried.

ENGINEERING SOCIETIES.

THE INSTITUTION OF JUNIOR ENGINEERS.—At the meeting of this Institution on the 12th inst., a paper on "The Protection of Buildings from Fire" was read by Mr. W. Rushworth Beckton, Chief Engineer of the Hotel Cecil. The author said that the all-important question of protection from fire, though essentially engineers' work, was too often left in the hands of less experienced persons without due regard to the peculiar circumstances of the case. On the other hand, when this experience was available, it was sometimes overruled by the architect or some higher authority who would not allow the decorations to be interfered with, the result being that the apparatus (if provided at all) was placed in some obscure position, at once losing its necessary characteristic of accessibility. Notice was given in the paper of first-aid appliances, of which the primary object was the confinement of a conflagration to the seat of outbreak, or extinguishing it in its first stages. In selecting the system to be employed, consideration should be given to the form and description of building—its content, the assistance available upon emergencies, and occasionally the nature and contents of surrounding properties. Irrespective of the circumstances attending the building, or the apparatus to be employed, water was generally accepted as the most useful agent for the extinction of fire. Its source and extent of supply were, therefore, questions of the highest importance. In all cases the supply should be duplicated by an ample storage, sufficiently elevated to give the required

head. In illustration of this method a diagram was exhibited, in which the fire main was shown connected to an elevated tank by a valve equal in area to the main, automatically closing by a float rising with the water level in the tank, and in like manner opening upon the pressure in the main being released by the opening of a hydrant (or sprinkler) at a time when the primary source of supply failed. In referring to the insufficient pressure obtainable upon upper floors, the author showed how this could be augmented by various apparatus. In buildings where hydraulic power was used, and the ordinary supply was at too low a pressure for fire purposes, the principle of the injector could be employed to increase it. In selecting positions for hydrants, &c., due regard should be paid to the escape of the operator in the event of his efforts being of no avail. As many buildings of most approved fireproof construction had been utterly demolished by the ravages of fire, it might be averred that no edifice was really fireproof, though the endeavours to achieve this ideal construction had resulted in increasing to a very great extent the facility of confining a conflagration to where it had broken out. Fireproof doors were usually made of iron, but these were found to buckle under severe heat, causing openings through which flame and sparks could pass. An improvement was found in building the doors in layers of wood battens firmly braced together at cross grains, and sheathed with thin tinned steel plates so interlocked as to allow for expansion—yet excluding the air from the wood. Doors of this description had stood very severe tests, showing only a very shallow charring of the timber.

ARCHÆOLOGICAL SOCIETIES.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—The eighth meeting of the session of this Association was held on the 17th inst., Mr. C. H. Compton, V.P., in the chair. The hon. secretary announced that it had been decided to hold the Congress this year at Conway, upon the invitation of the Mayor and Corporation. Mrs. Collier read a paper on the church and painted glass at Bowness-on-Windermere, which edifice, she said, appeared not to have received as much notice from antiquaries as it deserved. The church is dedicated to St. Martin, but the actual date of its erection is not recorded. It is a very ancient structure, and some of the materials employed in its construction have been traced to Roman origin, and were probably brought from a Roman station which is known to have been established in the neighbourhood. Like most of the churches in the Lake district it is simple and rudimentary in construction, consisting (until the recent additions) of a nave and aisles, chancel, and a low, square, embattled tower at the west end. The east window is of late Perpendicular work without tracery or other enrichment, and the arches, capital and base of the columns, are equally devoid of all ornamentation, and until recently were covered with successive coats of whitewash. In the year 1864 some curious inscriptions and texts were accidentally discovered painted on the walls beneath the coats of whitewash. They consist of quotations from Robert Openshaw's catechism, and relate to the Sacraments of Baptism and the Lord's Supper, and belong to the time of James I. The chief feature of interest in the church is the painted glass in the east window, which was brought into prominent notice during the process of restoration in 1873. This glass is considered by competent authorities to date from about the year 1480, and to have been originally in the Priory of Cartmel, near Grange, whence it was removed to Bowness about 1528. A second paper was read by Mr. Patrick, hon. sec., in the absence of the author, Mr. H. Syer Cuming, upon "Mead and Mead Vessels." The author traced the origin of the beverage known as mead or methglin, so much appreciated by the Britannie tribes and the Teutonic nations, from the hydromel of the Classic age. The vessels in which the methglin was stored, and in which it was brought to table, were particularly described, and drawings illustrative of examples of mead cups and pots, several of which are in the author's collection, were exhibited. These vessels are reported to have been in early ages amongst the Celtic chieftains of gold and silver, and jewelled, as well as of glass, but those which have come down to our days are made of various woods wrought out of single blocks of beech, oak, elm, pine, walnut, willow, sycamore, and yew, sometimes ornamented with incised lines, and some bearing dates and initials.

SOME DIRECTORIES FOR 1897.

We have received from Messrs. Knight & Co. (Fleet-street), a copy of the "Local Government Directory, Almanac and Guide for 1897," which is a neat, compact, and well-arranged edition of a very useful work. The volume includes the following lists:—Unions formed by the Poor Law Commissioners and the Poor Law Board, and Places under Local Acts; Town and Urban District Councils (including County Borough Councils); Rural District Councils, Parish Councils, Metropolitan Sanitary Authorities; School Boards, Burial Boards, &c. The information contained in this form, as to officers, populations, &c., appears to be very complete, and for purposes of reference by those concerned in local government matters the work is specially useful.

Sell's "Directory of Registered Telegraphic Addresses for 1897" (Henry Sell, Fleet-street), is the twelfth annual issue of a work which is compiled from official lists supplied by the authority of the Postmaster-General. More than 40,000 new registrations, alterations, &c., have been made since the last issue was printed, and in order to maintain the usefulness of the work the publisher issues supplements from time to time during the year. In addition to the various articles on British trade and foreign competition, there are included articles and figures for 1895 and 1896 relating to the following industries:—Iron and Steel, Coal, Petroleum, Textiles, Chemicals, &c. The directory contains other information of general interest.

"The Electrical Trades Directory and Handbook for 1897" (The Electrician Printing and Publishing Co., Limited, Salisbury-court, Fleet-street) is the fifteenth annual issue of a useful book of reference. The issue contains, for the first time, a large sheet table, giving technical particulars of the electric railways and tramways of the United Kingdom; regulations regarding the free supply of incandescent electric lamps; the new regulations of the London County Council for electric meter testing; tables relating to water power, British coal, dry saturated steam, hydraulic heads, feed water heating, gear gearing, &c.; the Buda-Pesth (1896) revision of the International Telegraph Tariffs, which come into effect on July 1 next; a sheet table, giving particulars of the electricity supply stations of the United Kingdom; a revised digest of the law of electric lighting; a digest of the law of electric power (for traction purposes), &c. The book contains other information of interest to the electrical industries. The directorial division consists of over 700 pages, containing a list of individuals and firms engaged in electrical science, engineering, and industry throughout the world.

Whitaker's "Titled Persons" for 1897 is a new work, designed as a companion to Whitaker's Almanac, and its get up is similar to that of the well-known almanac. The ordinary contents of a peerage, baronetage and knighthood, including Dowager Ladies and Titled Issue, are given under a single alphabet; and to this is prefixed an extended list of the Royal Family, together with descriptive and explanatory information. An alphabetical list of country seats is a noticeable feature. The price of the work is half-a-crown.

THE LONDON COUNTY COUNCIL.

The usual weekly meeting of this Council was held on Tuesday, in the County Hall, Spring Gardens, Dr. Collins, Chairman, presiding.

Loan.—On the recommendation of the Finance Committee it was agreed to lend the Clerkenwell Vestry 2,900l. for wood-paving works.

Battersea Park-road.—On the recommendation of the Improvements Committee it was agreed that the estimate of 6,241l. 10s., submitted by the Finance Committee, be approved, and that the Council do contribute on the usual conditions three-fourths of the net cost of the widening of Battersea Park-road, between Bridge-road and Carlton-grove, as shown upon the plan forwarded by the Vestry of Battersea, such contribution not to exceed the sum of 6,241l. 10s.

Lincoln Inn Fields, Railings.—The Parks and Open Spaces Committee brought up a report containing the following paragraph, the recommendation, after some discussion, being agreed to:—

"The boundary railing of Lincoln's Inn Fields garden is in urgent need of repair and painting, and the dwarf wall on which it is mounted is also much out of repair. In carrying out these works it is our intention that the present characteristics of the railing and wall shall be preserved as far as possible. We propose, however, for the convenience of the public,

to widen to 7 ft. the existing gateways, which are only 3 ft. 6 in. in width. The length of the railing is about 2,100 ft., and the money necessary to cover the cost of its repair is provided in the estimates for the year. We recommend—that the Council do approve the estimate submitted by the Finance Committee, and do authorise an expenditure of 600l. for the repair and painting of the boundary railing and repairing the kerb of the same at Lincoln's Inn Fields; that the work be executed without the intervention of a contractor, and that the estimate, plan, specification, &c., be referred to the Works Committee accordingly; but that in the event of that Committee not being satisfied as to the sufficiency of the estimate, the Parks Committee be authorised to invite tenders for the work."

Street Improvement (London) Bill.—The report of the Parliamentary Committee contained the following paragraph, the recommendation being agreed to:—

"On June 9, 1896, the Council, on the recommendation of the Improvements Committee, referred it to us to consider and report as to the desirability of embodying in a Bill in the next session of Parliament a clause to the effect that the Council should have henceforth the same compulsory powers of acquiring land for the purpose of improving streets in the County of London as the City Commissioners of Sewers and the district boards, and vestries in London now have under the Act 57 Geo. III., cap. 29. We reported on the reference on January 26 last, and were instructed by the Council to prepare a Bill. We have accordingly had a Bill prepared which in our opinion meets the case, and we have ordered a copy to be sent to each member of the Council. We recommend that the Streets Improvement (London) Bill, as circulated, be approved, and that we be authorised to take the necessary steps for its introduction as a public Bill."

Common Shelters.—The Public Health Committee brought up the following report:—

"We have from time to time had under consideration the question whether common shelters which are not subject to the Common Lodging Houses Acts should be brought within the provisions of these Acts, and with a view to obtaining some information concerning the several shelters in London, Mr. Young, our Inspector, was instructed to inspect premises in which poor people are temporarily provided with night accommodation in rooms which they occupy in common. In submitting Dr. Young's report, the medical officer points out that the premises inspected comprise numerous institutions which differ in their primary object as well as in the character of the accommodation they provide. Some aim especially at the reformation of the character of the inmates, providing them with a temporary home with a view to bringing them under wholesome influences; others have as their principal object the provision of a shelter for necessitous persons, although the moral improvement of the inmates is not lost sight of. In the former especially, efforts are made to assist the inmates in finding work, and in some work is provided for them on the premises. After stating the result of Dr. Young's inspection as regards cleanliness, air space and water-closet accommodation, the Medical Officer gives his conclusions as follows:—'While fully recognising, therefore, the value of the work which is done in connexion with these shelters, I think Dr. Young's report shows the necessity for subjecting those which are found to be inadequate to regulations which shall prevent the accommodation they provide falling below a certain minimum. The fact that they are not carried on for profit does not appear to me to be sufficient reason for exempting them from the requirement that their dormitories shall not be overcrowded, that the opportunities for cleanliness shall be adequate, and the water-closet accommodation of a proper kind. There would, however, be further advantage in the exercise of control over these places such as would ensure that they were fit for the purposes of a shelter before they are actually occupied. Premises are sometimes taken for this purpose which have been erected for an entirely different object, and knowledge is required to determine whether they can be properly adapted for use as shelters. This knowledge has sometimes been wanting, and hence unsatisfactory conditions are found to exist which might have been prevented. Probably the best course to adopt is an application to Parliament for the amendment of the definition of a common lodging-house, so as to bring common shelters within the provisions of the Common Lodging Houses Acts, notwithstanding that the houses are not used for the purposes of profit. An alternative method would be to empower sanitary authorities to regulate shelters much in the same manner as they can houses let in lodgings.' The Council on the 9th inst. authorised us to communicate with the Home Secretary with regard to the amendment of the law relating to common lodging-houses in London, and we are considering the question of shelters in this connexion. As the medical officer's report contains valuable information on this important question, we think it should be placed before the Council and the public, and we have therefore given instructions for copies to be sent to each member of the Council and placed on sale. We recommend that the course taken be approved."

The report was referred back, in order that a fuller report might be prepared.

New Theatre (Norris-street).—The Theatres and Music-halls Committee reported as follows, with recommendations being agreed to:—

"On June 30 last the Council approved of two drawings, dated May 14 and June 16, 1896, submitted by Mr. W. Emden, on behalf of Mr. Henry Jana, showing a site upon which it was proposed to erect a building to be known as the Regent Theatre. In our report on the subject we pointed out that the site of the theatre had a frontage of about 66 ft. 9 in. to Norris-street and of 98 ft. 6 in. to St. Alban's-place, Haymarket; that Norris-street was 28 ft. 6 in. in width, but would be increased to 30 ft. in front of the theatre; and, further, that St. Alban's-place was 41 ft. 2 in. in width. Mr. Phipps subsequently submitted drawings on behalf of Sir Henry Brownrigg, and our report thereon recommending their approval was referred back to us, in order that we might consult the solicitor as to the legal position of the Council in the matter. We have found it necessary, therefore, to reconsider the whole question of the site, and as instructed we have obtained the opinion of the solicitor as to whether it does or does not comply with the Council's regulations. He advises us that in his opinion the site does not comply with the regulations as the thoroughfares on which its boundaries are not thoroughfares 40 ft. and 30 ft. wide as required by such regulations. Having regard to the opinion of the solicitor we now recommend:—

(a) That the resolution of the Council of June 30, 1896, approving the two drawings, dated May 14 and June 16, 1896, be rescinded.

(b) That the Clerk be instructed to forward to Mr. Phipps a copy of the resolution rescinding the approval of the drawings, and to intimate that the Council will be unable to grant a certificate under the Metropolitan Management and Building Acts Amendment Act, 1895, for a theatre on the site in question."

The Works Committee.—In answer to a question by Mr. Cohen, Mr. Hoare, Chairman of the Works Committee, said that the Works Department had refused sixty-one works, the total estimate for which was 142,000*l.* Mr. Cohen subsequently asked for details, and the Chairman of the Committee promised to give the matter his attention.

The Council, having transacted other business, adjourned at twenty minutes to eight o'clock.

THE INSTITUTE OF BUILDERS.

THE thirteenth annual general meeting of the Institute of Builders (Incorporated) was held at the offices, 31, Bedford-street, Strand, W.C., on the 23rd inst., Mr. Geo. Haward Trollope, the President, in the chair.

The following report, on the motion of the Chairman, was received and adopted:—

"In presenting their thirteenth annual report the Council have to record, with great regret, the death of Mr. W. H. Cowlin, of Bristol.

In view of the course taken by the Royal Institute of British Architects in issuing, on their own account, an agreement and conditions for building contracts in a form which the Council of this Institute were unable to approve, the Council have thought it desirable, in the interests of the members of this Institute and the trade generally, to print a form of agreement to be used with the conditions of contract agreed between the Royal Institute of British Architects and the Builders' Society in 1870, which, as the members are aware, have been in constant use ever since. The first prints of these conditions have, however, been corrected as was necessary to bring them up to date in the references to Acts of Parliament and authorities passed or constituted since they were first agreed.

The Council have during the past year been in correspondence with the Surveyors' Institution, with reference to the growing practice among quantity surveyors not to take out in their quantities the labour upon stone-work; but they regret to say that the Council of the Institution do not see their way to taking any action in the matter. They, however, consider it a practice to be deprecated, and state that their examinations include the preparation of quantities in which the whole of the labour in stone-work has to be given in detail, and they think this to be a sufficient indication of their views on the subject.

The Council during the past year were called upon by her Majesty's Office of Works to nominate a quantity surveyor, to act with the surveyor appointed by that Department in preparing the bills of quantities for a new post-office for the Western Central District of London.

The Council desire to express their obligations to the various committees.

The audited accounts of the Institute and the Benevolent Fund will, as usual, be submitted to the meeting.

In accordance with the Articles of Association the President, Mr. Geo. Haward Trollope; one of the Vice-Presidents, Mr. Joseph Randall; the Treasurer, Mr. George Plucknett; the auditors, Mr. Ernest S. Rider and Mr. J. W. Duffield; and four members of

the Council, Messrs. George Burt, G. N. Watts, S. Wheeler, and Geo. Williams retire, but are eligible for re-election; and one other vacancy on the Council remains to be filled by the election of some member at the general meeting. It will also be necessary to elect two auditors, as Mr. Duffield does not seek re-election."

The Secretary (Mr. R. S. Henshaw) then read the audited accounts for the past year, which were adopted. A vote of thanks was tendered to Mr. Trollope for his services as President, and Mr. William Shepherd was elected President for the year 1897-8. Mr. Joseph Randall was re-elected a Vice-President and Mr. George Plucknett treasurer, the following members being elected on the Council, Messrs. George Burt, Thomas Hall, George Kett, Geo. Nelson Watts, Samuel Wheeler and George Williams. Mr. Ernest S. Rider and Mr. Fred Dove, jun., were elected auditors for the ensuing year.

PRACTICAL PLUMBERS' WORK.

THE last of the present course of lectures on matters connected with building at Carpenters' Hall, was delivered on Wednesday by Mr. J. Wright Clarke, whose subject was "Practical Plumbers' Work." The chair was occupied by Alderman Sir Stuart Knill.

The lecturer said that the plumber of to-day was not called upon to do artistic lead-work, though, if architects would design such work, there would be found plumbers capable of executing it. Some excellent lead-work was occasionally carried out at the present time, but, unfortunately, there was very little call for artistic work. His lecture would be confined to practical plumbing as applied to buildings, and sanitary plumbing would not be dealt with. With the aid of a large number of diagrams, of models, and specimens of lead pipes, the lecturer then referred in detail to the proper and improper methods of dealing with roofs, soil pipes, joints, sinks, closets, &c., his remarks applying to such matters as covering the ridge roll of roofs, flashings, drips (which should never be less than 2 in. deep, 2 1/2 in. being better), lead flats, secret gutters, soakers, hips to roofs, covering roofs, gutters, dormers, trap doors, and skylights, &c. In referring to square soil pipes, he remarked that they were sometimes preferred for the sake of appearance, but round pipes were better, since they kept cleaner than square pipes.

The Chairman, in proposing a vote of thanks to the lecturer, said that it was quite evident that some of the past work was of a most artistic character. The remains of the Romans showed that there were some beautiful bits of plumbing to be found underground. Plumbers' work of the time of the Middle Ages showed beautiful ornamentation.

As the lecturer had remarked, plumbers depended now upon the architects for their designs, but in olden times that was not the case. The plumber then, like all other workmen, was an artist, and undertook his own work, and aimed at carrying out his work in the most beautiful manner he could. Whatever a man's work might be, he ought to strive to become an artist in doing that work. If that spirit animated plumbers and others to-day, lead work would be executed as it was in the times he had referred to. In conclusion, he mentioned a course of lectures arranged by the Carpenters' Company on Carpentry and Joinery, to be delivered on the Wednesdays from April 28 to May 26.

Books.

Die Baukunst Frankreichs. By CORNELIUS GUKLITT. Dresden: J. Bleyl. London: B. T. Batsford.

THIS is so far simply a portfolio of illustrations by the Lichtdruck process, issued under the editorship of Herr Guklitt; whether any letterpress is to follow at a later date does not appear. It contains however very finely executed illustrations of ancient buildings some of which have not yet been rendered commonplace by frequent illustration. Among them are the Porte Naine at Besançon, among Renaissance remains, and the remarkable gate of the Capitul at Toulouse, with its curious and characteristic sculpture; a fine house in the Rue des Forges at Dijon, enriched with sculptured wreaths and swags remarkable for their boldness and high relief; and the Hôtel de Monnaies at Avignon, now the Conservatoire of Music.

Among the illustrations of Gothic work there is a fine and very clear photograph of the interior

of Angoulême Cathedral, and another of part of the interior of Albi, a reproduction of which appears among our plates this week. Mr. Batsford is the agent for the publication in England.

Sanitary House Drainage; its Principles and Practice. By T. E. COLEMAN, Surveyor Royal Engineer Civil Staff, M.San.I. London: E. & F. N. Spon. 1896. Pp. xx. and 186, and 97 illustrations.

THIS little book can be recommended for its lucidity, terseness, and general correctness. It covers practically the whole field of ordinary house-drainage and what are generally termed "sanitary fittings," but the information on some points is somewhat meagre; for example, the only washing-up sinks which are mentioned are of stoneware. Here and there we notice the tendency, not uncommon in books on sanitation, to lay down rules which cannot possibly be universally applied and which are more exacting than need be; if every drain-ventilating shaft must be at "a minimum horizontal distance of 18 ft. from any chimney," then farewell staves or chimneys, and farewell Mr. Coleman's frontispiece. Among the "general principles" of drainage, it would be well to include another to the effect that the drains must have a sufficient inclination in the right direction, otherwise "the degree of perfection in which these general principles are carried out will [not] be the measure of the sanitary efficacy of the whole." Soil-pipes less than 4 in. in diameter are now often used. These, however, are details. The book is well illustrated, well printed, and contains a complete index, and is worth buying and studying.

Lockwood's Builders', Architects', Contractors', and Engineers' Price-Book for 1897. Edited by FRANCIS T. W. MILLER, A.R.I.B.A. London: Crosby, Lockwood, & Son. Pp. 516, 200, and clvii.

THIS is undoubtedly the most ably and carefully edited of the three price-books for 1897. In almost every respect the book is up-to-date; it is not without its shortcomings (e.g., no prices are given of copper boilers, copper cylinders, concealed roof-ventilators), but the shortcomings are certainly few in number—unless we take the editor and publisher seriously when they term it an "engineers'" price-book; then, indeed, we should have to draw up a most formidable list of omissions. The "Legal Notes and Memoranda" are clear, concise, and useful, and the supplement of 200 pages on the London Building Act (1894), and other enactments and by-laws in force in London, with "an Introduction, Notes, Cases, and Index," by Alexander J. David, B.A., Barrister-at-Law, will be of service to Metropolitan architects and builders. We can recommend the book, but it would be all the more trustworthy if many of the prices were reduced considerably; many of them are 50 per cent. higher than the ordinary prices which builders accept for good work. This fault, however, is common to all the price books.

A Practical Manual of Building Societies, with Tables. By ARTHUR FAWCETT, Accountant. London: W. B. Whittingham, Ltd. 1896.

THIS work is one which will be useful to officers of building societies. It deals with these bodies, to quote from the preface, "from an arithmetical and statistical point of view." It is concerned not with law but with figures. Thus, pages 62-67 are filled with a repayment table; pages 68-99 are occupied with a revenue account table. The ordinary subscriber to a building society cannot be expected to trouble himself with such details as these, but those who are responsible for the conduct of these societies are bound to understand all the details necessary for efficient management, and it is to this class that this work properly appeals.

Rating: Principles, Practice, Procedure. By P. MICHAEL FARADAY, Rating Surveyor. The Legal Matter Revised by STANLEY A. LATHAM, LL.B., Barrister. London: Estates Gazette Office. 1896.

IT may be doubted whether there is any need for a new book on the subject of rating. If there is, it arises chiefly from the size to which standard works on this subject have grown, and from the want of material which is noticeable in mere handbooks. The work before us has distinctly a merit in this respect; it is fairly full, it states principles, and gives legal references; but it is eminently a book which can well be used by a person who is not a lawyer. There is nothing

more noticeable in regard to this branch of law than the way in which judges have had to decide economic and social questions which are, in truth, fully as capable of being decided by a layman as by a lawyer. Thus, by 6 & 7 Vict., c. 36, literary societies are exempt from being rated. The question then arises, What is a literary society? A judge is no better able to decide this than any other well-educated man. Mr. Faraday treats of this point in his chapter on "Exemptions," and any one who reads it can in a short time obtain a clear idea of the general scheme of exemptions from local taxation. The work is sensible and readable, and its material is comprised in a moderate space.

Correspondence.

To the Editor of THE BUILDER.

HERALDRY IN ARCHITECTURE.

SIR,—As a student of heraldry from my boyhood, it was a real trouble to me to be unable to hear Mr. St. John Hope's paper, but, thanks to your report of it, I am able to realise the treat that I missed, and the excellent discussion provoked by it is a most healthy sign.

In my thirty years' practice it has always been my aim to introduce heraldry wherever I can do so suitably and worthily, but the dislike shown by many well-bred Englishmen to its introduction is both amazing and inexplicable. So different, indeed, to our German cousins, who use it so freely. In Ulm Cathedral, for instance, the shields, helmets, and tilting spears of the Ritters appear, as also on the pews of the tradesfolk. I would like to mention other foreign examples: to wit, the tombs of the prince-bishops at Mayence, full of fine composition and beautiful modelling; the churches and house-fronts in Rotenburg, on the Tauber; the shields in the vaulting of Bayonne Cathedral; in the house of Jacques Cœur, at Bourges; in the Château of Meillant; in the restored Château of Pierrefonds. Nor are we without good modern examples at Cardiff Castle, Easington Park, Combe Abbey, &c.

With regard to the origin of the lozenge used by ladies, surely the reason is that the term "spinster," denoting the old occupation of the fair sex, is set forth by its similitude to the distaff when wound up, a manor in France being described as "en quenouille" when owned by a lady. But perhaps a better account may be forthcoming.

I venture to think that no detail in buildings can be made more interesting, telling, and beautiful (in competent hands full of the science of heraldry) than that which is founded on heraldic lines, it being necessarily full of meaning, which much modern ornament is not.

Fugin, Burges, and Nesfield are names connected with heraldry, of whose works we may be justly proud.

As a rule (of course there are exceptions to it) one may say that the arches of the 13th, 14th, and 15th centuries, when inverted, represent very fairly the shields of those periods: as a factor in "l'art de vérifier les dates," this is worth remembering.

It is good to know that Mr. St. John Hope's paper is to be followed by one on the same subject by Mr. Gochy; and he is a master of it. His own county of Northampton (mine also in the past) is well to the fore in noble examples in churches, houses, tombs, and buildings, and, being nearest to our own day may do much to influence it for good.

E. SWINFEN HARRIS.

COLLECTING AREA FOR A RAIN-WATER TANK.

SIR—Your correspondent "Homo" will probably find that the best covering surface is the chalk itself, stripped of all vegetable soil, and beaten by the hoofs of horses, or "punned" into consistency in the same way as are the bottoms of the small ponds common on the South Downs. It would, of course, require to be kept clean, and renewed occasionally, but would be infinitely cheaper than any artificial covering.—Your obedient servant,

FRANK SILBY.

"SKETCHES OF LONDON STREET ARCHITECTURE."

SIR,—I was sorry to read the letters from Mr. J. S. Williams, in which he asserts himself as the architect of 63, Sloane-street. I was called in as an expert in a recent dispute between the builder and the owner of 63, Sloane-street, and on no occasion was the fact disputed that Mr. Wade was the architect. Mr. F. B. Wade was referred to in the builder's affidavits as the architect and Mr. J. E. Williams as his assistant. Applications for payments and instructions were made to Mr. F. B. Wade, and I saw drawings with notes in Mr. Wade's handwriting.

J. I. WILLIAMS.

Mansion House Farm, Croydon, Surrey.

The Student's Column.

SPECIFICATIONS.—XIII.

GAS FITTER.

THE usual way of specifying gas fitters work is as follows:—The gas to be laid on from the Company's mains to the meter in with ½-in. patent strong galvanised wrought-iron welded tube, jointed in red lead cement with all the necessary bends, elbows, T's, crosses, junctions, stopped ends, diminishing sockets, nipples, and other necessary fittings. The gas tubing to be stout composition pipes soldered at joints, and the gas is to be laid on to the following points. The situation of the various lights are then enumerated and the gas fitter is left to use his own discretion as to the size of pipes and method of running. This can hardly be considered satisfactory, as it leaves the way open for the contractor who intends to scamp the work, and does not give a fair chance to the man whose aim is to carry out his work properly.

Another method specially favoured by quantity surveyors is to specify approximately the lengths of piping required, and to enumerate the number of fittings at p.c. prices, leaving all the details to be settled when the building is in progress by the architect. Still another way of getting over the difficulty is to put the work into the hands of a trustworthy gasfitter as a sub-contractor, and include the amount of his prices as a provisional sum in the specification.

Assuming, however, that the student will desire to know how to specify gas fitters' work with the same degree of care that he devotes to the work of other trades we may proceed as follows, taking some hints from the useful little handbook published by Messrs. James Stott & Co.

Meter and Service.—The contractor is to give notice to the Gas Company, and obtain from them a properly stamped dry-gas meter for lights, and fix same on inch deal shelf, supported on wrought-iron brackets in , and shall pay all fees for connecting the service from the main to meter by the Gas Company.

Pipes.—The pipes are to be wrought-iron welded tubing, with all necessary bends, tees, angles, and connexions, and of the weights, and screwed to the standard threads, as shown on schedule below, and are to be capable, when fitted, of resisting an internal pressure of 60 lbs. to the square inch.

Int. Diam. Pipe.	Weight per 100 ft.			Threads per inch.
	cwts.	qrs.	lbs.	
1/4	0	1	14	19
3/8	0	2	6	19
1/2	0	3	6	19
3/4	1	0	22	14
1	1	3	0	11
1 1/4	2	1	11	11
1 1/2	2	3	7	11
2	3	3	21	11
2 1/2	5	0	6	11
3	6	0	20	11

Int. Diam. Pipe.	Weight per Ten Elbows.		Weight per Ten Tees.	
	lbs.	ozs.	lbs.	ozs.
1/4	1	7	1	8
3/8	1	13	2	4
1/2	2	15	3	0
3/4	4	6	5	4
1	6	4	7	10
1 1/4	10	4	12	15
1 1/2	15	8	16	7
2	22	6	27	0
2 1/2	46	2	50	15
3	73	8	85	5

The contractor is to supply all bends, elbows, sockets, tees, hack-nuts, nipples, plugs, caps, wall-hooks, pipe-clips, screws and other material necessary. Bends are to be used in place of elbows wherever possible, and where it is necessary to use elbows they are to be of the pattern known as "round elbows." The pipes are to be stayed by wall-hooks or clips at intervals as stated below.

1/4 in., 3/8 in., and 1/2 in. pipes, one stay every 6 ft.	
3/4 in., 1 in., and 1 1/4 in. "	9 ft.
1 1/2 in., 2 in., 2 1/2 in., and 3 in. "	12 ft.

If composition pipes are to be used they should be specified of the following weights:—

Int. Diam. of pipe.	Weight per yard.	
	lbs.	ozs.
1/4	0	13
3/8	1	0
1/2	1	5
3/4	1	10
1	2	2
1 1/4	3	4
1 1/2	4	4
2	5	8
2 1/2	5	12

(If there is any length of piping underground should preferably be of cast-iron, or if the pipes are of wrought iron they should be protected in wooden box troughing, packed with dry sand, and flushed with hot pitch.)

No pipes are to be hedged in plaster or in walls but they are to be kept 1 in. clear from finished surfaces of walls and ceilings. (This is highly desirable for the sake of the pipes, and for the detection of any leakage that may subsequently occur. But if considered unsightly, the architect will use his own discretion as to casing, or even bedding the pipes in the plaster.) The gas fitter is to obtain the approval of the architect to all lines of piping, and is not to cut away any joists or other woodwork, except as may be special allowed by the architect. (Of course, the way of arranging for gas fitting is to supply drawings showings where pipes are to be placed, but this is very seldom done.) Floor boards over pipes to be fitted to remove easily, and fixed with brass cups and screws.

Syphon-Bar.—All gas-pipes are to be laid with a slight inclination towards the meter, and a cast-iron syphon-hox with sockets for pipes, capacity four gallons each, fitted with lock lid bolted to flange, and provided with 1/2 in. wrought-iron suction pipe, is to be fixed where directed near to meter.

Governors.—Provide and fix where directed No. 1 1/2 in. Stott's self-acting gas-governor. No. 2 in., and No. 3 in. ditto.

Stop Cocks.—Provide and fix where directed the following stop-cocks. (Give list for various sizes.) These are to be strong, brass full-weight stop-cocks, square headed with loose keys, with brass screw unions to pipes.

Lines of Piping.—The piping to main from to to be 1 1/2 in. wrought-iron gas barrel, with 1 in. secondary mains from to to 3/4 in. branches from to to 1/2 in. nipples to . In laying piping any pipes that have to be bent shall be first heated to redness and bent whilst hot. Care is to be taken that the sectional area of pipes is not diminished, and no piping will be passed unless it is of full diameter. Joints are to be strongly screwed up, and made firm and gas-tight with white lead and hemp.

Fittings.—Provide and fix No. two arm wrought iron pendants, 3/4 in. by 3/4 in. by 60 in. long, No. two arm bronzed brass pendant 1 in. by 3/4 in. by 54 in. long, No. single jointed bronzed brass brackets 3/4 in. by 13 in. long, No. stiff wrought-iron brackets 3/4 in. by 10 in. long, and allow the sum of p.c. fee fittings to be selected by the architect to be fixed in the following rooms. (Give a list of the points where the selected fittings are to be used.) The contractor is to provide storage for all fittings when delivered on the premises as well as the pipes, etc., which he may himself supply, and to protect same from rust or other damage.

Painting.—All wrought-iron pipes and fittings to be absolutely clean and free from rust before painting, and each to receive one coat of red lead and boiled oil mixed in small quantities and applied whilst fresh before being fixed, and the interior of the pipes to be painted with red lead and boiled oil and two coats of lead paint afterwards, also before fixing. The exteriors to be painted after fixing with three coats in good lead and oil colours of approved tints, as directed by the architect.

Testing.—Provide the sum of two guineas to be paid for testing the gas fittings by the expert to be appointed by the architect, who will not approve gas fitting until such testing has been done, and the expert's fee paid.

N.B.—In arranging the gas fittings for churches and schools and other public buildings it is generally desirable to provide for by-passes, and the student should therefore specify where he desires these, that No. 1 in. brass cocks and by-passes are to be fixed where directed, the cocks to be lever taps with chains, stating whether brass or iron chains, and stout brass tablets marked "On" and "Off" respectively. Provision must also be made for lamplighters' torches.

When sliding pendants are used with the ordinary water tub arrangements, it is well to specify that a small quantity of olive oil should be poured on top of the water in order to prevent evaporation.

GENERAL BUILDING NEWS.

NEW THEATRE, TUNBRIDGE WELLS.—A syndicate has been formed to erect a new theatre at Tunbridge Wells. Mr. John P. Briggs, of London, has been appointed architect.

SCHOOLS, WHITWELL, DERBYSHIRE.—On the 13th inst. the Duke of Portland laid the memorial stone of new voluntary schools at Whitwell. The buildings comprise an infants' school for 300 scholars, senior departments for 150 girls, and the same number of boys, who will be taught separately, two residences, one for the master, and one for the mistress, together with covered playground and all the necessary out-offices. Gothic is the style adopted, and the schools will be erected in red brick with Mansfield stone dressings, while the roofs will be covered with red tiles. Mr. Joseph Smith, of Hartshead, Sheffield, is the architect, and Mr. J. Collingham, of Langwith, the contractor.

POLICE STATION, WELLINGTON.—This building occupies a position at the corner of Church-street and Plough-road. It is built with Lilleshal pressed bricks, and Grimsbill stone dressings, and is in the Italian style, with the new arms of the county surmounting the principal facade. On the ground-floor there is a charge office, and an office for the superintendent immediately adjoining. In close proximity to the charge office, and adjacent to the same, are four cells. A staircase is provided leading from the cell corridor to the dock in the court above. Adjacent to the cells is a prisoners' airing yard surrounded by high walls. On the first floor there is a Petty Sessions Court with a slightly raised gallery at one end for the public, and a witnesses' waiting-room, and solicitors' retiring-room, with lavatory accommodation adjoining. Adjacent to the Bench is a retiring-room, with lavatory accommodation, for the use of the magistrates. The public entrance to the court is from Church-street, and there is a private entrance for the magistrates from Plough-road. There is a house adjoining for the superintendent or sergeant in charge, and in the rear there are a large drill-yard and a stable and gig-house. The whole of the public part of the building is warmed on the high-pressure hot-water principle. The court roof and fittings are of red deal, stained and varnished. Mr. A. Roper, of Wellington, has carried out the work, under the superintendence of Mr. A. T. Davies, the County Surveyor, and his chief assistant, Mr. M. S. Stobbs.

SCHOOL, PITCHCOCH, PERTH.—From thirty-two competitive designs submitted for a new central school, Pitchoch, that by Mr. C. S. Robertson, architect, Perth, was selected. The building is one story in height and Gothic in style. Its general shape may be described as resembling the letter L, the court forming the back or west side of the school, which will be about 160 ft. in length on either side. The main elevation faces the east. The main entrances for the boys and girls are separate. The cloak-rooms and lavatories are placed near the main entrances. Rooms for the headmaster and for the teachers are also near the main entrances. Each classroom has separate doors for boys and girls, but separate entrances and passages leading to them. The infants' classroom is divided by a movable glass partition into two classrooms in the same wing are similarly divided. The secondary department consists of one large classroom, occupying part of the front on the east elevation of the building. It is proposed to heat the school by means of hot-water pipes on the low-pressure system. The heating chamber is placed in the basement. The school is designed to accommodate 620 scholars. The total cost is estimated at about 6,000.

CATHOLIC CHURCH, DUNDEE.—On the 17th inst., the foundation stone of a new church was laid on a site at the corner of Arthurstone-terrace and Maitland-street, Dundee. The architect is Mr. T. M. Cappon, of Dundee. The church, which will accommodate 800 persons, is to be built of red stone from Ayrshire, while the rubble is to come from Berry Muthrie, near Forfar. So far, the mason contract has been fixed, and it has been entrusted to Mr. Wm. Bannet, Dundee.

RACECOURSE BUILDINGS, LINCOLN.—The improvements on the Carlholme, Lincoln, have now been completed. The improvements effected are to the east of the Grand Stand, which is situated on the south side of the racecourse. The old wooden stands have been pulled down, and in their place has been erected a brick structure, with iron stanchions, steel girders, and a roof of corrugated iron. The stand will accommodate 2,500 persons. At the east end of the stand entrance is gained to a refreshment-bar, 56 ft. by 38 ft. A kitchen serves the luncheon-room on one side, and a dining-room, 38 ft. by 26 ft., on the other. Accommodation has been provided for ladies. Behind the stand at the east end are the police-office cells. East of Tattersall's ring is a saddling paddock occupying about a third of an acre, with brick and tiled shed for exercising horses in inclement weather. The architects of the new stand were Messrs. W.

Mortimer & Son, Lincoln; and the builders were Messrs. Wright & Son, Lincoln, the contract price, exclusive of the saddling paddock, being over 3,000.

ALTERATIONS, ST. BLAZEY CHURCH, CORNWALL.—Tenders having been invited for re-roofing and internal alterations of St. Blaze Church, from plans by Mr. Sedding, of Plymouth, eight tenders have been received. That of Messrs. Hobbs & Bartlett, Callington, 535/6, ros., has been accepted.

WESLEYAN CHURCH, ALREWAS, STAFFORDSHIRE.—The foundation stones of the new Wesleyan church and school, Alrewas, were laid recently. The building will be of red brick, relieved with stone dressings. The plan of the church is cruciform, and the transepts and vestries connect into the school which runs parallel, forming a quadrangle. There will be an apse, with pulpit at the side, and another feature of the building will be the open-timbered hammer-beam roof. Entrance will be made by means of a narthex, extending the whole width of the front of the building. The church will accommodate 300 persons, and the Sunday school 250. The cost of the building is estimated at 1,025, and the contractor is Mr. H. Kershaw, Burton-on-Trent. Messrs. Gordon, Lowther, and Ganton, of London, are the architects.

NEW SCHOOLS AND CHAPEL, LEEDS.—Foundations of new schools and chapel, in connexion with Oxford-place Wesleyan Methodist Chapel, Leeds, have just been laid. The joint architects are Mr. George F. Danby and Mr. William H. Thorp. If funds had permitted of the erection of an entirely new structure, the chapel building would have been raised to a considerable height, with the floor elevated on a basement stage. As it is, the old boundary-wall and entrance-gates will be removed, the ground-floor raised 15 in., and a flight of steps front, giving access to the principal entrance-porch in the centre of the facade, and also to the two side entrances. The building will be carried up to an additional height of about 24 ft. from the main cornice level by means of a central pedimented gable, and cupolas at either side, crowning corner pavilions. The leading features of the front will consist of a rusticated ground-floor stage, with piers, banded alternately with brick and stone ashlar work, marking the angles of the corner pavilions and the central gable; a bold projecting central porch, with a segmental arched canopy carried on rusticated piers, and coupled Ionic columns; and two square-headed side-entrances, with circular fanlights and carved spandrels. The upper first-floor stage will be embellished by coupled and single columns, with carved composite capitals of a Renaissance character, carrying a bold entablature, with a projecting cornice. A three-light window in the central gable will be surmounted above the cornice level by a moulded, rusticated arch, the tympanum of which will be filled in with a moulded circular light and carved side panels. The synd hall, which will be brought up to the frontage line, will be connected with the principal front by means of a quadrant. A tower about 170 ft. in height will form a leading feature in the block. On the plan it is square-shaped up to the top of the stage immediately above the eaves of the main building, with rusticated angle piers and carved scroll terminals, and it is then surmounted by an octagonal belfry stage with open arched sides, carrying an ogee-shaped, domical roof. A treatment similar to that of the central gable of the chapel will be employed at the gable end of the lecture hall. The Park-lane elevation of the chapel will be re-faced with brick and stone work, with a pavilion at the south-west angle, with a lead-domed roof and two projecting central bays, with rusticated pilasters carrying moulded cornices and pedimented gables. The new Sunday-school building, fronting Oxford-road, is designed to harmonise with the chapel renovation, but its design is of a more domestic type. The principal block, with high-pitched roof over the large schoolroom, will have gables at either end, with moulded curved sides and pediments, and two small gables in the centre of the front, to relieve the eaves line. The first floor stage will be treated with rusticated projecting pilasters. When completed, the school, which is to be lighted by electricity, will accommodate 660 children. It is estimated that the total cost of the alterations and extensions will be 18,000.

LIBERAL CLUB, DEWSBURY.—On the 20th inst. Mr. Oldroyd, M.P., opened a new club-house in Boothroyd-lane, Dewsbury, named the Gladstone Liberal Club, and which has been erected from designs by Messrs. D. & W. Thornton, architects, of Dewsbury.

ST. MARY'S CHURCH, OXFORD.—The sum of 1,750/6 is to be spent on the restoration of the pinnacles and battlements of the nave of St. Mary's (the University) Church, in accordance with the design of Mr. T. G. Jackson, R.A.

CHURCH AND SCHOOLS, PARKGATE, NEAR CHESTER.—New church and schools are being erected on the Parade, Parkgate, according to the plans and under the superintendence of Messrs. Frederick Fraser and Warburton, architects, Warrington. The cost of the building is estimated at 9,000. Further extensions to the schools are contemplated over the above sum, and the architects are preparing plans. These include the erection of

a large covered playground, roofed in a single span of 100 ft. The contractor for the work is Mr. Wm. Fleming, of Neston.

TENNEN-STREET MISSION HALL AND SCHOOLS, BELFAST.—The new schools connected with Donegal-street Independent Church were recently opened. The architect of the building is Mr. T. H. McCall, and the builder Mr. George Alexander. The upper part is to be used for Sabbath-school and mission work, and the lower as day-schools.

NEW CHURCH FOR FLOOKBURGH, LANCASTHIRE.—The parish of Flookburgh, Cark-in-Carmel, is to be provided with a new church. Plans of the projected structure have been prepared by Messrs. Austin & Paley, architects, of Lancaster.

CONGREGATIONAL CHURCH, STAFFORD.—This building has just been reopened after alterations, &c. It has been lengthened 15 ft. A new front has been erected. The stone portico, which for many years formed the entrance to the old Infirmary at Stafford, has been adapted to the new front of the building. The interior has been almost rebuilt. A new rostrum and platform have been erected; the organ has been brought from the gallery to the ground floor, and is placed to the left of the minister; the galleries are entirely new; as are also the windows, which are filled with leaded lights of tinted glass. There is now a vestibule with double doors. The building is lighted by the electric light, which has been installed by Messrs. Lea, Son & Co., of Shrewsbury. The architects were Messrs. Inghal & Son, of Birmingham, and the builder Mr. J. Biggs, of the same city. The painting has been done by Mr. Adams, of Stafford, and the organ has been enlarged and re-erected by the original builder, Mr. Banfield, of Birmingham.

THE USHER HALL, EDINBURGH.—The special committee of Edinburgh Town Council, charged with the duty of looking out for a suitable site for the Usher Hall had before them on the 15th inst. sketch plans of the Charlotte-square and Music Hall sites, prepared by Councillor Cameron, and based on the information supplied by Mr. Morham, the City Architect, as to what was necessary to be provided in a desirable scheme. After considering the two sets of plans, the Lord Provost moved that the sub-committee should now report to the Lord Provost's committee as to the present position of the matter, and recommending the adoption of the site on the north side of Charlotte-square, which, it was said, could be acquired at a cost not exceeding that of any other eligible site in the city. Dean of Guild Miller seconded the motion. Treasurer McCreae moved, and Mr. Telfer seconded, delay, but the motion was carried by a majority of six to two. The general scheme approved by the sub-committee contemplates the erection of the building on the area covered by the seven centre houses of the north side of Charlotte-square, the east and west wings, each containing two houses, being left as at present. A carriage-way at the level of Charlotte-square, 30 ft. wide, will be carried round the proposed block, giving direct access to and egress from all parts of the buildings. The sketch plans show on the street level a large central hall, about the size of the grand ball of St. Andrew's Halls, Glasgow. On the first-floor level there will be a grand corridor, or crush space, reached by double central stairs. A horse-shoe balcony will run round three sides of the grand hall, and a second gallery can be introduced if thought desirable. The central hall is flanked on either side by a chamber concert hall and another small hall, each with accommodation for between 400 and 500, and a spacious vestibule affords direct access to the inner lobbies. On the first-floor level, galleries for art or social purposes run the whole length of the east and west sides of the building. Although the halls were shown *en suite* on the plans, the arrangements are such that each of the halls can be used for separate gatherings at one and the same time without causing inconvenience, and all the halls can be approached by the grand entrance, besides their own side entrances. Ample accommodation is provided for reception-rooms, cloak-rooms, service-rooms, &c. The fall of the ground at the north side of the square gives facilities for a basement floor, where the heating and ventilating apparatus can be placed, as well as the necessary stores.—*Edinburgh Dispatch.*

ST. AUGUSTINE'S, KILBURN.—We are glad to learn that there is a probability of the tower and spire of Mr. Pearson's fine church at Kilburn being at length completed.

BOARD SCHOOLS, GREAT BENTLEY, ESSEX.—New schools for the Great Bentley School Board have just been opened near Bentley Railway Station. The school and master's residence are built of red brick relieved with Bath-stone dressings. The roofs are covered with brown Broseley tiles, and octagonal cloak-rooms are situate at the north and south ends. The schools have accommodation for 274 children, together with a board-room. The large room contains accommodation for 150, and is so arranged that on removal of a glass partition the room is enlarged to 22 ft. by 58 ft., with three entrances. The babies' room contains accommodation for fifty-four infants, and the boys' class-room for sixty. Round each of the rooms runs a wooden dado, and the corridors have a dado of salt-glazed brick. The flooring is of wood blocks, and Hoyle's foul-air exits and Johns' fresh-air inlets have been used throughout. The school-master's house adjoins

the schools. The architect for the schools is Mr. J. W. Start, F.S.I., of Colchester and Harwich, and the contractor Mr. E. West, of Chelmsford.

SANITARY AND ENGINEERING NEWS.

HALIFAX SEWAGE WORKS.—At the Halifax Town Hall recently Major-General H. D. Crozer, R.E., conducted an inquiry on behalf of the Local Government Board into applications by the Corporation to borrow 32,000*l.* for purposes of sewerage and sewage disposal, 25,000*l.* for waterworks purposes, and 364*l.* for swing doors for the New Markets. The Town Clerk (Mr. K. Walton) appeared for the Corporation. The Borough Engineer (Mr. E. R. S. Escott) was called, and presented the various details of estimated expenditure.

WHITBY IMPROVEMENTS.—On the 18th inst. Col. W. Langston Coke, M.Inst.C.E., held an inquiry at the Urban District Council Chamber, Whitby, respecting the Council's application for authority to borrow 2,500*l.* for the construction of new roads on the West Cliff. Mr. T. K. Scott, Town Surveyor, produced plans of the improvements, after which evidence was given in favour of the proposal.

WATER SUPPLY, BELPER.—An inquiry was held in the High-street School, Belper, recently, by Mr. F. H. Tullock, M.Inst.C.E., one of the Inspectors of the Local Government Board. The District Council had made application for a loan of 8,400*l.* to lay mains and pipes in connexion with the water supply. The Engineers (Messrs. C. & F. W. Hodson), and the Clerk of the works (Mr. Samples) were in attendance. The plans were laid before the Inspector.

SEWERAGE OF PEMBROKE.—At a meeting of the Pembroke Town Council recently, the scheme for the sewerage of Pembroke, submitted by Messrs. F. Beesley & Sons, Westminster, with some modifications respecting the outfall, was adopted, and it was decided to submit it to the Local Government Board forthwith. The works will cost about 6,000*l.*

SEWERAGE SCHEME, CAMBRIDGE.—A Local Government Inquiry was conducted at the Guildhall, Cambridge, recently, by Col. J. T. Marsh, R.E. The subject was the application of the Town Council for sanction to borrow 25,000*l.* for works of sewerage and sewage disposal. There were present Messrs. J. E. L. Whitehead (Town Clerk), J. T. Wood (Engineer to the Works), and E. W. Harry (Borough Surveyor). There was no opposition.

ELECTRIC AND GAS LIGHTING AT DOUGLAS.—The Douglas (Isle of Man) Town Council, with a view to the better lighting of the bay front and the main thoroughfare to Woodbourne, on the outskirts of the town, invited tenders from the Electric Power Company for lighting by powerful arc lamps, and from the gas company by the most approved incandescent system. The former offers to light, free of all cost to the town, the promenade, main artery and thoroughfare to Woodbourne, with 67 arc-lamps of 1,200 candle power. In return they ask for leave to work the bay tramway with electric trolley cars, power to lay mains for private lighting, and to lay tramways to the railway station. On sale of the current they will pay 5 per cent. of the gross income, and 15 per cent. of the gross income of the North Quay tramway. The gas company offers to light the promenade with 120 double candle Wellsbach burners for 120*l.* a year, and the remainder of the town at a correspondingly low price.

PROPOSED NEW BRIDGE AT KEW.—For the last three years the Middlesex County Council and the Surrey County Council have been negotiating terms for the erection of a new bridge across the Thames at Kew. A short time ago it was announced that terms had been arranged between the two County Councils, and that the building of the new bridge would be proceeded with forthwith. Now, however, an intimation has been received stating that an unexpected hitch has occurred. It had been decided that the gradients of the new bridge should be one in forty, but it is found that in order to get such a gradient it will be necessary to raise the road crossing the foot of the bridge 6 ft., which will cut off access to a hotel on one side, and to some business premises on the other, and also seriously interfere with other rights of property. It appears that the only way to get out of the difficulty is to get a special Act of Parliament passed, and it is now too late to do that this year.

BUILDING A RAILWAY BRIDGE IN THIRTEEN HOURS.—At Loughborough, Leicestershire, south of the station, an old bridge was recently demolished, a new one constructed, and the metals relaid for the heavy week-day traffic in the metals space of thirteen hours. The work became imperative to prevent the line being flooded during a period of exceptionally heavy rains. The new bridge is of steel, and the special feature connected with it is that no less than eight arches are constructed in its piece, the whole being supported by steel pillars instead of brick abutments as heretofore. The work was done under the superintendence of Mr. Lorey, the Midland Railway Company's resident engineer at Leicester.

RANDY MERE RESERVOIR.—Messrs. Parker & Sharp, contractors of York, have been given the contract for the lining of the floor and sides of this reservoir with concrete; the work to be completed in twelve months.

FOREIGN.

FRANCE.—The Jury on Architectural exhibits at the Champ de Mars Salon this year is composed of MM. Chaîne, Sauvageot, and Benouville, with MM. Gout and Plumet as Supplementary Jurors.—M. Chaplain, Member of the Institute, who succeeded M. Coutan, sculptor, as artistic director of the Sèvres Manufactory, has resigned his post. It will now be taken by M. Sandier, who has for several months been the head of the decoration works. The new Director is an architect. In America, where he has built several large hotels, he has made great use of *chromique* in architecture. He has also been attached to a large manufactory in the East.—The new buildings of the Museum reserved for comparative anatomy and paleontology will shortly be opened. They were built by M. Dutert, and are in the Rue de Buffon; the principal facade is in the Boulevard de l'Hôpital.—The annual exhibition of the pupils of the Académie Julian in the Rue Lafitte is announced, and also the exhibition of pastels by M. Albert Bussy in the Durand Gallery.—M. Raoul Verlet has just finished the monument in honour of Guy de Maupassant, which will be exhibited at the Salon, and is afterwards to be erected in the Parc Monceau, close to the Natunachie.—The Municipal Council of Nancy has asked the Government to establish a complete system of fortifications round the town. The pretty facade of the old chapel of Notre Dame de Galles at Cosne is being destroyed. It dates from the eleventh century.—There is a question of preserving in a State museum the decorative group which crowns the central pavilion of the Palais de l'Industrie; also the large bas-relief under the arch of the entrance door of the Palais. These two works were executed in 1854 by MM. Elias Robert and Vilain.—The town of Châlons-sur-Marne has just opened a competition for the enlargement of the College Communal. The expense is estimated at 400,000 francs.—M. Ferdinand Faivre, sculptor, pupil of MM. Cavellier and G. Barrias, has just been commissioned by the Egyptian Government to decorate the new museum of antiquities at Cairo. For the principal door there will be two caryatides, 4 metres 75 centimetres in height, symbolising "Haute" and "Basse Egypte."—The town of Avignon has just opened a competition for the building of a central market in this town. The expense is estimated at 400,000 francs.—The "Société historique" of Passy and Auteuil have taken the initiative of erecting a monument at the Ranelagh, commemorating the visit of the Emperor and Empress of Russia. This monument, which is to be executed by M. Gustave Michel, sculptor (grand prix at the 1896 Salon), will be five metres high.—The French Archeological Congress will hold its sixty-fourth session at Nîmes from May 18 to May 25.

GERMANY.—We are pleased to be able to record the fact that the Emperor William has not forgotten architects and sculptors in his list of honours on the occasion of the ceremonies at Berlin. The Court sculptor, Professor Reinhold Begas, has been given the Cross of the Hohenzollern Order; his brother, Carl Legas of Cassel, and his assistants—Messrs. Bernewitz, Casper, Felderhoff, Gootz, and Waegener have received distinctions and likewise architect, Gustav Halmbauer. "Baurath" Werner of Berlin has received an order. The clerk of works, foremen, and contractors, on the Emperor William I.'s monument have also not been forgotten.—A considerable amount of sculpture has been ordered for the Houses of Parliament at Berlin, in which the interior decorations are as yet far from complete. Professor Walat, the architect, has also already given several commissions for the fresco work.—No less than fifteen groups of sculpture have now been ordered by the Emperor for the Avenue of Victory. From an official report we see that the monument to the Emperor Frederick, which has been erected by voluntary subscription on the battlefield of Worth, has cost nearly 12,500*l.*—The Municipality of Berlin are considering the erection of four more bridges over the waterways in their city. There is to be a new Aisen bridge at a cost of about 25,000*l.* There is to be a bridge at the Ross Strasse costing about 8,000*l.*, and the Mockern will be a fourth bridge costing about 22,000*l.* The extent of the building operations in the City Engineer's Department, more particularly in respect to bridges, is remarkable.—Considerable improvements are to be made to the main thoroughfare of Berlin "Unter den Linden" in the neighbourhood of the Opera House, which itself is also to undergo further considerable alterations. It is not improbable that the wings which were added to the Opera House, which would certainly be an advantage as the accommodation in this building is very cramped. The new wings will encroach on certain side thoroughfares which the Municipality will, however, present to the Royal owner of the building.—The annual Schinkel celebration took place recently under the auspices of the Berlin Architectural Society, and was followed by a banquet.—We have to record the death of Overbaurath Mathies at Munich, who held a leading position in the Office of Works for the Bavarian Government since 1882; also that of Professor Kopp, whose work was particularly

associated with the Royal Technical College at Stuttgart. He was a sculptor by profession, and a master of architectural modelling and bas-relief work. The sculpture carried out in his studio will be found on most of the principal buildings at Stuttgart.—There will be the usual Annual Art Exhibition this year, and the exhibition building near the Lehn-Strasse will perhaps use the influential committee of artists representing the Royal Academy and the various artist associations will form the executive of the show.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Messrs. Smith, Brodick, & Lowther, architects, have removed from Cogan-chambers, Hull, to York-chambers, 77, Lowgate, in the same city.—Messrs. Easton, Anderson, & Golden are changing their address this week from 3, Whitehall-place to Broad Sanitary-chambers, S.W. They have given up their office at 22, Billiter-street.

ROMAN LINCOLN.—Digging commenced on the 15th inst. for the remaining column of the Roman colonnade, which it was expected would be found under the pavement in front of Mr. W. Blaz's shop in the Bail, and in the course of the day the workmen made a discovery of quite an unexpected character. It was thought that perhaps this pillar might have been a double one, to correspond with the one next it on the north, but it was found to be a triple column. The main shaft appears to be exactly in a line with the columns previously exposed, and it is larger than the other two, into both of which it is set almost at right angles. A singular feature of this triple column is that the mouldings on each are of a different kind from the others. The discovery of this column tends to support the view held by the late Precursor Venables, that these extra shafts were introduced in order to give an air of strength and solidity to the corners of the building rather than to remedy some failure in the architecture of the portico, which latter was regarded as the more likely when the first double column was discovered. The thirteen columns of the colonnade is now known to have consisted, stand as follows:—The first column to the north, and which was the first discovered, is a double column standing east and west; then, at intervals of about 16 ft., are four single columns; next is a double column standing north and south, and then comes the triple column just unearthed, five single columns at similar distances, and then two double columns, both standing north and south; four more single columns, and finally, at the south end, a double column, standing east and west. With one exception, therefore, all the twin columns stand one way. Plans of the latest discovery are being made by Mr. H. H. Dunn, architect, Lincoln, and will be deposited at the Corporation offices. Mr. Dunn has also made a coloured drawing of the beautiful tessellated paving found the previous week, and it is understood that the Corporation intend making further excavations at the place where this was discovered.—*Lincoln Mercury.*

SOUTHEND PIER WORKS.—A special meeting of the Southend Town Council was held on the 16th inst. to seal the supplemental contract for the pier works. The Town Clerk said the agreement was that Messrs. Murdoch & Cameron should go on under a fresh contract, with Mr. Brunless as the engineer; but if any fresh question arose it was to be referred to a separate engineer as referee. Sufficient of the work was to be finished for the steamboats to use the pier by the Friday before WhitSun, and the whole within sixteen weeks. If they failed to complete the work, the Corporation could step in and remove the work done near the old pier-head, and the contractors would forfeit 1,000*l.* If the work were done, a bonus of 2,000*l.* was to be given to the contractor. The original security of 1,700*l.* had been replaced by a fresh bond of 2,000*l.* The contractors were to employ a competent foreman, and if they failed to do so, the Engineer could employ one and charge the firm with the expense. The terms of the contract were more stringent than those of the old one, and in the Corporation's favour. There was to be no more law over it; every question was to be settled by arbitration. The supplemental contract was subsequently sealed.

GREEK HISTORY AND MONUMENTS.—In the third and last series of lectures on "Greek History and Extant Monuments," Professor Percy Gardner, at the Royal Institution, recently pointed out how in ancient Athens, political history ran parallel to the development of art and religion, and each completed the other. After the Persian war the Athenians came back to their city in no conservative spirit. The first thing they did was to rebuild the city walls, and they took the materials ready to hand, including fragments of columns, sculptural monuments, &c. Then they turned their attention to the Acropolis, and the buildings which they erected were still the admiration of the world. The history of the great temples was very striking. One of the first of the gods to be honoured was Pan, whose grotto was set up in gratitude for his supposed interference on their behalf at the battle of Marathon. The wooden statue of Athena, carefully preserved, was safely removed, and Themistocles evolved a project for a new temple, but his plans were stopped by his fall. Pericles

and he had a great opportunity, and, in spite of protests as to the use of money intended for defence being used in this manner, continued the work, assisted by the great sculptor Phedias. A great bronze statue of Athena, standing 40 ft. high, on a base of 10 ft., was the first monument given to all sorts of artificers and workmen. The Parthenon, with its statues, carvings, &c., gave an ideal summary of Athenian history. In succeeding years a more conservative spirit set in, but still every great event commemorated by some addition to the glories of this unique structure. Greek art lay at the root of all art; it represented outward from the growth of the nation, its poetry, religion, martial enterprises, and politics, and was therefore worthy of the respect and closest study.

ABERDEEN GRANITE ASSOCIATION.—The annual assembly of this Association took place in Douglas Hotel, Aberdeen, on the 19th inst. Councillor Boddie, in proposing "The Town and Trade of Aberdeen" referred to the large demand for polished granite fronts for London and the provinces. Baillie Taggart, who presided at supper, replying for the toast of "The Association," spoke of the proposed granite statue of Hygieia for Duthie Park, and said the Association were to present to the Aberdeen Art Gallery and Museum a collection of different granites as a permanent exhibit.

REEREDS, NEWTON FLOTMAN CHURCH, NORFOLK.—A memorial reered in stone (a gift to the church) was dedicated a short time since by the Bishop of Thetford at Newton Flotman. The design of the reered was by Mr. Lee, architect, London. The stonework and carving of the diaper work which fills the panels has been executed by Mr. A. W. Peritt, Long Stratton.

FIRE AT BUILDERS' PREMISES.—Shortly after one o'clock on the morning of the 22nd inst. an outbreak of fire occurred on premises in Warren Lane, Woodwich, occupied by Messrs. Kirk & Randall, builders. The fire originated in the boiler-house on the ground floor, and in a short time the flames were spreading right and left, threatening to involve the whole building, which consisted of three floors, measuring 100 ft. one way by 300 ft. the other. A watchman, however, was on duty, and, getting a hydrant to work, he held the flames in check until the arrival of the firemen from the Woolwich and Shooter's Hill stations. Two more hydrants were then requisitioned, and within an hour the outbreak was under control.

OLD ARCHWAY, CHESTER.—The old archway of St. Michael's Church, Chester, is being preserved. The archway, or gateway, once formed the entrance from Bridge-street row to St. Michael's Church, Chester, and was taken down in 1852, when the church was rebuilt. It consists of two periods of architecture, two-thirds being Norman work, while the doorway proper is about 400 years later. It has now been removed to the corner of Grosvenor Park called the Quarry, where another arch, which belonged to St. Mary's Nunnery, has found a resting place since 1820.

THE IMPROVEMENT OF A HIGHLAND ESTATE.—A scheme of improvement has just been carried out on the Highland estate of Loch Rosque, in Ross-shire, the property of Mr. Bignold. A considerable amount of money has been expended in beautifying the grounds around the mansion house, but the principal feature of the improvement has been the planting with forest trees on the hills for miles along the Achanault and Gairloch roads. The plans and designs, so far as the mansion house is concerned, were furnished by Mr. Carruthers, architect, Inverness.

OLD ARCHITECTURE IN LIVERPOOL.—At a recent meeting of the Liverpool Teachers' Guild at University College, Professor F. M. Simpson, M.A., a Professor of Architecture, lectured on "Old Architecture in Liverpool." The lecturer dealt chiefly with eighteenth century architecture, as it was during that century that Liverpool, through its increasing trade with America and the West Indies, grew most rapidly. Rows of houses were built on what were then outskirts, but are now in the middle of the town. Such houses are found in Great George-square, Hanover-street and Duke-street, Islington, St. Anne-street, and St. Paul's-square. Round the cathedral the best old houses are seen, though many of them have been knocked down to make room for modern warehouses. The lecturer described the appearance of these eighteenth century houses, which, externally, are plain, even severe. The very important fact on account of the eye is the doorway, and although the principle is the same in all, the variety in design, slight as it is, is positively amazing. In front of the house were generally cast-iron railings and ornamental lamp standards, often masterpieces of the smith's craft. But, throughout all, the feeling left upon the mind is very important, on account of the good proportions of their different parts. This effect is produced by the size and shape of the windows. They were buildings suited to the people who lived in them, and to the times in which they lived—simple but stately, plain but refined. Professor Simpson then showed a series of slides, as examples of good proportions and discreet use of ornament. Photographs of well-known houses were then thrown on the screen to illustrate the beauty of the eighteenth century doorways, steps, gables, and iron railings. These included houses in Slater-street, Kent-street,

Duke-street, Hanover-street, Great George-square, Daulby-street, Parliament-street, Union-street, and the almshouses near Arrad-street. The lecturer also showed some slides of the Cathedral, Town Hall, and Blue Coat School, and said that the latter was probably the oldest domestic building in the town, and the one which gave him most pleasure as an architect.

THE WIDENING OF FLEET-STREET.—On Tuesday next, the 30th inst., at the Commissioners of Sewers, Mr. Alderman Treloar will move that the necessary notices be served to acquire all interests in all the premises (fifteen houses) between Ludgate-circus and Salisbury-court, so that this important improvement may be at once proceeded with. The London County Council has agreed to pay 85,350*l.* towards the cost of this portion of the improvement, which, if adopted, will make Fleet-street 60 ft. wide, adding 16 ft. to the width from Ludgate-circus to Salisbury-court, that is to say, for 320 ft. of its length. The entire length of Fleet-street from Temple Bar to Ludgate-circus is 1,670 ft., so that the proposal is to widen at once about one-fifth of the whole length of the street.

DAGNALL PARK ESTATE, SELHURST, SURREY.—This freehold estate, adjoining Selhurst station, has recently been disposed of, and the purchaser has retained Messrs. Pralgraves, 12, Victoria-street, S.W., as architects and surveyors for the extensive building operations to be commenced immediately.

THE CITY WALLS, EXETER.—On April 5 a length of about one hundred and ninety feet of the old city walls of Exeter is to be put up for auction, in connexion with surrounding land. We presume this means the destruction of the wall. About one-third of the city is still surrounded by its old wall.

PRESBYTERIAN ROYAL ACADEMY PICTURES.—We have in type the estimated table of dimensions of various Cathedrals, but we are obliged to postpone it on account of the space required for the Building Exhibition article.

LEGAL.

IMPORTANT POINT UNDER A BUILDING CONTRACT:

CASE IN THE COURT OF APPEAL.

The case of Dadd v. Churton came before the Court of Appeal, composed of the Master of the Rolls and Lords Justices Lopes and Chitty, on the 20th inst., it being an action brought by a builder in the Whitechurch County Court against the building owner to recover the balance due under a building contract. The defendant admitted the claim, but he contended that he was entitled to recover 50*l.* as liquidated damages for delay in completing the work. It appeared that by the contract the plaintiff undertook to make certain alterations and additions to the defendant's house for 664*l.*, as set forth in the specification, and according to the general conditions annexed thereto. By Clause 1 of the general conditions "the whole of the works and any other works that may be ordered as additions to this contract are to be executed and completed in the best and most workmanlike manner, and with the best materials of their several kinds, and everything to be done to the full spirit and intent of this contract, which is intended to comprise everything necessary to the perfect completion of the works. Every part of the works to be done to the satisfaction of the architect, and their direction to be followed in every respect, and their opinion on all questions relating to the works or contract to be final and conclusive." Clause 4:—"Any authority given by the architects for any alteration or addition in or to the works is not to vitiate the contract, but all additions, omissions, or variations made in carrying out the works for which a price may not have been previously agreed upon are to be measured and valued and certified for by the architects and added to or deducted from the amount of the contract as the case may be according to the detailed schedule of prices on which the contract was formed. The schedule of prices to apply to all deductions and to additions up to 15 per cent. above the amount of the contract; any additional works beyond 15 per cent. above the amount of the contract and any item to which the schedule of prices does not apply to be allowed for at such prices as the architects may consider fair and reasonable." Clause 24:—"The whole of the works to be completed by June 1, 1892, under a penalty of 2*l.* per week for every week that any part of the works remains unfinished after that date as liquidated damages." It transpired that the extra works to the amount of 2*l.* 18*s.* 8*d.* were ordered, and the total works were not completed until twenty-seven weeks after the time specified for completion. The defendant, after allowing two weeks' additional time for the completion of the extra works ordered, counterclaimed for 50*l.* being 2*l.* per week for twenty-five weeks, as liquidated damages for the delay in completion. The learned County Court Judge held that the ordering of the extra works was a waiver of the stipulation to pay damages for delay, and gave judgment for the plaintiff on the counterclaim. In the Divisional Court Mr. Justice Wills agreed with the learned County Court Judge, while Mr. Justice Wright differed, the judgment of the learned County Court Judge therefore standing. The defendant now appealed.

At the conclusion of the arguments of counsel the Master of the Rolls, in giving judgment, said that the extra work admittedly delayed the completion beyond the time that would have been occupied in executing the specified works. The contract gave the building owner the right to call upon the builder to do extra works. A recognised rule had been laid down in "Holme v. Guppy," that if the building owner ordered extra works beyond the specified works which increased the time necessary for completion, the building owner was disabled from claiming penalties for delay in completion. If that were not so it would be a most unreasonable burden to put upon the builder to do extra works, and then if the whole works were not completed within the specified time to claim the specified penalties from him. Again, it was laid down in "Westwood v. the Secretary of State for India" that the fact that the contract entitled the building owner to call upon the builder to do extra works did not prevent the application of the above rule. Then came the case of "Jones v. St. John's College," which was an exception to that rule. In that case it was stated in the pleadings that the builder had agreed that if extra works were ordered to conclude the entire works within the stipulated time. The Court held that if the builder were foolish enough to agree to that, even though it became impossible to complete the works within the time, he must take the consequences. In the present case the builder did not by the agreement undertake such a foolish responsibility. The rule of construction was that if a particular construction allowed of an unreasonable result the court would be slow to adopt that construction. In the case of "Jones v. St. John's College" the contract was set out in the pleadings and admitted on demurrer. The present contract could not be reconstructed as was the contract in Jones's case. Therefore, the building owner, if entitled by the contract to order extra works, had by ordering the extra works deprived himself of the right to claim the penalties. They would, therefore, adopt the judgment of Mr. Justice Wills in preference to that of Mr. Justice Wright.

The Lords Justices concurred, and the appeal was accordingly dismissed with costs.

Mr. E. H. Lloyd appeared as counsel for the defendant (the appellant) and Mr. Loehnis for the plaintiff (the respondent).

THE WORKING CLASS DWELLING SECTIONS OF THE LONDON BUILDING ACT SUCCESSFULLY EVADED.

At the Worship-street Police-court, on the 17th inst., Mr. Hyman Davis, builder and property owner, of 65, Bishopsgate-street Without, appeared before Mr. Haden Corser in answer to a summons taken out by the London County Council for having failed to comply with a notice calling upon him to set back the front wall of No. 105, Brick-lane, Spital-fields, so that every part thereof should be at a distance in every direction not less than the "prescribed distance" from the centre of the roadway (viz. 20 ft.) in accordance with Sections 13, 14, and 200 of the London Building Act, 1894, the said house having recently been erected at a distance of only 12 ft. 1 in. from the centre of the roadway to a height exceeding the width of the street, and being alleged to be now occupied by persons of the working class.

Mr. E. Sagar Berry, in opening the case for the London County Council, drew the magistrate's attention to the fact that there was no definition in the London Building Act of the term "persons of the working class," but referred him to the definition embodied in Section 75 of the Housing of the Working Classes Act, 1890, which limited the term "letting for habitation by persons of the working class" for the purposes of that section to "letting a house or part of a house at a rent not exceeding in London 20*l.* a year." There was, however, a further definition which might be of assistance, namely, that contained in the Standing Orders of the House of Commons, and embodied in the South-Eastern Railway Company's Act, 1896, and many other Railway Companies' Acts, which was as follows:—"The expression 'labouring class' means and includes mechanics, artisans, labourers, and others working for wages; hawkers, costermongers, persons not working for wages, but working at some trade or handicraft without employing others except members of their own family, and persons other than domestic servants whose income does not exceed an average of 30*s.* a week, and the families of such persons who may be residing with them." He then pointed out the conditions under which a builder was entitled to build within the prescribed distance, as set forth in Sub-Section 5 of Section 13, viz., that where it was desired to alter or re-erect a building existing either at the commencement of the Act, or at any time within seven years previously, and which stood within the prescribed distance, it was permitted by the Act to do so, provided that the builder got the plans of the old building certified by the District Surveyor; but the privilege in Sub-Section 5 was restricted by the following proviso:—"Provided always that no dwelling house to be inhabited or adapted to be inhabited by persons of the working class shall without the consent of the Council be erected or re-erected within the prescribed distance to a height

exceeding the distance of the front or nearest external wall of such building from the opposite side of such street, and that no building or structure shall be converted into such dwelling house within the prescribed distance so as to exceed such height." He contended that Mr. Davis had lost the privilege conferred by that section inasmuch as the building had been erected within the prescribed distance to a height exceeding the width of the street, and was now occupied by persons of the working class, and that by Section 206 the exemption or privilege enjoyed ceased when the building became used by persons of the working class and the building thereupon became subject to the provisions of Section 13 (r). He also contended that this was not an alteration or re-erection within the meaning of Section 13 (s), inasmuch as the owner had erected eleven houses, each four stories high, with no back yards, on a site previously occupied by ten houses, each three stories high and each having a back yard. The case against No. 105 was taken as a test case, the Council contending that the decision in such case would govern each of the remaining ten houses of the block.

Mr. Arthur Crow, District Surveyor for Spitalfields, was then called, and stated that the house in question was one of a row of eleven houses erected by Messrs. Davis Bros. in 1895, from plans prepared by Mr. H. H. Collins. The site of the present houses was formerly occupied by ten houses, each of three stories, and having yards at the rear. The plans of those old houses were duly certified by him, in accordance with Section 13 (5) of the Act. (The certified plans were then put in evidence.) He examined the plans of the new buildings, and approved them, on the understanding that the houses were not designed for persons of the working class. The accommodation shown by Mr. Collins' plans included a shop and back room on the ground floor, and three floors over, with two rooms on each floor. The buildings were duly proceeded with and inspected by him from time to time. On January 23, 1896, he found that six houses had been roofed in, and were being fitted up for occupation—that in each house the back rooms on each floor were prepared to receive ranges, and that in No. 107 ranges had been fitted on the ground and first floors. On January 24 he served notices of irregularity, which were produced, objecting to the houses under Secs. 13 and 41, on the ground that they were being adapted for working-class dwellings. In reply he received a letter from Mr. Collins, which he produced, stating, *inter alia*, that, "as you must be aware, these buildings have never been erected for, nor are they intended for, the occupation of the artisan and labouring classes." Thereupon he consulted the Council's advisers, and, having regard to that letter, no action was taken. In October last his attention was called to the houses, and he inspected them and found that they were sublet to various sub-tenants. Dealing with No. 105, the whole house was let by Mr. Davis to Israel Cohen, a working clockmaker, at 2*l.* a week, who, with his wife and family, occupied the ground floor. Each floor above was sublet by Cohen to a separate family at 8*s.* 6*d.*, 8*s.*, and 6*s.* a week respectively. Each sub-tenant was a cabinet maker by trade. He put in a plan, showing the house as at present existing.

In cross-examination by Mr. Marshall Hall, who appeared for Mr. Davis, witness said, assuming the house to be a working-class dwelling, it did not infringe the Act as regards the line on which it fronted, but the party walls were not coincident with the old party walls; that he made a return to the Council of the houses when they were roofed in; that he had been paid his fees as District Surveyor; that he thought the house was adapted for persons of the working class because it and the others in the block were so occupied.

Mr. Thomas Blashill, Superintending Architect of the London County Council, said that he had seen the house in question; that Brick-lane was a highway; that the Council had given no consent to the building, which was inside the prescribed distance.

In cross-examination witness said that if the Council's views were correct a very large number of East End houses and some West End houses in poor class neighbourhoods would be affected by it.

Inspector Harvey, of the Whitechapel District Board of Works, said he had inspected the houses on several occasions. He confirmed the District Surveyor as to the occupation, and added that in No. 111 the two upper floors (four rooms) were occupied by a man to whom they were sublet at 15*s.* per week, with his wife and three children and ten lodgers. At No. 115 there were three single room sub-tenancies, two by a laundress and an office charwoman, each paying 3*s.* 6*d.* a week rent.

In reply to the Magistrate he said the cooking in the upstairs rooms was done at open stoves. There were two water-closets in each house.

Dr. Loane, Medical Officer of Health for Whitechapel, said he had visited the houses, and he produced some photographs of them.

The tenant Cohen and one sub-tenant were called and corroborated as to rents and occupations.

The tenancy agreement with Cohen was produced together with his rent-book, containing rules to be observed by the tenants.

The Magistrate in giving judgment, with out calling

on Mr. Marshall Hall, said:—"The question I have to decide is whether the houses are within the meaning of Section 13 (5) of the Building Act, 'dwelling houses to be inhabited or adapted to be inhabited by persons of the working class.' If they are, they are within the prescribed limits and must be set back. If they are not they may remain. There is nothing to guide me as to what is meant by 'persons of the working class,' except Section 75 of the Housing of the Working Classes Act, 1890. If this is to be a guide, it is a money guide—viz., an annual rent of 20*l.* for a house or part of a house. I must, however, look at the facts of the case. I need not go through the various sections, since the parties agree that what I have to decide is whether this house is a house to be inhabited or adapted to be inhabited by persons of the working class. I should mention the South-Eastern Railway Company's Act of 1895." (The Magistrate then read the section which is quoted above.) "That section seems as if, after exhausting every class named therein, any one else earning less than 30*s.* a week was of the labouring class. The person to whom this house is let is Cohen, at a rent of 2*l.* a week. He is a watchmaker, and occupies the ground floor. Above are first and second floors and a floor in the roof. The house is set out as a house would be in Piccadilly if designed for a shop with living rooms over. How could you erect differently a shop with living rooms over? I must not look at the passing character of the tenants, but at the house. Every place of bricks and mortar can be lived in by persons of the working class if they can afford it. Cohen has grossly overcrowded his premises, which are occupied by persons who work with their hands for their daily bread, but that cannot alter the intention of Davis when he built the house—it cannot alter the character of the house. The Legislature intended houses for persons of the working class to have reasonable provision of air-space in front, because more people live on the premises. Davis says 'I don't want the working class.' I must find that these houses are not houses to be inhabited or adapted to be inhabited by persons of the working class. The people living there are, in my judgment, persons of the working class. Many rooms are occupied by persons—strictly and accurately described as persons of the working class."

The summons was accordingly dismissed with ten guineas costs, the magistrate expressing his readiness to state a case for the superior court. The defendant's counsel said that defendant would himself like to have a case stated.

LONDON COUNTY COUNCIL v. FAULKES.

Mr. d'Eyncourt gave his decision on the 23rd inst. at the North London Police-court in the case of the "London County Council v. Faulkes." The defendant in this case is the freeholder of the Willows Estate, Park-lane, Stoke Newington, and he was summoned at the instance of the Council for forming and laying out a road on the north side of Carylford-road, which did not communicate at each end with public carriage-ways, without the consent of the Council. The Council, on the 14th fortnight ago, Mr. Chilvers appearing for the Council, and Mr. Macmotan, with him Mr. Salter, for the defendant. It was admitted that prior to the London Building Act of 1894 the defendant could have laid out the new street in the way he proposed, but this Act of Parliament made it necessary that a new street should communicate with public carriage-ways at each end, and that the consent of the Council must also be obtained. The defence raised was that the new street had been commenced prior to the Act of 1894 coming into operation. The evidence showed that openings were left in the line of houses in Carylford-road when they were put up in 1894, and that the flank walls of the houses abutting on these openings were finished off as corner houses, and that the garden fences were made as outside-fences would be. It was also alleged for the defence that the spaces through the openings had been partly made up as "builder's roads" in 1894. On the other hand, it was said that the openings had simply been left and hoarded up, and that so far from the proposed roadways being made up, the opening had simply been used for the storage of hard core, &c., for use in the making up of Carylford-road. No attempt to lay out the new street was made until November last.

In giving his decision, Mr. d'Eyncourt said that there could be no doubt that if the present Building Act had been in force a hundred years ago, London would have been a much finer place than it is now.

The question, however, for him to decide was whether the present work had been commenced before the Act of 1894 came into operation. There was no doubt that the plans were sent in before that time, and those plans contained a spur street which the defendant did not press, and to which the Council had a right to object. The Council, however, offered the defendant no assistance in the matter, as they only sent an indefinite objection, which the defendant might naturally take to apply only to the spur street. Without the spur street the circumstances were identical with those existing in the case of "The London County Council v. Edmondson" (decided by the

judges against the Council), and he concurred in it that the judges had said in that case. As in the case, the new street was to be made in crescent form, both ends coming into one carriage-way. Was this new street commenced before the end of 1894? He should hold that it was, for the reason as stated in the evidence that the four corner houses were finished as corner houses, and the garden fences were a foot higher than those between the ordinary gardens. It was clearly the intention of the defendant to lay out the new street when he was building Carylford-road early in 1894. Under these circumstances he should dismiss the summons.

Mr. Salter asked for costs, saying that the defendant had cost 30 guineas. They asked the magistrate to grant 15 guineas costs.

Mr. d'Eyncourt granted 12*l.* 12*s.* costs.

Mr. Chilvers asked the magistrate to state a case for the superior Court.

Mr. d'Eyncourt said he would consider the application.—*Morning Advertiser.*

BUILDING TRESPASS IN CHEAPSIDE: ACTION IN THE CHANCERY DIVISION.

MR. JUSTICE NORTH, in the Chancery Division on the 23rd inst., delivered a considered judgment in the case of "The Aerated Bread Company v. Shephard." It being an action brought by the plaintiffs, the lessees of No. 51, Cheapside, for an alleged trespass in connexion with work done in rebuilding the adjoining premises, No. 52, Cheapside, by the owner, the defendant. It appeared that the wall between the premises, Nos. 51 and 52, Cheapside, was a party-wall within the meaning of the Metropolitan Building Acts, the matter in dispute being whether the wall was a party-wall in the sense that there was a common ownership, or whether the wall was, as the learned Judge held, entirely the property of the plaintiffs, subject to easements of supports. A question was also raised, on the construction of the London Building Act, 1894, Section 64 (18), which provides that all chimney-flues are to be surrounded by new brickwork of a certain thickness, the defendant having put chimney-flues against the plaintiff's party-wall. These flues were constructed of actual new brick on three sides only. The two ends were bonded into the party-wall, the face of the party-wall itself forming the fourth side of the flue. The plaintiffs alleged that the London Building Act of 1894 had not been complied with; but the defendant's expert witness, on the contrary, asserted that in his opinion it had, because the party wall, being sound and in good condition, was to be considered new brickwork within the meaning of the Act.

His Lordship, in giving judgment, said that he considered this construction of the statute to be absurd, and held that the defendant had not complied with the Act, which required the brickwork to be new at the time of the construction of the flues, although the District Surveyor had passed the work. He did not, however, consider it necessary, in the circumstances, to grant a mandatory injunction. His Lordship having decided the main issues in favour of the plaintiffs, gave them the general costs of the action.

Order accordingly. Mr. Swinfen Eady, Q.C., and Mr. W. F. Hamilton appeared as counsel for the plaintiff company; and Mr. Cozens-Hardy, Q.C., and Mr. Ingle Joyce for the defendant.

MEETINGS.

FRIDAY, MARCH 26.

Institution of Civil Engineers (Students' Meeting).—Mr. W. J. Griffin on "The Re-Signalling of the Liverpool Street Terminus of the Great Eastern Railway." 8 p.m.

SATURDAY, MARCH 27.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at Harrison & Barber's Knacker Yard, Whitechapel. 3 p.m.

London and Provincial Builders' Foremen's Association (Memorial Hall, Farringdon-road, E.C.).—Mr. F. Chessell on "Technical Education." 7 p.m.

Edinburgh Architectural Association.—Visit to Hatton House, Midlothian.

MONDAY, MARCH 29.

Royal Institute of British Architects.—Mr. J. A. Gotch on "Heraldry of the Renaissance in England." 8 p.m.

Society of Arts (Cantor Lectures).—Professor W. Chandler Roberts-Austen on "Alloys." III. 4.30 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Dr. J. Priestley on "Ventilation, Warming, and Lighting." 8 p.m.

Leeds and Yorkshire Architectural Society.—Annual Report to be read, and Officers elected. 7.30 p.m.

TUESDAY, MARCH 30.

Society of Arts (Applied Art Section).—Mr. W. R. Leithy on "Lead Work." 8 p.m.

Institution of Civil Engineers.—Mr. Henry W. Ravenshaw on "Electric Lifts and Cranes." 8 p.m.

Auctioneers' Institute.—Mr. E. J. Harper on "Some Effects of the Incidence of Rates upon Landed Property." 8 p.m.

WEDNESDAY, MARCH 31.

Society of Arts.—Mr. G. L. Hillier on "Cycling—Historical and Practical." 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—Quarterly meeting of the Directors. 8 p.m.

Sanitary Institute (Demonstration for Sanitary Officers) - Inspection in the Parish of St. George's, Liverpool...

Liverpool Engineering Society - Mr. Joseph Corbett on "Sewage Sludge Removal and Shipment."

Thursday, April 1. Society of Antiquaries - 8.30 p.m. Sanitary Institute (Lectures for Sanitary Officers) - Mr. J. Wallace Pegeas on "Principles of Calculating Areas, Volumes, &c., Interpretation of Plans and Sections to Scale."

Institution of Civil Engineers - Students' Visit to the Generating Station of the City of London Electric Lighting Company, Bankside, S.E. 8.30 p.m.

Friday, April 2. The Architectural Association - Mr. T. G. Jackson, R.A., on "Architecture in Relation to the Crafts."

Royal Institution - Mr. C. T. Heycock, M.A., on "Metallic Alloys and the Theory of Solution."

British Institute of Certified Carpenters - Special Meeting at Carpenter's Hall, 6 p.m. Paper by Mr. T. G. Lloyd on "Ancient and Historical Carpentry."

Saturday, April 3. Sanitary Institute (Demonstration for Sanitary Officers) - Inspection of the Aylesbury Dairy Company's premises, Bayswater, 3 p.m. Sanitary Inspectors' Association - 6 p.m. British Institute of Certified Carpenters - Special Meeting at Carpenter's Hall, 6 p.m. Paper by Mr. T. G. Lloyd on "Ancient and Historical Carpentry."

RECENT PATENTS: ABSTRACTS OF SPECIFICATIONS. 4,105 - PUG MILL FOR BRICKS, &c.; D. Doyle and another - The several improvements claimed by inventor, consist in (1) lubricating the interior surface of the mill...

5,310 - LAVATORY AND WATER-CLOSET APPARATUS; F. Hulke - In order to obtain a combination lavatory, water-closet, urinal, and slop sink, inventor adapts a pedestal closet, with a hinged seat to fold back, so as to be used for urinal or slop sink. On the back of the fixed portion of seat a trough is provided to receive contents of lavatory basin when emptied. Inventor makes a lavatory hinged at back to fold upwards, when water-closet is to be used, and to be there secured by springs. Separate supply cisterns, with overflow pipe, are provided.

8,531 - CHIMNEY POT OR VENTILATOR; H. W. Swain - The chimney pot or ventilator, constructed as a fixture, is made in chambers on an obtuse angle, the flueway or shaft tapering downwards. Around the basal portion of each obtuse-angled chamber is a series of round apertures. The base of the ventilator, or pot, is square, and on each side of the square base a gully trap, the whole arrangement being conducive to driving the smoke or hot air upwards.

20,207 - GULLY TRAPS; J. Richards - Inventor claims (1) a gully trap, having the cover consisting of a movable grid and a fixed part, provided with an aperture or apertures for extending into the trap a fall pipe or pipes, receiving water from gutters or other sources; and (2) the same trap, but the method of delivering the waste water from a fall pipe, &c., into the trap below its cover, by extending pipe or pipes through a suitable aperture or apertures.

26,233 - DRAIN PLUG AND HOOPER FOR TESTING DRAINS IN SECTIONS; W. Neighbour - Inventor adopts a drain plug with enlarged waterway, provided with an air escape tube, with cup, also a galvanised hopper, detachable. It is claimed that this will obviate the old method of puddling with clay for bends for the purpose of testing drains in sections with water.

26,437 - PAVEMENT LIGHTS; J. A. Willmore - Inventor claims (1) the application and use of tiles or plates, either solid or perforated, composed of lead or other suitable metal or alloy, in combination with glass and cement or asphalt, to form the top surface of pavement lights, &c., and (2) the application of lead with projecting pins made of suitable metal in combination with glass and cement or asphalt for same purpose. As none of the iron trap, except its outside edge, comes within a certain distance of the top surface, the tendency of pedestrians to slip on pavement lights, cellar flaps, coal plates, &c., is greatly reduced.

29,916 - THE GRATES; G. C. St. John - (1) A grate in the form of a series of the straight-spaces being greatly in excess of the metal presented to the direct action of the heat, whereby a strong upward draught will be generated and durability secured; (2) a similar grate, having raised portions at the air openings constituting fuel supports; and (3) an endless travelling grate, constituting a plurality of open-work grate surfaces, with a frame enclosing each.

NEW PATENTS FOR LETTERS PATENT. MARCH 8 - 6,050, A. Rider and E. Russell, Sliding Sash Windows - 6,056, The Wilkinson Sword Co., Ltd. MARCH 9 - 6,113, F. Lynde, Flushing Cisterns, - 6,121, J. Taylor, Removing Steam and Vapours from Buildings, and for Promoting Ventilation, applicable also for the prevention of draught in chimneys - 6,159, T. F. Brimley, Ladder Grip and Scaffold Rest - 6,138, J. Skinner, Chimney Ventilating Cowl, &c. - 6,143, J. Smith, Self-Locking Window Sash Fastener - 6,171, L. Hanks, Gully Traps - 6,201, J. Noel, Chimney and Ventilator Tops - 6,216, W. Hughes, Machines for Marbling Paper - 6,224, E. Taylor, Sash Fasteners.

MARCH 10 - 6,230, W. Phillips, Combined Stay and Fastener for Sliding and Revolving Windows - 6,248, J. Vidal, Flushing of Water Closets - 6,275, W. Edwards and E. Runtz, Flooring and Floor Construction - 6,300, F. Chapman, Blocks for Paving Wood - 6,310, W. Gadden, Window Fastener - 6,320, J. B. Sanson, Manufacture of White Lead - 6,328, A. Henström, Ventilating and Air Exhausting Apparatus.

MARCH 11 - 6,347, A. and J. Moore, Equalize Firing Kinds - 6,354, J. Ralls, Noiselessly Filling Flushing Cisterns, &c. - 6,385, J. Ralls, Discharging Apparatus connected with Flushing Cisterns, &c. - 6,413, D. and J. Burgess, Concrete Paving, &c. - 6,426, F. Golby, Door Hinges - 6,450, W. Reid and F. Crosland, Lime or Cement Kinds - 6,467, H. Lake, Moulding Block for Forming Plates for Building Purposes - 6,468, J. Oldham, Saws.

MARCH 12 - 6,500, H. Sowerby, Saw Blades for Sawing Stone - 6,522, E. Wollard, Ventilating Gear for Green-houses - 6,524, F. Daw, Casement Fastening - 6,526, C. Armstrong, Buffers and Fittings of Automatic Tiling for Waste Water-closets - 6,577, S. Buck, Ridge Tiles, &c. - 6,579, G. Siehle, Floors or Flooring.

MARCH 13 - 6,590, J. Davis and Others, Sanitary Pipe Machines - 6,643, J. Rendle, Roof Glazing - 6,649, D. Campbell, Holes and Spindles of Door Locks - 6,650, J. Johnson, Water-closets - 6,657, A. Parmacot, Water-Waste Preventers - 6,676, J. Westhead, Combined Plumber's or Soldering Iron, and Lamp for Heating same - 6,693, A. Testas, Band Sawing Machines.

PROVISIONAL SPECIFICATIONS ACCEPTED. 2,530, J. Robertson, Dove-tailed Wooden Structures, &c. - 2,583, W. Dawson and A. Burn, Rule Saws - 4,199, H. Barnett, Casement Windows - 4,205, A. Murdoch, Glasgow, Fire Grates - 4,383, A. Bucknall, Constructing Portable and other Wooden Buildings, also applicable to Floors and other parts of Buildings of any kind - 4,658, J. Hussey, Plumber's Pat. &c. - 4,659, W. Freshwick, Door Spring - 4,745, J. Feare, Ventilators - 4,960, E. Coding, Drain Pipes.

COMPLETE SPECIFICATIONS ACCEPTED. Open to opposition for two months. 7,059, J. Hamilton, Roof Ladders and Stairing - 9,363, E. Laroche, Stoves - 9,518, E. Palmer, Reaching by a Lateral Movement Elevated parts of Buildings and other Erections for the purpose of Repairing such Buildings and other erections, and for Painting, &c. - 12,314, F. Erice, Flushing Cisterns - 23,731, J. Eirick, Chimney-top Smoke Preventer and Extract Ventilator - 25,521, R. Birtley, Drain Pipes and Traps.

SOME RECENT SALES OF PROPERTY: ESTATE EXCHANGE REPORT.

MARCH 11 - By Fenn & Co. (at Dedham), Dedham, Essex - Burket's road, &c., enclosing 12 lands, and two tenements, 37 a. 1 r. 29 p. 6. £1,000 Cooper's lane, "The Park Farm," 16 a. 3 r. 28 p. 6. 540 Enclosure of land, 8 a. 1 r. 26 p. 6. 215 A House and land, 31 p. 7. 300

By W. THOMSON (at Douglas), Douglas, Isle of Man - Falcon Cliff Castle Hotel, Pavilion, and Race Ground, also a residence, including "Fernleigh," total area, 7 a. 1 r. 9,000 Santon, "The Ballacross Estate," comprising 60 a. 3 r. 19 p. 6. 1,225 Clapham - 13, Lyette-ave., ut. 88 yrs., g.r. 117. 115. g.r. 454. 425 168 and 170, Clapham Park-rd., f. g.r. 866. 1,105

By HENRY FOX & SON (at Henley), Henley-on-Thames, Oxford - 2 Park-villas, f. r. 334. 125. 355 Plaistow - 15 to 25 (odd), Florence-st., ut. 78 yrs., g.r. 134. 105. f. 1,024. 88. 650

Hoxton - 6, White Horse-court, ut. 80 yrs., g.r. nil, r. 261. 190 Bow - 144 and 146, Turner-rd., ut. 60 yrs., g.r. 204, r. 714. 305

By F. WARMAN, Stoke Newington - King Henry's-walk, f.g.r. 481, reversion in 25 yrs. 1,820 Milton-park, f.g.r. 516, reversion in 55 yrs. 215 Mildmay-st., f.g.r. 62, reversion in 55 yrs. 360

By MESSRS. SHELMAN (at Norwich), Norwich - Aylsham-road, a residence, and 2 a. 0 r. 5 p., ut. 53 yrs., g.r. 164. 530 174, Newmarket-rd., ut. 24 yrs., g.r. 24. 530

Fulham - Lillie-rd., f.g.r. 354, reversion in 92 yrs. £1,025 By E. W. RICHARDSON & SON. Stoke Newington - 31 and 33, Clissold-rd., ut. 51 yrs., g.r. 154. 108, r. 1007. 1,035

By R. TIBBY & SON, Dalston - 10, Middleton-rd., ut. 40 yrs., g.r. 51. 295 r. 401. De Beauvoir Town - 8, Derby-rd., ut. 22 yrs., g.r. 54, r. 307. 115

By E. & S. SMITH, Kenish Town - 32, 33, 38, and 40, Charlton Kings-rd.; also l.g.r. 32. 108, ut. 431 yrs., g.r. 271. 108. 740, r. 314. 300

By E. TOMPKINS, Bexley Heath - 61, Lion-rd., ut. 802 yrs., g.r. 67, r. 3. 205

By LOYD & HOWITT (at Masons Hall Tavern), Mile End - Mile End-rd., The "White Horse" P.B., lease for 33 yrs., f. 1,504, with goodwill. 14,070 Mitcham - London-rd., "The Buck's Head," with goodwill. 11,550

By BISHOP & PRITCHETT (at Swindon), Swindon, Wilts. - 28, 30, and 32, Wood-st., f. r. 1776. 3,000

By DAVIS & BARROW, Gorse-hill, enclosures of building land, about 2 r. 17 p. 6. 4,546

By NEWMAN, EDWARDS & SHEPHERD, Hornsey Rise - Lambdon-rd., &c., f.g.r. 454, reversion in 81 yrs. 1,300

By A. PREVOST & SON, Mile End - 41 and 42, Ely-ter., ut. 124 yrs., g.r. 135

By STIMPSON & SONS, Southwark - 33, 34, 35, and 36, Camelot-st., f. r. 1054. 6. 1,000

By H. J. BRASS & SONS, Bethnal Green - 4, Gaultier-st., ut. 37 yrs., g.r. 32. 125

By H. J. BRASS & SONS, 38 to 60 (even), Herford-st., and 74 and 76, Sale-st., f. r. 2600. 2,620

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Table with columns: Nature of Work, By whom Advertised, Premiums, Dates to be delivered.

CONTRACTS—Continued.

Table with columns: Nature of Work or Materials, By whom Required, Name of Tenderer, &c., Tender to be delivered.

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Table with columns: Nature of Work or Materials, By whom Required, Name of Tenderer, &c., Tender to be delivered.

PUBLIC APPOINTMENTS.

Table with columns: Nature of Appointment, By whom Advertised, Salary, Application to be in.

Those marked with an asterisk (*) are advertised in this number. Competitions, p. iv. Contracts, pp. iv, vi, viii, & xxi. Public Appointments, pp. xviii, & xxii.

20, Approach rd., ut. 561 yrs., cr. 61, r. 351. £405 Hackney—r8, Kenton rd., ut. 40 yrs., gr. 31, 751, r. 361. 270

TENDERS.

Communications or insertion under this heading should be addressed to "The Editor," and must reach us not later than 4 p.m. on Thursday.

BUCKFAS' LEIGH.—For the erection of Young Men's Christian Association premises and music hall, including Norman, G. & Telkington, Walter H. Bridgman, architects, Tottenham, E. London.

BUCKNALL.—For the provision and laying of the pipe sewers, the laying of the iron mains, construction of manholes and lamp-posts.

PRICES CURRENT OF MATERIALS.

Table listing prices for various materials including timber, iron, steel, and other building supplies.

ALBERTON (Yorks).—Accepted for the erection of a villa residence.

ALBERTON (Yorks).—Accepted for the erection of a villa residence, Mr. Pearson, Messrs. Fairbank & Wall, architects, Craven Bank Chambers, Bradford.

ASHTON-UNDER-LYNE.—For erecting the Waterloo and Hooley Hill.

ASHTON-UNDER-LYNE.—For erecting the Waterloo and Hooley Hill. For all trades except plumbing and glazing.

BANGOR.—For alterations to the "Alma Vaults," High-street, Bangor.

BANGOR.—For alterations to the "Alma Vaults," High-street, Bangor, for Messrs. Greenall, Whitely, & Co., Limited, Warrington.

BOSTON Lincs.—For the supply of 120,000 tons broken granite.

BOSTON Lincs.—For the supply of 120,000 tons broken granite, 1,210 tons slag, &c., for the Holland (Lincolnshire) County Council.

CARNARVON.—For the erection of school buildings, for the School Board, Mr. R. Lloyd Jones, architect, 14, Market-street, Carnarvon.

CARNARVON.—For the erection of school buildings, for the School Board, Mr. R. Lloyd Jones, architect, 14, Market-street, Carnarvon.

COLCHESTER.—For the erection of a pair of semi-detached villas.

COLCHESTER.—For the erection of a pair of semi-detached villas, residences, Greenfield-road, Mr. J. H. Starr, architect, Colchester.

COOKHAM DEAN.—For the erection of three pairs of semi-detached cottages.

COOKHAM DEAN.—For the erection of three pairs of semi-detached cottages, Mr. J. H. Denon, architect, Colchester.

CROYDON.—For the erection of superstructure of block of five business premises.

CROYDON.—For the erection of superstructure of block of five business premises, Greenway-street, for Mr. F. R. Docking, Mr. A. H. Hood, architect, 2, High-street, Croydon.

DUNSTABLE.—For erecting shop, No. 6, Church-street, Dunstable.

DUNSTABLE.—For erecting shop, No. 6, Church-street, Dunstable, Beds., for Mr. L. H. Hoad, H. A. Wilkinson, architect, Luton.

CYMER (Wales).—For the erection of offices for the Clym...

GLANAMMAN.—Accepted for building a manager's house...

CLASS HOUGHTON (Wales).—For the erection of school buildings...

HASTINGS.—For the restoration of No. 38, White Rock, for...

HENDON.—Accepted for alterations to stables, Belle Vue road...

HULL.—For the supply of c.i. pipes, &c., North Ferry, for the...

HORNCASTLE (Lincs.).—Accepted for the supply of 6,635 tons...

ISLEWORTH.—For the erection of a joint installation at...

LINGFIELD.—For alterations and additions to Ford Manor...

LONDON.—Accepted for alterations and additions to 2, Devon...

LONDON.—Accepted for sanitary works at Montrell road and...

LONDON.—For the erection of additional coal bunkers, at...

LONDON.—Accepted for alterations and additions, 16, Clifford...

LONDON.—For the completion of two houses, Telford Park...

LONDON.—For rebuilding Nos. 416, 418, and 420, Holloway...

LONDON.—For the erection of new housekeeper's rooms in...

LONDON.—For repairs to the "Trafalgar," Merton road, for...

LONDON.—For alterations to the "Glasshouse Stores," Picca...

LONDON.—Accepted for decorations, &c., at "Cadeligh," Here...

MORLEY (Wales).—Accepted for the erection of business premises...

MORLEY (Wales).—For the erection of mill premises, for Mr. A...

MARLOW.—Accepted for the erection of a shop at Bourne End...

MARLOW.—For brewery extension for Messrs. Thomas Wethered...

MAIDENHEAD.—Accepted for alterations and additions to the...

MIDDLESBROUGH.—For the erection of a large block of buildings...

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MIDDLESBROUGH.—For the erection of a large block of buildings...

MIDDLESBROUGH.—For alterations and additions to 2, Devon...

NOTTINGHAM.—For the supply of granite, slag, and limestone...

OXENHOPE (Wales).—Accepted for the erection of store premises...

OXENHOPE (Wales).—Accepted for the erection of store premises...

PENRITH.—For erecting two cottages at Clifton, near Penrith...

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NEW BROMPTON (Kent).—Accepted for the erection of four houses...

PENRITH.—For the erection of a farm house at Colt-croft, near...

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PENRITH.—For the erection of a farm house at Colt-croft, near...

PENRITH.—For the erection of a farm house at Colt-croft, near...

ROCHDALE.—For the erection of three houses, Howarth Cross...

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SWINDON.—For the erection of a smallpox hospital and caretaker's...

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SUPPLY OF DRY GAS METERS.

Table with columns for Size of Meters, W. & R. Cowan, G. Glover & Co., T. Glover & Co., D. Hallett & Co., W. Parkinson & Co., and Frank Wright's Gas Meter Corporation. Rows list various meter sizes from 3 to 200.

* Recommended for Acceptance.

SIGDON-ROAD.—Providing and fixing complete low-pressure hot-water apparatus and Trentham boiler.— J. C. & J. S. Ellis, Ltd., £695 0; Stride & Co., £498 0; H. C. Price Lee & Co., £53 0; Richardson & Co., £48 1s; Maguire & Gatchell, Ltd., 647 5; J. F. Clarke & Sons, £49 0; G. Davis, 575 0.

SOUTHAMPTON-STREET.—Rebuilding offices, &c.— Lathey Bros., £900; W. V. Gould, £254; J. Garrett & Son, 898; Holliday & Greenwood, 861; G. Parker, 863; W. & H. Castle, 790; Johnson & Co., 863.

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Sherborne Abbey.



F the three chief points of interest in Sherborne—the minster, the castle, and the school—the minster stands first both for its extent and beauty of detail and from the fact that to it is to be ascribed the existence of the other two and the town itself. In the early years of the eighth century St. Ealdhelm founded a cathedral, and made Sherborne the centre of a diocese which comprised most, if not all, Wessex. Round this necessarily grew a city, and at one time—in the following century—for nearly a score of years it was the capital of the Western Kingdom. In the Saxon minster were buried Æthelbald and Æthelberht, and the site of their graves is still marked in the church floor by a modern brass. The castle in its turn was also a palace, and Roger of Caen not only rebuilt the minster, but founded the palace, if Ealdhelm had not already built one on the site. Again, attached to the monastery was a school, and from this grew the Sherborne School of the Tudors, and the more extensive buildings of recent years, which place Sherborne among the great public schools of the country. Whatever may have been the original extent of Ealdhelm's Church, only a doorway remains, now incorporated with the west wall of the nave at the end of the north aisle, but this fragment proves that the line of Ealdhelm's west wall was retained by Roger of Caen, when, in 1107, he commenced rebuilding the minster in the Norman style. The Benedictine rule had been introduced in 998 by King Æthelred "the Unready," and the arrangements and planning of Roger's Church thus partook of the characteristics of the churches of that order of monks. As in other Benedictine churches throughout the country, the piers of the central tower remain, as well as the walls of the transepts and most of those in the nave. Roger's Church consisted of a nave of five bays with aisles, a central tower with transepts, each transept having a square-ended chapel projecting on its east side, and a presbytery, most probably of similar extent to the present one. Over the

crossing was a tower, and foundations at the west end of the nave, at one time revealed, seem to point to the former existence of a porch and tower at the west end of the nave. There is a porch on the south side of the nave in its westernmost bay, having its counterpart at Great Malvern, where, however, the porch has been included in the later scheme and rebuilt in Perpendicular times. In the Early English period a chapel was added on the north side of the presbytery, attached also to the Norman chapel of the north transept, and at the east end of the church a Lady Chapel was erected. The first-mentioned, known as "Bishop Roger's Chapel," still remains perfect. The western bay only, however, of the three bays that formed the Lady Chapel remain and are now built into a later building, part of the school that was built on the site, presumably at the Dissolution. Beyond the insertion of four Decorated windows in the north aisle of the nave, nothing seems to have been done to the church until the Perpendicular period. But in the later years of the fourteenth century the Church of All Hallows was built at the west end of the minster, divided from it by a passage or porch. A portion of the nave had been, in common with many of the monasteries of the order, given up to the parishioners, and had its parish altar against the west face of the rood screen. A font was placed in this part of the building for the baptism of the children of the town. The erection of All Hallows, however, was followed by the placing of a font in the new parish church, and the doorway at the end of the south aisle of the minster having been narrowed by the monks, and their font removed to another part of the nave, great ill-feeling between monks and laity resulted. The decision of the Bishop of Sarum, who was appealed to, seems, however, to have been disregarded by both parties, and in the early part of the fifteenth century a riot took place, aggravated in great measure by the destruction of the font in All Hallows by a certain butcher named Walter Gallor.

At this period the eastern arm was undergoing that transformation from Norman to rich Perpendicular which was, during succeeding years, to be carried throughout the fabric. It was, according to Leland, covered with a temporary roof of thatch, and a fire-arrow shot by a priest of All Hallows

during the riot set fire to that part of the building and considerably injured both the choir and central tower. This was in 1437, during the abbacy of Abbot Bradford, the rebuilding having been commenced by Abbot John Brunyng (1415). The new work was of a very elaborate character, and when the scheme was completed by Abbot Ramsam (1475) the whole church was elaborately vaulted in stone and richly decorated. In the first portion of the work—the rebuilding of the presbytery by Abbot Bradford—all the Norman work of Roger of Caen seems to have been removed with the exception of the portion of the north wall against which the thirteenth century chapel abutted. There is in all probability not much difference between the extent of the Norman and the Perpendicular presbyteries, so far as their main dimensions went. The Perpendicular presbytery was designed in three bays, with aisles, and an Eastern aisle or ambulatory, and the clearstory was lighted by six-light windows, and a fine east window of nine lights. Below this was a reredos, which divided the presbytery completely from the ambulatory. This portion of the church on the outside was supported by flying buttresses to resist the thrust of the vaulting. The vaulting itself was of a most elaborate description, thickly studded with elaborately-carved bosses, the whole being of Ham Hill stone. On the exterior, panelled parapets were carried round the whole, relieved by pinnacles. The traces of the fire are very clear in the walls of the tower and presbytery, and the warm reddish hue that has been given to the Ham stone has added much, doubtless, to its natural beauty of colour. The central tower was rebuilt, but only one stage above the parapets of the church, this, no doubt, being very largely due to a fear that the Norman work below would not support a heavier weight.* As it is, the western arch of the crossing is much depressed, and additional support was given by an arch in the transept, which shows on our exterior view.

Abbot Ramsam, in 1475, dealt with the Norman work at Sherborne much after the manner of William of Wykeham's treatment of Winchester. He left the Norman columns of the nave and the outer walls of the aisles

* The tower should be compared with the central tower of Milton Abbey, in the same county.

and west front, and surrounded the former and encased the latter in Perpendicular work richly panelled. His clearstory was designed to a large extent independently of the arcade below, and the spacing of the windows does not at either end coincide with that of the arcade.

A chapel at the east end of the north choir aisle and one equal in length with the Lady Chapel on its south side, and also the Sepulchre Chapel east of the south transept, had formed part of the work of Abbot Bradford. Abbot Ramsam presumably built the chapel of St. Katherine on the west side of the south transept. The "Wyckham" Chapel had also been vaulted in Perpendicular times. Abbot Ramsam's west window was filled in in its lower stage where the roof of the porch came against it.* The Monastery was on the north side and many of its buildings still exist incorporated with the buildings of the new school.

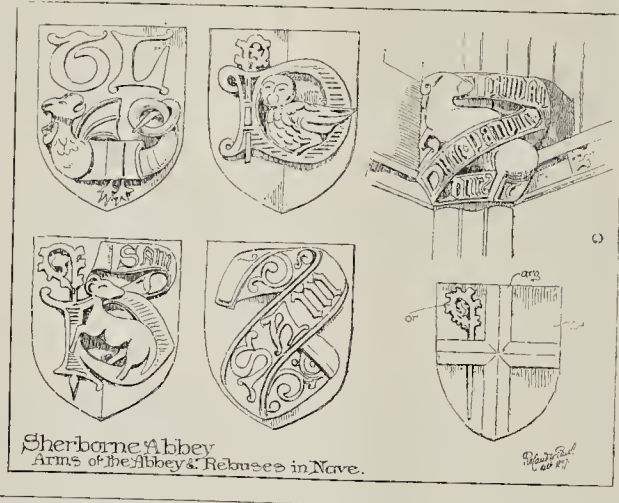
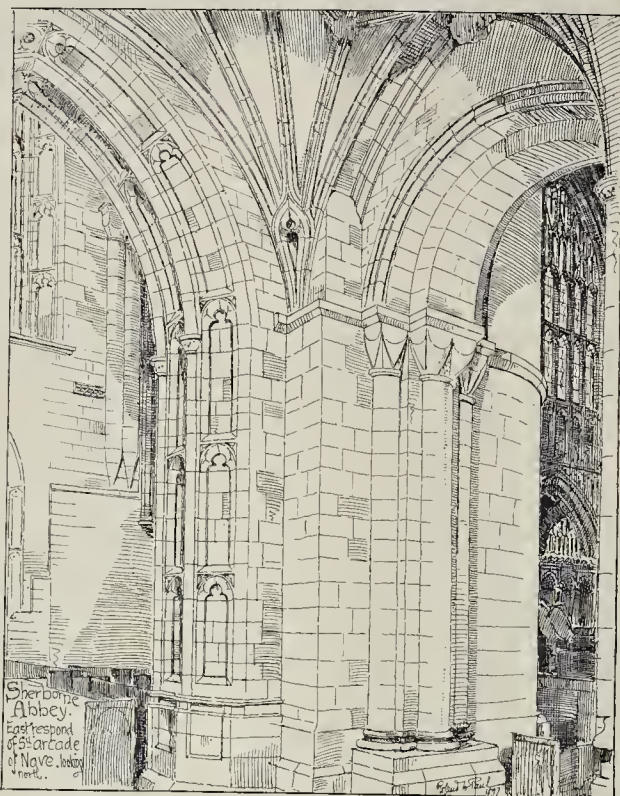
At the Dissolution the Abbey passed into the hands of Sir John Horsey, of Clifton Maybank (an interesting house still partly remaining, near Yeovil Junction), who in turn sold it to the townspeople for 250*l.*, and it then became the parish church.

In the present century, by the munificence of the Digby family, of Sherborne Castle, this beautiful church has been well restored by Messrs. Carpenter, Slater, & Ingelow during a period ranging from 1848 to 1884. In 1848 the nave was dealt with by Mr. Carpenter, in 1856 the choir was restored by Mr. Slater, and in 1884 the central tower was strengthened and repaired by Messrs. Carpenter & Ingelow. The general character and appearance of the exterior will be best understood by reference to the view taken from the south-east, given in our full page plate in the present issue. The elaborate work of the presbytery and its aisles is in strong contrast to the severity of the Norman work of the transept—one of the Norman windows will be noticed high up on the east face. The transept buttresses were strengthened in Perpendicular times. The Norman porch—the upper part a restoration—is just visible in the view, behind the transept. The general design of the nave is similar to that of the choir, and has panelled parapets throughout. The effect of the interior, with its elaborate roof, is very fine; and the various bosses, shields, and rebuses in the nave are alone worthy of careful study. We here give sketches of some of the rebuses in the nave—a scroll with "Sam" in large letters, and a ram holding a similar scroll, for Abbot Ramsam; an owl in an initial D, with a pastoral staff, supposed to be the rebus of Bishop Oldham, of Exeter; and the still more curious device of a cockatrice (*anguis*) in a ton, with the initials T. L., for Thomas Langton (Bishop of St. David's, 1483; of Sarum, 1485; and of Winchester, 1493†).

There are various shields also with the arms of the abbey *gu* a cross *ar*: on dexter side a pastoral staff *or* (see illustration), and those of the abbots at Cerne, Abbotsbury, Milton (all in Dorsetshire), and the See of St. David's, with which Sherborne was connected. Many more of interest will be found in the roof of the nave, including the pelican of Bishop Fox, of Winchester.

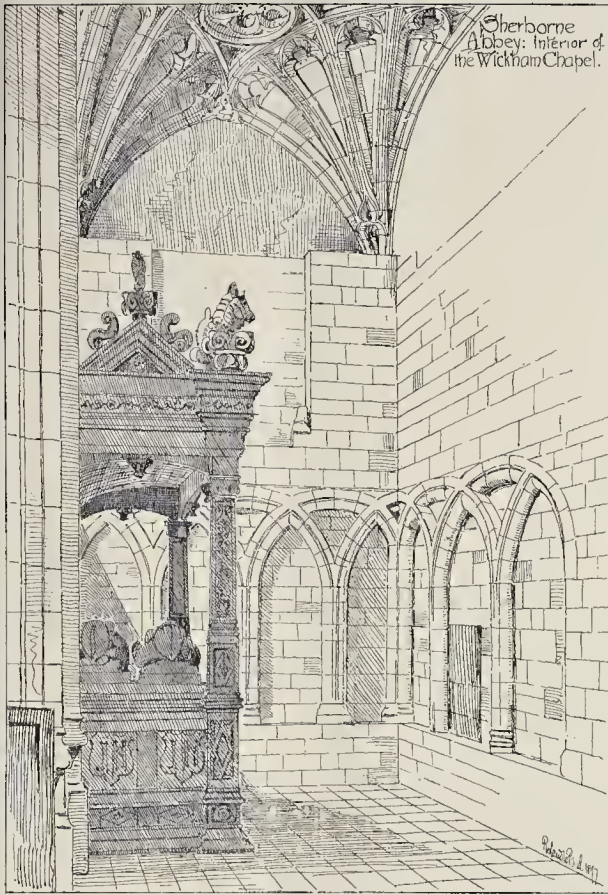
* At Great Malvern this feature also occurs, but it was pierced with small apertures, to give a view of the church from the monastic buildings, which extended across the front.

† See Wildman's "History of Sherborne," p. 24.



There are some monuments and effigies in the church of considerable interest. The early inscribed canopy and head of effigy in the north aisle (placed on a modern tomb) of Abbot Clement, 1163, is interesting, and also another effigy in the next bay adjoining. In the chapel of St. Katherine is a very beautiful effigy, now unfortunately partly built into the wall, with angels guarding the pillow. The effigy holds a very beautifully designed pastoral staff recently exposed by the enthusiastic verger of the abbey church.

The effigy is evidently of late thirteenth or early fourteenth century date. At the east end of the north aisle of the presbytery is a modern brass marking the place of burial of the two Saxon kings, Æthelbald and Æthelberht. In the Wykeham chapel is the monument of Sir John Horsey and his son—another Sir John—to whom the abbey passed at the Dissolution. And there is here some interlacing Norman arcading (see illustration). In "Bishop Roger's" chapel is also Norman work on the south side, an



Sherborne
Abbey: Interior of
the Wickham Chapel.

eastern triplet, and many mural monuments brought from various parts of the church. This chapel is now used as a vestry.

In the centre of St. Katherine's Chapel is a large late monument, commemorating John Lewston, Esquire, and his wife, Joane, 1584 and 1597, with their arms, and those of families connected with them, while in the south transept is a large monument to John, third Earl of Bristol, and against the south wall a mural monument to two children of William Lord Digby, with lines by Pope.

Of the ancient fittings, ten stalls, with quaintly carved misericords remain, and are set between the columns of the first bay of the presbytery. In front of these are the modern stalls. The pulpit, lectern, and font are likewise new.

The curious front of what remains of the Chapel of St. Mary-le-Bow, decorated with a late panel and series of shields, with initials and coats of arms, shows in our exterior view.

This was originally the head master's house. The large panel is filled with the arms of Edward VI., and below are shields bearing the arms of "Bishop Jewel of Sarum, of Horsey of Clifton Maybank, of Leweston of Leweston, Mullens of Westhall, and Thornhill of Thornhill."* Below again are eighteen shields, two defaced, with initials of the Governors of the School.

* Wildman, History of Sherborne, p. 41.

Of the monastery the sacristy remains, adjoining the north transept, the guesten hall with its cellars, fifteenth century with a fine roof; the abbots' lodging and kitchen on the north side of the cloister court, and the fifteenth century Abbot's Hall, also with a good roof, standing on a twelfth century crypt, or undercroft. The refectory, and buildings on the east side of the cloister, and the cloister itself, have disappeared. The conduit, formerly in the centre, now stands in the market place. It is of late Perpendicular date. Near it are remains of the Abbey gateway. With the exception of portions of the north wall with its wall shafts, the Church of All Hallows has been swept away.

Of smaller details, attention should be given to the panel on the south face of one of the buttresses on the north side of the west doorway, with a carving of the rood, and also some curious little kneeling figures introduced in the quatrefoils of the parapet of the south aisle, at its west end, and between the south-west angle and the south porch. Some of the gargoyles, too, are very grotesque. The town of Sherborne still retains many interesting old houses; at the south-west corner of the churchyard is the Hospital of St. John, and some little distance south-east of the town are the ruins of Roger de Caen's Castle, and the later house which now forms the residence of the

Digbys, a family whose munificence in rescuing the church from dilapidation and ruin will always be held in grateful remembrance of those who take interest in the preservation of our national monuments. The ground plan given in the present number has been kindly lent to us by Mr. B. Ingelow, and the monuments and vaulting have been added. A view of the school buildings showing some of the monastic buildings was given in the *Builder*, September 3, 1881; and on August 18, 1883, an architectural account was given of the Abbey Church, in connexion with the visit of the Architectural Association Excursion to Yeovil and its district. "A Short History of Sherborne" has recently been written by Mr. W. B. Wildman, and from it the explanation of the rebuses given in the present article has been taken, and other information, duly acknowledged in its place.

THE BLOOMSBURY ESTATE.

WE publish among our illustrations this week a sketch of the alterations about to be made to the exterior aspect of the houses in Russell-square, a sample of the various "improvements" which we are assured are being carried out on the ducal estate of which it forms a portion. The drawing was to have been accompanied by a *couleur de rose* description of the beauties and blessings of Bloomsbury, and the still more glorious future promised for its privileged tenants in view of the various improvements which are in hand. The document we fear, would only be in its right place in our advertising columns; at all events we prefer to give our own opinion about Bloomsbury and its improvements rather than that of the Duke's agents.

We do not know that it can be said that Bloomsbury was at any time a fashionable neighbourhood—not as any West End neighbourhood has been; but it was undoubtedly in its earlier days much more thought of as a residential neighbourhood than it is at present; people have drifted away from it in the course of one of those fluctuations which come over inhabited London from time to time, no one knows exactly why, and lead to a "set" in a new direction for residence. In Bedford-square, the most westerly of the squares, we are informed that houses are almost going begging; yet these are excellent houses, and nearer to the centre of things in London than many of the new residential neighbourhoods in the far west. And Bloomsbury unquestionably has recommendations which, if they are realised, might very well lead to a set back again in that direction. For one thing, it is probably the healthiest part of London; doctors say so at all events, and we believe statistics bear them out. It is also exceptionally well provided with open spaces, the squares forming such a relatively large proportion of the area—35 acres out of a total of 175 being open squares. The houses are for the most part very well built, and moreover they are planned internally with much greater variety than would be expected from the monotonous exterior appearance of most of the streets and squares. In a row of houses which have exactly the same repetition of doors and windows it will be found often that no two are planned exactly alike; people had more sense in that respect then than they commonly have now. The draw-

backs to the houses are that they are deficient and old-fashioned in sanitary planning; in some of the largest houses in the squares the water-closet will be found in the middle of the house with no opening to the outer air; and that the bedroom accommodation is in many of them deficient in proportion to the size of the house; everything is sacrificed to the sitting-rooms. This is a defect which in many cases cannot very well be got over, but the sanitary arrangements can be, and to some extent have been, improved, and to carry out this improvement thoroughly ought to be the first object of the managers of the estate.

The most is not made of the square gardens, they are for the most part very badly laid out; they have the compensating advantage that some of them at least contain very fine trees, but they might be made much more ornamental and attractive than they are.

Unfortunately the "improvement" ideas of the Bedford Estate Office seem mostly to run in wrong directions. They are to a great extent spoiling the neighbourhood by fancied improvements, the real object of which is to squeeze every pound of rental that can be got out of the land. With this object a great part of the property between Gower-street and Tottenham Court-road has been covered with lofty blocks of "flats" placed as close as they can be got. One or two of these are good buildings, but they are overcrowding the land. Overcrowding is not the less overcrowding because it is done vertically rather than horizontally. If this over-building of high "mansions" goes on, Bloomsbury will soon cease to be the healthiest part of London, and the Bedford Office will have defeated its own object. To make Bedford Court Mansions a considerable open space has been built over, and several trees cut down. To cut down trees which are growing in the middle of London is little short of a crime.

The manner of improving the houses is more than questionable. "It is proposed," we are told, "not to rebuild the houses" (this applies to the squares mainly) "but to treat their fronts architecturally with porches, bay-windows, friezes, cornices, and window dressings, all in light buff terra cotta, new railings and balconettes will complete the exterior. Each block is being treated as a separate unit, the centre and wing houses being carried up an additional story, imparting variety to the present rather monotonous skyline, as well as affording needed additional bedroom accommodation to some of the larger class of houses where the reception rooms are now somewhat disproportionately large."

This last proposal is a practical one enough; but the proposal to tinker up the house fronts with terra-cotta dressings &c., is as absurd as it is unnecessary, and a foolish expenditure of money which might be better employed. The houses as they exist have a certain character of their own which had much better be left to them. Of this the Bedford Estate Office seems to have no perception at all. In Gower-street, for example, the houses originally all had those ornamental fan-lights, variously and often very gracefully designed, which were a characteristic of the period when they were built. Nearly all these have been removed and blank sheets of plate-glass substituted. The doors of a number of the houses on the west

side have been encased with heavy clumsy-looking stone framework, which quite destroys the original character of the houses, and on the east side an attempt has been made to give new dignity to some of the larger houses by absurd flat stone pilasters plastered against the walls. Why could they not let the old brick fronts alone? However plain, they were in much better taste than these clumsy additions.

One of the means whereby Bloomsbury is to be rendered more attractive is to deprive tenants of their private gardens by removing the garden walls and throwing them all into one garden for the whole block. This has been done in one place, and is threatened in others. The object is to make the general neighbourhood look more attractive in appearance. It does not seem to have occurred to the Bedford Office that to many people living in London the possession of a fairly sized private garden which they can call their own is one of the greatest of blessings, and that in doing away with this advantage they are actually injuring their own property and lowering its value and attraction to possible tenants. If they cannot see that, they will find plenty of people, we imagine, to tell them so.

Unfortunately, if all we hear is true, the wishes of the tenants are the last motive the Bedford Estate office ever takes account of. It happens that a good many architects live in Bloomsbury, and hence we hear a good deal about their complaints, and several of them who have communicated with us evidently consider that living on the Bedford Estate is pretty well equivalent to living under a despotism. The form of lease granted to tenants is in itself a document which reads as if residents on the estate were to be the serfs rather than the tenants of the Duke of Bedford; it ought to be revised by Act of Parliament. It may be admitted that the lessors do not use all the powers the form of lease puts into their hands; but it is nevertheless a fact that we have had evidence from many quarters that the Bedford Office is regarded as being arbitrary and high handed in its dealings with tenants to an extent which is a legitimate source of complaint; and if the Duke of Bedford wishes his Bloomsbury Estate to come into its old favour as a residential neighbourhood, he would do wisely to inquire into the causes of the very strong feeling which obviously exists as to the policy and practice of his office, and to get some information from the tenants' side as well as from that of the estate agent.

NOTES.

In the House of Commons on Tuesday the Government announced the terms of the reference to the Royal Commission on the London water supply. After perusing it, we are a little astonished that the Government does not refer all its business to a Royal Commission. The first point of inquiry is whether it is desirable that the undertakings of the water companies should be acquired and managed either by one or by several authorities, and if so on what terms. If not, whether additional powers should be given to the Local Authorities to control the water companies. This is simply to give up the forming of a policy by a Government, since it is now left to a

Royal Commission to make up the mind of the Government. This is the long and short of the matter. Let it be remembered also that last session the Government had a policy, namely, to establish a central public authority to which the management of the water supply should be intrusted. Now that policy is given up, and this extraordinary Government, which was to do such great things for the people, can only ask a dozen gentlemen called a Royal Commission to discover a policy for it.

Austrian
Architects
and the
Government.

THE Council of the Architectural section in the Vienna Association of Artists have sent in a petition to the Government to take in hand a larger number of public buildings. Attention is drawn to the fact that a large number of the Government institutions are housed in tenement buildings at high rentals, and that there would be economy if the Government became its own landlord to a greater extent. The petition points out that since the great epoch of Government architecture some twenty years back, when the Houses of Parliament, the Town Hall, and the other great modern monuments of Vienna were erected, the architecture of the capital city has deteriorated owing to building operations having been practically confined to private enterprise, and building speculation of the worst sort. It is not unlikely that the Government will seriously consider this petition, as there is a strong feeling in Vienna on the subject.

"Structure" in
the London
Building Act.

THE case of *Venne v. McDonell*, which is reported in the author's *rised Law Reports* (1897, 1 Q.B.D. 421) should be carefully read by all persons who have to do with London buildings. It was an appeal to a Divisional Court from the decision of a magistrate, and has an importance beyond the interests of the persons concerned in it. The directors of the Agricultural Hall, at Islington, have a movable seating, which can be taken away when it is not needed, and is replaced if necessary, and fixed by screws and bolts being let into sockets attached to the pillars. It was alleged by the proper District Surveyor that the seating was a "building, structure, or work" within the meaning of Section 145 of the Building Act, 1894, and that, therefore, notice should be given to the District Surveyor before it was put up. The Court, however, did not take this view, and held that it was not such a structure as was contemplated by this part of the Act. If it were, said the Court, "no person could put up a fixed cupboard or a fitted bookcase in his house without giving notice to the District Surveyor and without being subject to his supervision." It is obvious that the Act intended to mean by the word "structure" in this part of the Act something of the same general nature and character as a building. That is to say, this word must be construed keeping in view the context. Thus, in Section 164 the expression "the regulation of lamps, signs, or other structures" is to be found. It is an odd use of the word "structure," but there can be no doubt that in this place "structure" means something in the nature of a sign or a lamp. In the part of the Act which has to do with the erection of buildings it means something in the nature of a building, not a movable row of seats.

The Purified Petroleum Fire.
 IN connexion with the proceedings of the Petroleum Committee at the House of Commons, it is curious to find that practically the only exhaustive technical report in the large petroleum fire that occurred at Purfleet in January is to be found in a German contemporary, from the pen of Chief Officer Westphalen, of the Hamburg Fire Brigade. His notes are, moreover, illustrated by a sketch plan of the petroleum stores and the fire, and they contain many valuable hints on the treatment of petroleum fires. It would appear that the Senate of Hamburg, being much interested in the prevention of fires, have given their Chief Officer a kind of general commission to attend any conflagration, the results of which he may consider deserving the attention of the Local Authorities, and although Hamburg is twenty-four hours' distance from London, it would also appear that the officer actually reached the scene of the fire before any of our leading fire experts, including the Chief Officers of the Metropolitan Fire Brigade, had considered it worth their while to personally look into the matter, it not actually being part of their duties to do so. The London Brigade had, it is true, sent one of their fire floats to this fire, but they had been worked by a foreman. Mr. Westphalen appears to consider the preventative measures in his city somewhat excessive; further, he considers that the risk of explosion in a well-constructed petroleum tank can only be very slight, and that a fire brigade can risk attacking a conflagration of its description at close quarters. It seems somewhat curious that we should hear all this from abroad in connexion with a fire so close to London.

The Sanitary Condition of Great Yarmouth.
 THE case of Durrant v. the Corporation of Great Yarmouth, recently decided in the Law Courts, is of interest from the light which it throws on the condition of some of our so-called health resorts. The action was brought by the executors of a gentleman who it was admitted died from typhoid fever in March of last year, contracted through drinking impure water from a well in Great Yarmouth. This well, it is alleged by the plaintiffs, was contaminated by leakage from a new sewer which was being made in Queen-street, in which was the house occupied by the deceased gentleman. It was clear, however, from the evidence, and the jury so found, that the well in question was not contaminated by this sewer, which was 36 ft. from the surface. There was ample poison within due reach, for within 16 ft. of the well was one closet, and within 27 ft. was another closet from which liquid excreta oozed up through the pavement. Of the well itself the Inspector of Nuisances said that the brickwork of the well was defective, and that there was slimy incrustated matter on its old standing. The Public Analyst stated, and this is perhaps the most remarkable evidence in the whole case, that he had examined as many as three hundred wells in Great Yarmouth, and they were all unwholesome. This statement shows conclusively the frightfully unhealthy state of this seaside town. If there are other wells in Queen-street and in Yarmouth like that described in this case, all we can say is that any one who goes to this town does so in

peril of his life. The facts elicited during the course of this trial show very conclusively that the Sanitary Authority of every town which calls itself a health resort should make periodical sanitary surveys, and give certificates of sanitation to such persons as own houses which are in a proper sanitary state, and strangers should be warned that they cannot safely go to a house which is not so certified. A person who intends to occupy a whole house for some length of time will, if he be prudent, have it examined for himself; but the stranger who visits Yarmouth or a similar town for a few weeks only cannot well have such a survey made. At any rate, however, the incomer now knows that Yarmouth is an unsafe place.

THE Botanical Society has
 A New Observatory offered the Astronomical Society a site for an observatory in the Botanical Gardens, which appears to be considered a very suitable position by the astronomers, who are likely to be the best judges. It has the advantages undoubtedly of being central, of showing a fair horizon, and of being better removed from smoke and disturbances of the ground than perhaps any other site which is available within London. The question is now as to acquiring funds for erecting the building.

LORD RAYLEIGH'S fourth lecture on "Electricity and Electrical Vibrations" at the Royal Institution was a very interesting one. He gave experimental illustrations of many anomalous phenomena due to the mutual actions and reactions of circuits carrying alternating currents. He showed how an alternating current, when it comes to a divided circuit, may sometimes split itself up in such a way that the subdivided currents may be greater than the main current. The reason of this apparently startling result is that some of the currents in the divided circuits are flowing in one direction and some in the other. At any instant their algebraic sum is exactly equal to the current in the main, but individually they may be hundreds of times greater. In other words the inductance of the branched circuits causes raging whirlpools of current in these circuits. Lord Rayleigh gave an excellent illustration of the oscillatory nature of the spark in a Leyden jar discharge. He altered the inductance of the path of the discharge and showed how this changed the note of the spark. The lecturer said that the presence of iron in the core of the transformer made the theory of transformer designing very difficult, and pointed out that if copper were a perfect conductor all theoretical difficulties would vanish. We think that no transformer designer will agree that iron makes the theory difficult. The approximate formulæ he uses would cease to be true if he had an air-core transformer to deal with, and the formulæ that would come in their place would astound him by their length and complication. In conclusion, Lord Rayleigh showed some of the most striking of Mr. Tesla's experiments on high frequency currents.

In his lecture on "Leadwork" at the Society of Arts on Tuesday, Mr. W. R. Lethaby made a protest in favour of the trial of cast

lead in place of milled lead, which he characterised as a wretched substitute. Cast lead, he urged, is certainly more durable, more easily bossed up, has a beautiful surface, and he finds, contrary to what he used to suppose, that it whitens by exposure like old lead. All this we think is true; the last statement we are ready to take on Mr. Lethaby's evidence; but does Mr. Lethaby maintain that cast lead, with its chance of small holes in casting, is as safe a material for roofing as milled lead?

St. Thomas's Church and Parish, Southwark. By a Bill which has been introduced into the House of Lords, the Corporation of London, as Governors of St. Thomas's Hospital, propose to effect a union of this ecclesiastical parish with that of St. Saviour, the united parishes to constitute one benefice and cure, and to convey their estate and interest in the church and adjoining land to the Ecclesiastical Commissioners. It is proposed also to empower the Commissioners to either pull down the church and sell its materials, or convert it into a chapter-house for the collegiate church of St. Saviour, or otherwise appropriate the building to some purpose authorised by the Act. The church, which represents the (old) hospital chapel, as re-dedicated to St. Thomas-the-Apostle, was rebuilt, with a tower, of red brick, at a cost of 3,000*l.*, in the year 1702, Sir Robert Clayton being then president of the hospital. It does not present any architectural features of especial interest; there is a view of it, by E. Cole, in Maitland's "London" (1756). Next to it stood the treasurer's house, the two forming the south side of the middle court of the former hospital buildings, which were closed in 1862, their site being taken, on an award of 296,000*l.*, for the railway extension to Charing Cross. We gave some historical particulars of the origin of the hospital, which at the Suppression was a religious foundation, dedicated to St. Thomas of Canterbury, and of the parish, co-extensive with the earlier precincts, in our "Notes" of March 9, 1895, and June 20, 1896.

An old Tavern, Fetter-lane. WE understand that the old tavern, by sign of the "Magpie and Stump," in Fetter-lane, one of the many for which that thoroughfare was once famous, will shortly be pulled down. It stands on the east side, opposite Norwich-court (formerly Magpie-yard) and the "White Horse." It claims to have been established in the year 1605, and to have been a chosen haunt of Otway and Dryden (who, it is said, lived for awhile in two houses, as opposite neighbours, in the Lane*), and of Hobbes, of Malmesbury, Dr. Harvey, and Cowley. In the earlier half of the current century it was much frequented by prizefighters and their following. The story goes that in a room of the "Magpie and Stump" Edmund Waller, Nathaniel Tomkins (his brother-in-law), and Challoner, concocting their plot for delivering the City to the Royalist party, were overheard by a servant of Tomkins, who betrayed them to Praise-God Barebone, the leather-seller, or skinner, of Fleet-street. The Barebone family owned property in this part of London; it is said that some houses

* See the *Builder* of Jan. 10 and 17, 1891, and (with illustration) of Jan. 24, 1891.

on the site of the Outer Temple were built by Dr. Nicholas Barebone, son of the above-named, and that the house built by Wren for the Royal Society, between Fleur-de-Lys and Two Crane courts, was erected on their land.

A DESIGN by Messrs. Watson, of the Goldsmith Memorial, Forgnoy. Youghal, has been chosen for a window, in memory of the poet, which the subscribers intend to place in the parish church of Forgnoy (or Ferney), near Mullingar. Goldsmith was born (1728) in the village of Pallas (or Pallasmore), on the river Inny, within that parish. The house wherein he was born—it has been pulled down—stood two miles distant from the church. In 1730 his father obtained the cure of Kilkenny West, and removed to a house and farm at Lissoy, distant about eight miles from Pallas, which the poet doubtlessly had in mind when he wrote some stanzas of his "Deserted Village." There is a separate project on foot for fixing a memorial window in his honour in St. Saviour's, Southwark, in reference to the fact that soon after he first came to London, Goldsmith practised during some months in 1756-7 as a poor doctor to the poor in Bankside.

The Haymarket Galleries. THE two picture galleries next door to each other in the Haymarket, Messrs. Arthur Tooth & Son's and Mr. McLean's, opened their spring exhibitions simultaneously on Monday. At Messrs. Tooth's Gallery the most noticeable incident is the re-appearance of Mr. Holman Hunt's extraordinary picture "Dolce far Niente," the portrait of a masculine-looking woman in a very striking costume which is painted with immense force of colour, seated in a room the details of which are seen reflected in a convex mirror. It is a thing that gives one quite a start to come upon in the midst of an average dealer's exhibition. The flesh-painting is bad and the whole picture undeniably ugly, and yet with a power about it which puts it quite out of the category of ordinary pictures. Among other works exhibited is a charming figure by M. Dagnan-Bouveret, "Vespers;" Mr. Dendy Sadler's "Morning Gossip," in which the admirably painted accessories are perhaps of more interest than the figures; Mr. David Farquharson's "Looking towards Harrow," a landscape in a broader style than most works we have seen from him; M. Munkacsy's "Tête-à-Tête," a commonplace work in his brilliant but superficial style, and a scene in which Mr. Heffner endeavours to persuade us that scenery "On the Norfolk Broads" has exactly the same colour and tone as the scenes in Bavarian marshland which he has often painted; in other words, Mr. Heffner has only one effect under various titles. In the small room is an interesting collection of old water-colours, with a few modern ones. At Mr. McLean's Gallery many will be interested to see again Mr. H. W. B. Davis's beautiful "Springtime," exhibited three or four years ago at the Academy under the title "Elderberry." Mr. Godward's "Andromeda" is a pretty figure study, with the name of Andromeda unnecessarily tacked to it. Among other works there are M. Vastagh's fine life-size head of a lion; M. Bouguereau's "Spring," like many other works by the same artist; M. Neuhy's "Fisherman's Family," an imitation of Israel's; Marie Dieterle's "Cows in a

Meadow," and C. Werterbeck's "Scene [in Holland]," both excellent works of their kind; a fine specimen of the sea-pieces of Clays, and a small marble sculpture group by M. Dalou.

A NUMBER of minor exhibitions Exhibitions open among which may be mentioned especially that of the works of M. O. de Champeaux, at the Cercle Artistique in Rue Volney. This exhibition includes about seventy oil paintings—landscapes, sea-pieces, and flower paintings—besides some thirty large water-colours. It is the outcome of ten years' persevering labour and a good deal of foreign travel. Among the landscapes we may mention especially "Road near Autun," "Sunset in Galway Bay," "The lagoon, Chioggia," "Twilight effect at San Giorgio Maggiore," and some decorative panels of chrysanthemums, roses, and other flowers. At the Mancini Gallery M. Gustave Colin exhibits a series of paintings of coast scenes in Spain and the neighbourhood of the Pyrenees,

remarkable for their force of treatment and showing that age has not robbed this gifted painter of any of his powers of observation or of painting. In the Gallery at the Champs Elysées the "Société Artistique des Amateurs" holds its exhibition. There are no great works, certainly, among these five hundred paintings, but there are some interesting pictures by the Duchesse de Chartres, the Comtesse de Flandre, Mlle de Caraman-Chimay (who works in pastel), and others, and some good sculptures by the Comte de Passage. The exhibition, though an amateur one, is worth a visit.

DIMENSIONS OF SOME MEDÆVAL BUILDINGS.

In publishing Professor Aitchison's series of Royal Academy lectures on "The Advancement of Architecture," we mentioned that we would give as an appendix at the end of them the list of dimensions of some English and French cathedrals which the Professor had prepared in connexion with these lectures.

We now give them as follows. It will be understood that this is Professor Aitchison's list, not ours, and that we give it on his responsibility, and as a portion of his lectures.

DIMENSIONS OF SOME ENGLISH CATHEDRALS, ARRANGED ACCORDING TO AREA.

Name.	Area.	Length.	Span.	Height of Nave.	Height of West Towers.	Height of Central Tower.	East End.	Trans-sept.	Aisles to Trans-septs.
York	72,860	486	45	101	196	193	square	1	2
Lincoln	66,900	481	39	82	206	262	square	2	west, none; east, one.
Winchester ...	64,200	526	32	78	...	140	square recessed	1	2
Ely	53,480	517	34	72	215	...	square	1	2
Westminster ...	61,729	505	35	103	225	...	circular, with lady chapel	1	2
Durham	46,000	473	32	70	138	216	square	2	middle transept & one east aisle.
Salisbury	44,400	450	32	84	...	404	square recessed	2	one aisle each.
Canterbury ...	43,515	574	39	80	157	229	circular	2	none.
Peterborough ...	55,790	426	35	81	154	143	square, but circular end to choir	1	one east aisle.
Norwich	49,572	408	28	72	...	313	...	...	...
Worcester	47,950	394	32	68	...	196	...	...	...
Gloucester	40,572	359	32	73	...	127	...	...	...
Exeter	34,800	498	35	67	...	225	circular, with lady chapel	1	none.
Wells	38,980	393	34	69	140	...	...	...	...
	29,070	371	32	67	125	165	apse	2	middle, two aisles south, no aisles east.

In the above list the dimensions in thick figures are from Fergusson, the remainder from Lord Grimthorpe.

DIMENSIONS OF SOME FRENCH CATHEDRALS, ARRANGED ACCORDING TO LENGTH.

Name.	Area.	Length.	Span.	Height of Nave.	Height of West Towers.	Height of Central Tower.	End.	Trans-septs.	Aisles to Trans-septs.
Le Mans .....	...	492	...	ft. in. 111 6	...	...	semi-circular with 7 chapels	1	...
Reims	45,550	485	47	123 0	272	...	apsidal: 5 chapels	1	...
Amiens	67,475	435	46	140 0	N. 223 S. 205	422	wooden steeple, apsidal: 7 chapels	1	2
Chartres	60,709	415	46	106 0	N. 403 S. 365	...	semi-circular: 3 apses	1	2
Nôtre Dame	51,460	410	46	112 0	204	...	apsidal: 9 chapels	1	...
Troyes	68,261	400	42	...	...	...	semi-circular: 5 chapels	1	2
Evreux	54,950	368	21	72 7	...	142 9	...	1	...
Soissons	54,103	328	...	109 0	...	...	semi-circular: 7 chapels	1	2
Clermont .....	...	328	...	109 0	...	...	...	1	...
Beauvais	37,230	263	45	153 0	...	...	semi-circular: 7 chapels	1	...
Strasbourg	36,700	250	...	101 0	468	...	...	1	...
Coutances .....	...	242	...	87 0	...	...	semi-circular: one chapel	1	...
Laon .....	...	...	...	...	...	...	square	1	2
St. Peter's, Rome	150,000	710	80*	154 0	Pediment 155 cupolas 246	Dome 443	square internally: apsidal externally	1	...

* According to Letarouilly, 85 ft.

In the above list the dimensions in thick figures are from Lord Grimthorpe, the remainder from Fergusson and other sources.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS

HERALDRY OF THE RENAISSANCE IN ENGLAND.

The eleventh general meeting (ordinary) of this Institute for the present session was held on the 20th ult., at No. 9, Conduit-street, Professor Aitchison, A.R.A., President, occupying the chair.

The minutes of the last meeting having been taken as read, Mr. J. A. Gotch read a paper entitled, "Heraldry of the Renaissance in England," of which the following is an abstract:—

Mr. Gotch said that in dealing with the subject of heraldry before an audience of architects, he proposed to approach it from the decorative side, not from the scientific; for architects were not likely to be called upon to grant arms to their clients, but they might have to draw them; and to do this successfully it was essential to know something of decorative heraldry. After quoting various references to heraldry in Renaissance literature, and especially advertising to the curious fancy prevailing at one time for finding or inventing coats-of-arms for scriptural characters, saints, and even for the Saviour, Mr. Gotch referred to one law as to the granting of arms laid down by Sir John Ferne in his "Blazon of Gentrie," whereby it seemed that while professors of "the seven liberal arts" were not unworthy of having arms granted to them, the followers of "the seven mechanical sciences" were quite outside the pale. As architecture was one of the mechanical sciences, their case, as mere architects at any rate, was hopeless, for Sir John Ferne was emphatic. "Although it be true," he says, "which I erst sayde: (that mechanical sciences, with their professors, be debarred the preheminance of Gentrye: which opinion, if any one would overthrow, let him look for this, that my friends Barth, with his codes and textes, will easily confounde his rashnes and ignorance.) Yet I have not denied but that some notable collateral merite and worthines may be in the mechanical man, that he shall duly obtayne a coat-of-arms: But not by the meere practice of his mechanical trade." Let them endeavour to be thankful for small mercies. When the posthumous granting of arms to persons who could have had no concern with them was considered, they could realise how far heraldry had travelled from its original starting-point three centuries before. From being matters of daily practical use, armorial bearings had come to be what certain rudimentary organs of many animals were, a mere indication of particular ancestry: and so by implication a mark of gentility. The next inevitable stage was crystallisation. Rules were laid down which shared the fate of many other rules if blindly adhered to: instead of being guides they became goals; the origin of armorial bearings being forgotten, the application of them tended to become illogical, and heraldry gradually declined both as a science and as a decorative art. The drawing became too realistic, and lost its proper conventional treatment; the bearings were depicted in the round instead of the flat. Draughtsmen were too well instructed in general matters, they had got to know what live lions really looked like; they were familiar with many animals and things which their ancestors knew chiefly by conjecture, and they utilised their knowledge to the detriment of their design. The eighteenth century squires gradually fell out of the habit of adorning their houses with heraldry, which became little more than a matter of book-plates. Another cause of deterioration in heraldic drawing arose directly from the change in the object of heraldry, namely, its becoming an indication of ancient descent, leading to a multiplication of quarterings, which so reduced the scale of each coat as to render spirited drawing impossible. There was in the hall at Fawsley, in Northamptonshire, an achievement of the Knights', containing 334 quarters, which was 330 too many for decorative effect. But although the heraldry of the Renaissance contained within itself the germs of its own decay, it flourished vigorously enough. The designers of the time loved to avail themselves of it in all materials and in all connexions. There was hardly a building of the period of Elizabeth and James that had not its owner's arms carved conspicuously upon it. Apart altogether from its decorative aspect, heraldry was most useful in historical research. Many a clue was afforded by the presence of a shield or a badge in a building which had outlived its story. Take, for instance, Rushton

Hall. There we found two gables alike in design, but bearing different shields, one with the Trefoils of Tresham, the other with the cocks of Cockayne. How much did that difference imply! It meant the downfall of the first family through complicity in Gunpowder Plot, and the succession of the second to the house and estate, and not only its succession, but its taking up and continuing the enlargement of the house in the old spirit and on the old lines of design. Or, again, take the ninety shields on Rothwell Market-house, all bearing the arms of families connected with the county. Why did some of those shields appear. It was impossible to say; but the fact of their being there pointed to a connexion with the county yet to be discovered. The shields on Rothwell Market-house brought us to another point, and that was the drawing of the charges; for there it was done with such vigour and grace as to be a pleasure to look at, apart altogether from the heraldic signification. The animals were fierce and wild and strong, and looked as if they had lived in the forest; not like their descendants of a century or two later, which had become tamed and docile, and fit to lie on the hearthrug. That was in the time of the Georges, when rules and regulations had broken their spirits. There were, of course, certain rules and regulations which had to be observed, but, within their limits, the more freedom the better; in fact, freedom was essential to decorative effect. The characteristic charge that distinguished the coat must be preserved, but within that limit it might be treated according to the taste of the designer. For instance, a lion rampant must always be made a lion rampant, but there was no need to have his head and his four legs in precisely the same relation to each other, nor need his tail always take the same curve. These things might be varied according to the space to be filled. [A very good instance was shown in the lantern illustrations afterwards, of two lions, one designed to fill an upright space, the other for a square space.] The treatment of the crest and wreath on the helm, and the mantling, should be founded on logic, at any rate, if not strictly logical; that was to say, the crest and wreath must accompany the helmet, and not float in mid-air just above the shield. The mantling must be treated as a kind of cloth puggaree, with two sides, which usually were of different colours. When supporters were introduced they ought to stand upon something more substantial than the edge of the ribbon which displayed the motto. They should also look as though they were actually supporting the shield and helm. Heraldic drawing was not an easy matter. The designer must be a skilful draughtsman, combining vigour of pencil with a strong feeling for anatomy; so that if an animal had to be drawn its particular characteristics might be presented in a truthful though conventional way, with as few strokes as possible.

Mr. J. M. Brydon, in proposing a vote of thanks to Mr. Gotch for his paper, said that, as an architect, he knew most of heraldry as applied to architecture, and that he knew very little about it scientifically. That night they had had their attention directed to heraldry, not only in the method of it, but in the sequence in which it should be applied in a decorative sense. Mr. Gotch, at the beginning of his paper had settled, or rather Sir John Ferne did, a vexed question. They had all heard of the controversy as to whether architecture is a profession or an art. It seemed to be neither; it was a "mechanical contrivance," and architects are all mechanics. He presumed that the "mechanic" of that day signified what "craftsman" does in this, and he was quite willing to accept that gentleman's dictum, and be a "craftsman," and as "craftsmen" heraldry must appeal to architects in two aspects—the historical aspect and the decorative aspect. It was evident from many of the illustrations of shields exhibited that it would be almost impossible to decipher the history of places in which they are embazoned but for the heraldry which is on them, and in that aspect they were deeply interesting, not only to the architect but to the archaeologist. The decorative side, of course, was the one that appealed to them most strongly, and the method in which Mr. Gotch had shown how shields ought to be filled by quarterings, and how the supporters ought to stand on something more substantial was, in a decorative sense, of great value and use to all students of architecture, who, of course, in their

practice were constantly using arms in their buildings, either in carving or in stained glass. There was one thing that had struck him in the magnificent decorative ceiling at Earlshall, in Fifeshire. This ceiling, he believed, was done by Sir William Bruce, who was architect to Charles I., and who carried out the modern part of Holyrood Palace. It was due to him that the county of Kinross was turned into a county and detached from Fifeshire, and the same man built a magnificent palace or house, which he hoped the King would occupy, but, unfortunately, he did not live to do so. In colour it was very fine, and he was glad to hear that since its restoration it had been taken such great care of, and that only the old work that they were perfectly sure of had been restored, and that they had not invented anything new. There was one example that Mr. Gotch had given of the two pictures from De Vaux. His (the speaker's) opinion was that the coat of arms was Lord Richard Neape's. Judging from the style of the carving purely and simply, it seemed to him that the panel that contained the arms had been carved later than the rest of it.

Mr. St. John Hope, in seconding the vote of thanks, said he quite agreed in the remarks that Mr. Gotch had made with regard to the rules which had brought heraldry into such disrepute, because, as Mr. Gotch pointed out, those rules had served to bring heraldry into a crystallised condition, and had destroyed its freedom, and all the fine art of it seemed to have more or less disappeared. And the same with the drawing from the round. All the ancient heraldry was simply painted in flat in outline, and when it began to assume the sculptured form, as one saw in the shields in Westminster Abbey, it was still kept in such low relief that it was only just out of the flat condition. Also, with regard to quarterings, there could be no doubt, as Mr. Gotch had pointed out, that the multiplication of quarterings was entirely destructive of a great deal of the artistic beauty of ancient heraldry. He supposed that multiplication of quarterings arose through the practice of representing first of all a quarter shield upon a shield that was already quartered. That would bring in eight quarters, and then, when the son of that man and his wife, whose arms were so represented, quartered them in turn, that further complicated matters, and if the gentleman who then became the possessor of that shield in turn married an heiress, he inherited further quarterings, and so they eventually reached that dreadful state of things that was seen in the quartered shield at Fawsley with 334 quarterings. The value of heraldry in dating buildings was one that could only be appreciated when one had taken the trouble to work it out for himself. A fortnight ago he exhibited a lantern slide of that beautiful gateway of Kirkham Priory. No date had been assigned to that in any book that he was aware of; but he happened to be called upon to write a paper upon Kirkham Priory, and it struck him with regard to the heraldry on that gateway that it was arranged on some kind of system, and that if the clue to that were found, one possibly might arrive at the date of the production; and he soon found, from the examination of the shields, that they represented alliances. From those alliances it was easy to prove—or, at any rate, suggest with a strong show of probability—a date within a very few years of which the old gateway was built. As Mr. Gotch had said, to draw heraldry properly one must become soaked with heraldic art; and one of the very best sources from which heraldic art may be learned was that of seals. It was unfortunate that the places where the seals were to be found were so difficult of access. There was a very large collection at the British Museum, which might be studied after a fashion. There ought to be a huge collection, much the same as the one which the Society of Antiquaries was fortunate enough in possessing, of casts of seals. They cost very little to make, and there ought to be such a collection at South Kensington, that one could take out drawer after drawer of seals, and arrange them in any order he pleased, so long as he restored them to their proper places.

Mr. H. H. Statham said he should like to join in the expression of thanks to Mr. Gotch for his paper, and more particularly so because he knew nothing about heraldry, and therefore had benefited all the more. There were one or two conclusions he came to, having regard to what Mr. Gotch mentioned was the title of the last paper—"Heraldry in Connexion with Archi-



Sketches of London Street Architecture.—XII. No. 83, New Bond-street.
Mr. W. A. S. Benson, Architect.

ecture." He quite agreed that heraldry, in a retrospective sense, was a most valuable aid, as Mr. St. John Hope has said, in studying the chronology of buildings; but as a modern subject heraldry was now only a kind of pastime, though a very picturesque one. The real use of it had gone. The original use of heraldry was to distinguish a man when his face was covered by a helmet, so as to prevent his own friends knocking him on the head by mistake. He was not quite able to follow all the enthusiasm of the lovers of heraldry in regard to the drawing of all the examples they had seen. Some of these lions, which were said to be so beautiful, seemed to him to be more curious than beautiful. But he was rather struck with this, in regard to the fact that heraldic animals of the best kind were conventional and not real, that the species were not numerous, and if we had to draw new coats of arms in the present day there was certainly a field for the youthful designer who took up heraldry for evolving some new forms as improvements or variations upon the orthodox griffin and lion. One remark he would add as to the question of "Heraldry in Relation to Architec-

ture." In the first illustration shown, that of the gateway at Holdenby, they might have noticed in the design of that gateway that the masonic design in the upper part of it was a preparation for a place to put the heraldic coat of arms in. The gateway was surmounted by a large circular mass with a panel, which was of no use except to display the heraldry. Now, it struck him that in most of the other cases the architecture had no particular reference to the display of the heraldry. The coat of arms was put on wherever it was found convenient. In the Holdenby Abbey Gate there was a real sense of the architectural design being affected by the desire to display a coat of arms. Now, if people were going to use heraldic devices as part of architectural ornament, that was one point to bear in mind, that the architectural effect was much greater when it appeared that the architecture and the heraldry had been planned together, and that the architectural design actually provided for the heraldry from the first.

The vote of thanks was carried unanimously. Mr. Gotch said that as to Mr. Statham's remarks about new species, if heraldry was to be

continued, it seemed to him that the line upon which the modern herald must go was to take the modern animal and conventionalise him not shutting his eyes to the knowledge that we had in the present day, but taking the animal and making him conventional very much in the same way in which the last slide showed the dog, which was a very modern dog, but treated in quite a conventional and vigorous way. When one came to an allegorical animal like a griffin or a unicorn there was, of course, a modern representation of it, and no modern specimen to be found in a museum, and he did not know what they were to do there. He thought they must depend entirely upon their invention. To Mr. St. John Hope he was indebted for many suggestions which he had been able to avail himself of. Mr. Hop had kindly put at his disposal the beautiful seals which were part of the series at the Society of Antiquaries.

The Chairman said that the next meeting would be held on April 12, when Mr. H. F. Statham would read a paper on "The New Government Offices Scheme."

The meeting then terminated.

SKETCHES OF LONDON STREET ARCHITECTURE.—XII.

No. 83, NEW BOND-STREET.

THIS front was designed by Mr. W. A. S. Benson. The stone used is Chiltern, in large blocks. The arch is a real one of red roofing tiles and through stone voussoirs, but there is a bond iron girder above and below the carved cornice. The front stands on the stone pier and not upon stanchions. The setting back of the top gable was intended to disguise the fact that No. 83 is considerably the loftiest house in the row.

The dominating condition of the design was that it was desirable to carry three floors back to the full depth of 63 ft., about 40 ft. of which had to be lighted from the front.

APPLICATIONS UNDER THE 1894 LONDON BUILDING ACT.

At a recent meeting of the London County Council the Building Act Committee reported that they had considered the under-mentioned applications under the London Building Act, 1894, and had arrived at the following decisions. Those applications which have been agreed to are granted on certain conditions:—

Lines of Frontages.

Westminster.—That consent be given to the erection of two blocks of residential flats, Nos. 1 & 2, Morpeth-mansions, Morpeth-terrace, Victoria-street, with bay windows and open porticoes, on the further application of Mr. G. Baines on behalf of Mr. G. Martin.

Fulham.—That consent be given to the erection of a two-story building on the south-east side of Harwood-terrace, to abut upon Imperial-road, on the further application of Mr. C. Collins.

Newington, West.—That consent be given to the erection of additional stories upon the shops in front of Nos. 338, 340, and 342, Walworth-road, by which the height of the buildings will be increased to 41 ft., on the application of Mr. E. H. Payne on behalf of Messrs. Grose Brothers.

Paddington, South.—That consent be given to the erection of an iron and glass covered way in front of No. 1, Southwick-street, Hyde Park-square, on the application (further considered) of Messrs. R. Hogg & Son.

Peckham.—That consent be given to the erection of two houses with one-story shops in front, next No. 648, Old Kent-road, at the corner of Ethand-road, on the application of Messrs. Holman & Goodham on behalf of the Royal London Friendly Society.

Strand.—That consent be given to the erection of an iron and glass shelter over part of the footway in front of Her Majesty's Theatre in the Haymarket and Charles-street, St. James's, on the application of Mr. C. J. Phipps on behalf of Mr. H. Beerbohm Tree.

Battersea.—That consent be not given to the erection of an enclosed porch to a proposed parish-room next the Vicarage, Prince of Wales-road, on the application of the Rev. G. Harcourt.

Clapham.—That consent be not given to the erection of a church in North Side, Clapham Common, at the corner of Lavender-gardens, on the application of Messrs. W. & C. A. Bassett Smith.

Beckenham.—That consent be not given to the erection of a one-story shopfront to Nos. 98 and 100, Beckenham-road, Penge, on the application of Mr. W. Theobalds on behalf of Mr. B. Grant.

Hackney, South.—That consent be not given to the erection of one-story shops upon part of the

occurents of Nos. 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, and 226, Morning-lane, on the further application of Mr. W. Hall on behalf of Mr. T. W. Wheeler.

Norwood.—That consent be not given to the erection of houses with one-story shops on the west side of Norwood road, between Ulls-water-street and Harpenden street, on the application of Mr. H. G. Brace on behalf of Mr. H. Prvor.

Wandsworth.—That consent be not given to the erection of a signboard in front of No. 40, Bedford Hill-road, Balham, on the application of Mr. C. C. Dunne.

Woodhick.—That consent be not given to the frontage of fourteen new houses and also to the proposed frontage line of other cottages to be erected northward of those houses on the west side of Chislehurst-lane, Eltham, on the application of Mr. A. G. Wright on behalf of Mr. J. Bass.

Width of Way.

Bow and Bromley.—That consent be given to the erection of an addition to a factory on the south side of The Mill-lane, Bromley, at less than the prescribed distance from the centre of the road, on the application of Messrs. Wigg, Oliver, & Hudson on behalf of Messrs. Kembal, Bishop & Co.

Hackney, South.—That consent be given to the retention of a one-story stable erected at the rear of No. 50, Eaton-place, Wells-street, at less than the prescribed distance from the centre of the road, on the application of Mr. A. G. Hutchings on behalf of Mr. P. Stoneham.

Islington, North.—That consent be given to the erection of a block of stables on the west side of Hercules-place, Holloway, with portions of the stables flanking upon Bowman's-mews and Bowman's place respectively, at less than the prescribed distance from the centre of each of those streets, on the application of Mr. J. C. Connelly.

Rotherhithe.—That consent be given to the erection of a one-story building on the north side of Rotherhithe-street, adjacent to Globe Wharf, at less than the prescribed distance from the centre of the road, on the application of Mr. A. R. Stenning on behalf of Messrs. Quirk, Barton & Co.

Westminster.—That consent be given to the erection of a building on the site of Nos. 71, 73, 75, 77, 79, 81 and 83, Vincent-square, at less than the prescribed distance from the centre of the road, on the application of Mr. E. Dru-Drury on behalf of Messrs. William Sugg & Co.

St. Pancras, North.—That consent be not given to the erection of three blocks of residential flats on the west side of Highgate-road, between Greenwood-place and Clerkenwell-lane, with the boundary or fence of the northernmost block at less than the prescribed distance from the centre of that lane, on the application of Messrs. E. J. Bellord & Co., on behalf of Messrs. Read Brothers, as no reason is seen why the boundary of the block next Carker's-lane should not be set back the statutory distance from the centre of that lane; and moreover, the ends of the several blocks next Highgate-road would, if erected as shown on the plan now submitted, be about 6 ft. in advance of the general line of buildings in that road as defined recently by the Superintendent Architect, under Section 22 of the London Building Act, 1894.

Open Space about Buildings.

Chelsea.—That sanction be given to certain deviations from the plan certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of a two-story stable at No. 5, Cheyne-mews, Cheyne-walk, on the application of Mr. E. W. Parker on behalf of Messrs. Sprake, Foreman, & Son.

Greenwich.—That the Council do, in the exercise of its powers under Section 41 (1) (vi.) of the London Building Act, 1894, allow a modification of the provisions of that section with regard to open spaces about buildings, so far as relates only to the proposed erection of No. 1, St. Clair-villas, Charlton-road, Blackheath, with an irregular space at rear, on the application of Messrs. Walker & Johnson on behalf of Mr. Allan Walker.

Hampstead.—That sanction be given to certain deviations from the plan certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed erection of a two-story addition on the site of a conservatory at Friedenheim, No. 8, Upper Avenue-road, St. John's Wood, on the application of Messrs. Hayward & Son on behalf of Miss F. M. Davidson.

St. George, Hanover-square.—That the Council do, in the exercise of its powers under Section 41 (1) (v.) of the London Building Act, 1894, permit the erection of an addition, 20 ft. high, on a portion of the open space at the rear of No. 60, Eaton-terrace, at the corner of Chester-terrace, on the application of Mr. W. A. Large on behalf of Mr. W. H. James.

Line of Frontage and Deviation from Certified Plan.

Marylebone, East.—That sanction be not given to certain deviations from the plan certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed erection of a four-story dwelling-house on the site of a stable and portion of a garden at the rear of No. 147, Harley-street, at the corner of Marylebone-road, and that the Council, in the exercise of its powers under

Section 22 of the Act, do not consent to the proposed frontage of the said dwelling-house, on the application of Messrs. Davis & Emanuel, on behalf of Mr. Barrow Emanuel.

Deviation from Certified Plans.

Bermondsey.—That sanction be not given to certain deviations from the plan certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of No. 33, Old Kent-road, on the application of Messrs. Battley, Sons, & Holmes.

Line of Fronts and Width of Way.

Greenwich.—That consent be not given to the erection of buildings on the north side of Ashburnham-road, the east side of Egerton-road, and the south side of Greenwich-road, on the application of Mr. W. T. Sawyer, on behalf of Queen Elizabeth College, Greenwich.

Width of Way and Construction of Buildings.

Deptford.—That consent be given to the construction and erection of an iron building, on the north side of Blackhorse-road, with the boundary or fence in front of such building at less than the prescribed distance from the centre of the road, on the further application of Messrs. Humphrys, Tennant, & Co.

Formation of Streets.

Fulham.—That an order be sealed and issued to Mr. C. Watkins, sanctioning the formation or laying out of a street 50 ft. wide for carriage traffic, to lead from North End-road into Auril-road, on his application to the Council on behalf of Mr. C. J. Knowles. That the name Fitz-George-avenue be approved for the new street.

Leisham.—That an order be sealed and issued to Mr. J. Norton, sanctioning a deviation from the plan approved on December 4, 1893, for the formation or laying-out for carriage-traffic of Rhymead, Molesworth-street, on his further application to the Council on behalf of Mr. E. MacF. Patterson.

Hampstead.—That an order be sealed and issued to Mr. W. Willett, sanctioning the formation or laying-out of a carriage-way approach, 20 ft. wide, to three houses on the south side of Elsworth-road, Avenue-road, on his application to the Council.

Wandsworth.—That an order be sealed and issued to Mr. H. H. Church, refusing to sanction the formation or laying-out of one street 50 ft. wide, and of six streets 40 ft. wide for carriage traffic on the Church-field estate on the north side of High-street, Plumstead, and the widening of portions of Church-manoorway and High-street in connexion with such new streets, on his application to the Council, on behalf of Queen's College, Oxford.

Fulham.—That an order be sealed and issued to Mr. W. C. Poole, refusing to sanction the formation or laying-out for carriage traffic of new streets, each 40 ft. wide, on the Sandsend estate, Townmead-road, on his application to the Council on behalf of Mr. J. Wilson.

Means of Escape at Top of High Buildings.

St. George, Hanover-square.—That the Council, in the exercise of its powers under Section 63 of the London Building Act, 1894, do grant a certificate in respect of the means of escape, in case of fire, proposed to be provided for the persons dwelling or employed in the fifth floor of an addition on the east side of the Berkeley Hotel, No. 77, Piccadilly, at the corner of Berkeley-street, on the application of Mr. R. Griggs on behalf of the Berkeley Hotel Company.

Cubical Extent.

Peckham.—That the consent of the Council be not given to a building on the site of Nos. 37, 39, and 41, Rye-lane, and premises at the rear, fronting upon Hanover Park, such building to exceed in extent 250,000, but not 450,000 cubic feet, and to be used only for the purposes of the trade of a draper and furniture dealer, on the application of Messrs. H. Jarvis & Son, on behalf of Messrs. Jones & Higgins.

Strand.—That consent be not given to a proposed addition to the Adelaide Gallery restaurant, No. 436, Strand, on the site of No. 9, King William-street, the building and addition together exceeding in extent 450,000 cubic feet, and to be used only for the purposes of the trade of the restaurant, on the application of Mr. W. Barnard Binhey, on behalf of Messrs. A. & S. Gatti.

Building for the Supply of Electricity.

St. George, Hanover-square.—That the Council do not approve of the plans, dated February 26, 1897, submitted with the application of Mr. C. S. Peach, on behalf of the Westminster Electric Supply Corporation, Limited, for the construction of an addition to a generating-station for electricity in Eccleston-place, Eccleston-street, Buckingham-palace-road, and that the Council do not authorise the erection of such generating station and works as shown upon the said plans, it being considered that the risk of fire extending to the adjacent buildings would be increased by the inclosure, by means of a temporary iron screen, of a portion of the southern end of the proposed addition.

The Building Act Committee brought up the following recommendations at the meeting of the Council on Tuesday:—

Lines of Frontage.

Wandsworth.—That consent be given to the erection of a covered way on the west side of Angle-

holme, East Hill, to abut upon Acris-street, on the further application of Mr. W. H. George, on behalf of Dr. P. H. Davies.

St. Pancras, West.—That consent be not given to the erection of a two-story building at the rear of Nos. 36, 37, and 38, Chalk Farm-road, to abut upon Harmond-street, on the application (further considered) of Messrs. Thorpe and Furniss, on behalf of Messrs. Thomson and James.

Hackney, South.—That consent be not given to the erection of a three-story warehouse on the north-east side, and partly upon the site, of No. 23, Fremont-street, Victoria Park-road, on the application of Mr. J. Morris.

Width of Way.

Southwark, West.—That consent be given to the erection of a two-story addition in front of Vestey's (late Hanbury's) wharf, Upper Ground-street, Blackfriars, with the forecourt boundary at less than the prescribed distance from the centre of the roadway, on the application of the Union Cold Storage Company.

Space at Rear of and Projections from Buildings.

Hackney, Central.—That consent be not given to the erection of five blocks of residential flats on the east side of Clapton-square, at the corner of Clapton-passage, with a four-story high window at the north-west angle of the blocks; and that the Council, in the exercise of its powers under Section 41 (1) of the London Building Act, 1894, do not allow the erection of the said residential flats with an insufficient space at the rear of three of the blocks, on the application of Messrs. Crewe and Hammond, on behalf of the Metropolitan House Investment and Agency Company, Limited.

Means of Escape at Top of High Buildings.

Southwark, West.—That the Council, in the exercise of its powers under Section 63 of the London Building Act, 1894, do grant a certificate in respect of the means of escape, in case of fire, proposed to be provided for the persons dwelling or employed in the top floor of a warehouse at Vestey's (late Hanbury's) wharf, Upper Ground-street, on the further application of Mr. A. W. Osborn, on behalf of Messrs. Vestey Brothers.

Recommendations marked *are contrary to the views of the Local Authorities.*

THE LONDON COUNTY COUNCIL.

The ordinary weekly meeting of this Council was held on Tuesday at the County Hall, Spring-gardens, Dr. Collins, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee it was agreed to lend the Bermondsey Vestry 3,000l. for wood, York, and granite paving works; the Lambeth Vestry, 10,000l. towards the cost of erecting baths and washhouses; and the Metropolitan Asylums Board 100,000l. towards the cost of erecting, fitting-up, and furnishing the Grove Hospital, Tooting.

Hydrant and Fire-Mug Indicators.—It was agreed that the Chief Officer be authorised to give orders to Messrs. S. Pontifex & Co. for the supply and fixing of not more than 3,000 hydrant indicator tablets, and 1,000 glass fire-mug indicator tablets, and for the execution in the latter case of the necessary re-glazing.

Southwark and Vauxhall Water Bill.—The Parliamentary Committee recommended the Council to allow them to oppose the Southwark and Vauxhall Water Company's Bill, by which the Company propose to increase their daily indraught from the Thames from 24,500,000 gallons to 45,000,000 gallons. The Committee reported: "It is proposed that the Act shall remain in force for eight years and no longer, but subsequent provisions of the clause providing for this, if passed in its present form, would indicate and justify the grant to the Company of further powers of making works so as to admit of their impounding and taking the water in perpetuity. We are of opinion that the general effect of the Bill would be to create a very large increase in the value of the undertaking, while this increased value is to be gained at the mere cost of an Act of Parliament transferring to the Company water which is public property, and in the flow of which London is very largely interested."

Lord Onslow moved an amendment to petition against the Bill on standing orders.

Mr. Harris seconded the amendment, which was supported by Mr. Beachcroft.

An equal vote having been taken for and against the amendment it was declared lost, and the Council divided on the Committee's recommendation, which was carried by 58 votes to 50.

Other Water Bills.—With regard to the East London and New River Water Companies' Bills, the Committee reported:—"We have

directed the Parliamentary agent to ask Mr. Stuart or some other member of Parliament to move an instruction to the Select Committee on the Bills, to insert a provision that nothing contained in them should be deemed to enhance the price to be paid in the event of the purchase of the Companies' undertakings by a public authority. The Staines Reservoirs Act of last session contains such a clause, and it seems to us only reasonable that the Bills of the East London and New River Companies should be placed on the same footing."

The action of the Committee was approved. **Result of Legal Proceedings.**—The Building Act Committee recommended, and it was agreed, that the solicitor do take the necessary steps, by means of an appeal against the magistrate's decision in the Brick-lane, Spitalfields, case* for obtaining a decision of the High Court upon the question of the meaning to be attached to the expression "houses to be inhabited or adapted to be inhabited by persons of the working class" used in Sections 13 (5) and 41 of the London Building Act, 1894.

Queen's Jubilee Procession—Temporary Structures.—The report of the same Committee contained the following paragraph:—

"We anticipate that in connexion with the Royal Procession, arranged for June 22 next, many temporary structures for the accommodation of sight-seers will be erected along the line of route; and we have accordingly made arrangements to ensure, as far as possible, the safety of the public. Notices are to be left at each house, and posted in prominent situations, in the line of route outside the City of London, intimating that, under Sections 83 and 84 of the London Building Act, 1894, the erection of temporary structures is unlawful unless the Council's licence shall have been first obtained, and that balconies intended to be used on the occasion should be shored up to prevent risk of accident. An advertisement in similar terms is to be inserted in the *Times* and two other London newspapers. The District Surveyors of the districts concerned have been requested to arrange for extra assistance to enable proper supervision to be exercised over the erection of the structures; and the Council's Works Department will arrange to deal promptly with any structures that may be found dangerous. We think that the adoption of these precautions will sufficiently guard against the possibility of accident from defective construction."

Tramway Purchase.—The adjourned report of the Highways Committee in respect to the purchase by the Council of the North Metropolitan and London Street Tramways Companies again came up. The Committee recommended:—"That the Council do approve the form of agreement and the form of lease (and the schedules attached thereto, showing the hours of labour and rates of wages of employees) prepared by the Highways Committee in accordance with the resolution of the Council of December 23, 1896, with regard to the purchase and lease of the North Metropolitan and London Street Tramways Companies' lines and depôts in the County of London; that so soon as the prices to be paid for the depôts and other buildings shall have been agreed, or fixed under an award of an arbitrator, such amounts be inserted in the agreement; and that the seal of the Council be affixed to such agreement when so completed."

Mr. Baker moved as an amendment, "That the lessees will not fix or place any advertisements or announcements in or upon any carriage in use upon the tramways in such a manner as to obscure light or prevent free vision, and in particular will not in any way cover either in whole or in part any window at the ends or sides, or in the doors of such carriages."

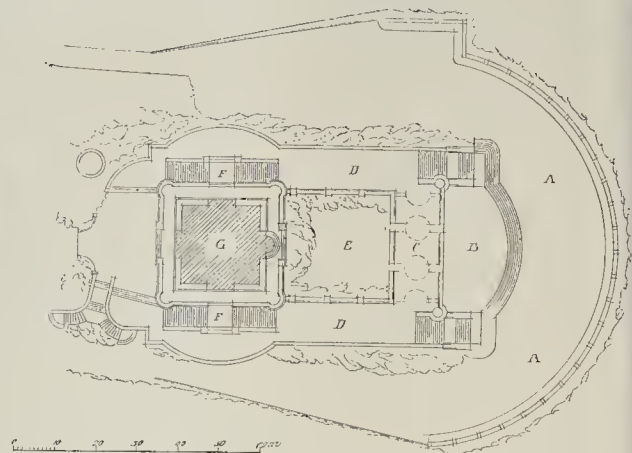
The amendment was defeated, after a long discussion, by a large majority. Mr. Steadman next moved, "That the third schedule be amended so as to provide that in all cases the hours of labour of the employees be reduced to eight per day, or forty-eight per week."

Mr. Westcott strongly opposed this amendment. The men did not want the hours of labour interfered with, and such a proviso would entail an extra expenditure on the leasing Company of 50,000l. a year.

While this discussion was proceeding the Council was counted out at twenty minutes to eight o'clock.

PROPOSED NEW MUSIC-HALL AT MIDDLESBROUGH.—It is proposed to erect a new theatre of varieties on the site of the circus in Corporation-road, Middlesbrough, with side entrances in Dunning-street and Pine-street. Plans have been prepared by Mr. Ernest Runtz, of London.

* See report of the case in our last issue, page 305.



Plan of Monument to the Emperor William I. at Kyffhäuser.

A.—First Grand Terrace.
B.—Second Terrace.
C.—Arches under Third Terrace.
D.—Third Terrace.
E.—Barossa Court.
F.—Gallery.
G.—Monument.

Illustrations.

ABBEYS OF GREAT BRITAIN.—No. 21: SHERBORNE.*

THE view here given of the Abbey Church at Sherborne is drawn for this series of illustrations by Mr. Roland W. Paul. The plan is based on one kindly lent to us by Messrs. Carpenter & Ingelow, and corrected or filled up in some details by Mr. Paul, from special measurements.

For further information with regard to the history and architecture of the church the reader is referred to the first article in the present issue.

THE EMPEROR WILLIAM MONUMENT AT THE KYFFHÄUSER.

THE monuments which are being erected in various parts of Germany to the memory of the first German Emperor, or in memory of the results of the Franco-Prussian War (and the two subjects are intimately related), whether we altogether admire them or not, may be said to be among the most characteristic architectural works recently erected in Germany. We are here referring especially not to the monuments erected in city squares, which are more in accordance with the usual type of such designs, but to those massive and rocklike structures which are erected here and there in the midst of the country, on the side of a hill, or in some other prominent position. One of these, that at the Porta Westphalia, was illustrated in our New Year's number this year; and we now give an illustration of another monument, in very similar style, just erected on the Kyffhäuser. The treatment and detail of these monuments is no doubt somewhat coarse in design, but it cannot be denied that there is a certain power and originality displayed in their general treatment.

Both the Kyffhäuser and the Porta Westphalia monuments were designed by Professor Bruno Schmitz, of Berlin; the sculptural accessories having in each case been carried out by sculptors of repute working in collaboration with the architect but in subordination to his general idea. In the monument now illustrated the sculpture is by MM. Nicholas Geiger, Emil Hundrieser, and August Vogel.

The situation of the monument is on a hill between the Hartz and the Thuringia forests, and the plan explains the arrangement of terraces which lead up to the central feature, which, as will be seen, is in the form of a tower, at the base of which stands an equestrian statue of the late Emperor. The legends of

* The series of the "Abbeys of Great Britain" is continued this month with illustrations of "Sherborne Abbey." The next of the series (Esoyham) will appear in the number to be published on July 3, 1897.

Barbarossa, which are so closely associated with Imperial Germany, are referred to in the monument; thus we find the figure of Barbarossa in his cave, overlooking a cemetery, which has been very cleverly arranged.

The cost of the monument was 65,000l.; the original estimate for the competition design having been 40,000l. We can only add to the responsibility of the design rests in every way with the architect, whilst the actual execution was in the hands of Herr Lindemann, the work being spread over five years. Herr Hundrieser was responsible for the equestrian statue, Herr Geiger modelled the figure of Barbarossa, and the bas-relief work was in the hands of Herr Vogel.

ALTERATIONS TO RUSSELL-SQUARE.

THIS drawing is not, we confess, of much architectural interest, but it may be of interest in another sense, as showing the alterations which are proposed to be carried out in what though not a fashionable square, may be considered nevertheless to be one of the best-known squares in London, and as being an indication we presume, of the method of treatment which it is proposed to apply to others of the large squares on the Bedford estate.

The drawing shows the north side of the square as remodelled, a small sketch also showing the original form of the row of houses. The work is being carried out by Mr. Philip Bilditch, as surveyor to the Bedford estate.

Some further comments on Bloomsbury at its proposed improvements will be found on another page.

** We regret to find that a few copies of last week's issue, owing to a mistake, were sent out without the plate of illustrations of Mr. Gotch's lecture, and with duplicate impressions of another plate. Any one who would apply to the publisher can be supplied with a copy of the missing plate which ought to have been inserted.

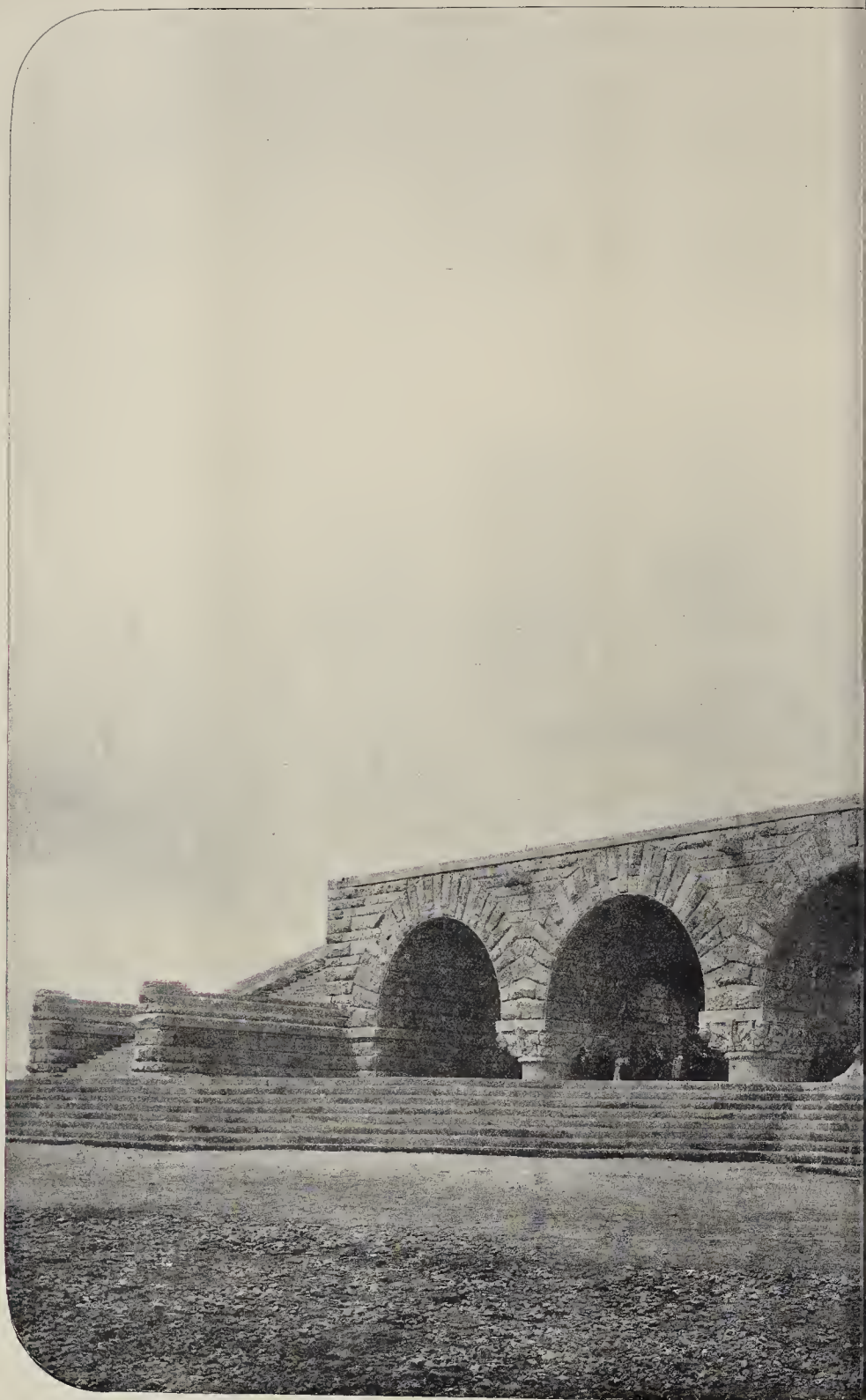
COMPETITIONS.

PARISH COUNCIL OFFICES, BRECHIN.—The Brechin Parish Council some time ago resolved to erect offices wholly for their own use, and plans from various architects were recently considered. After discussing the respective merits of the plans, those prepared by Mr. I. Wishart Galloway, of Brechin, were adopted.

SCHOOL, DUMFRIES.—Plans have been accepted by the Dumfries Burgh School Board for a new elementary school. The selected plans are by Mr. A. B. Crombie, architect, Dumfries.

BELFAST CITY HALL PLANS.—The minutes of the meeting of the Belfast Corporation committee held on the 22nd ult., at which the assessor's award for the new Belfast City Hall was formally accepted, came up for confirma-





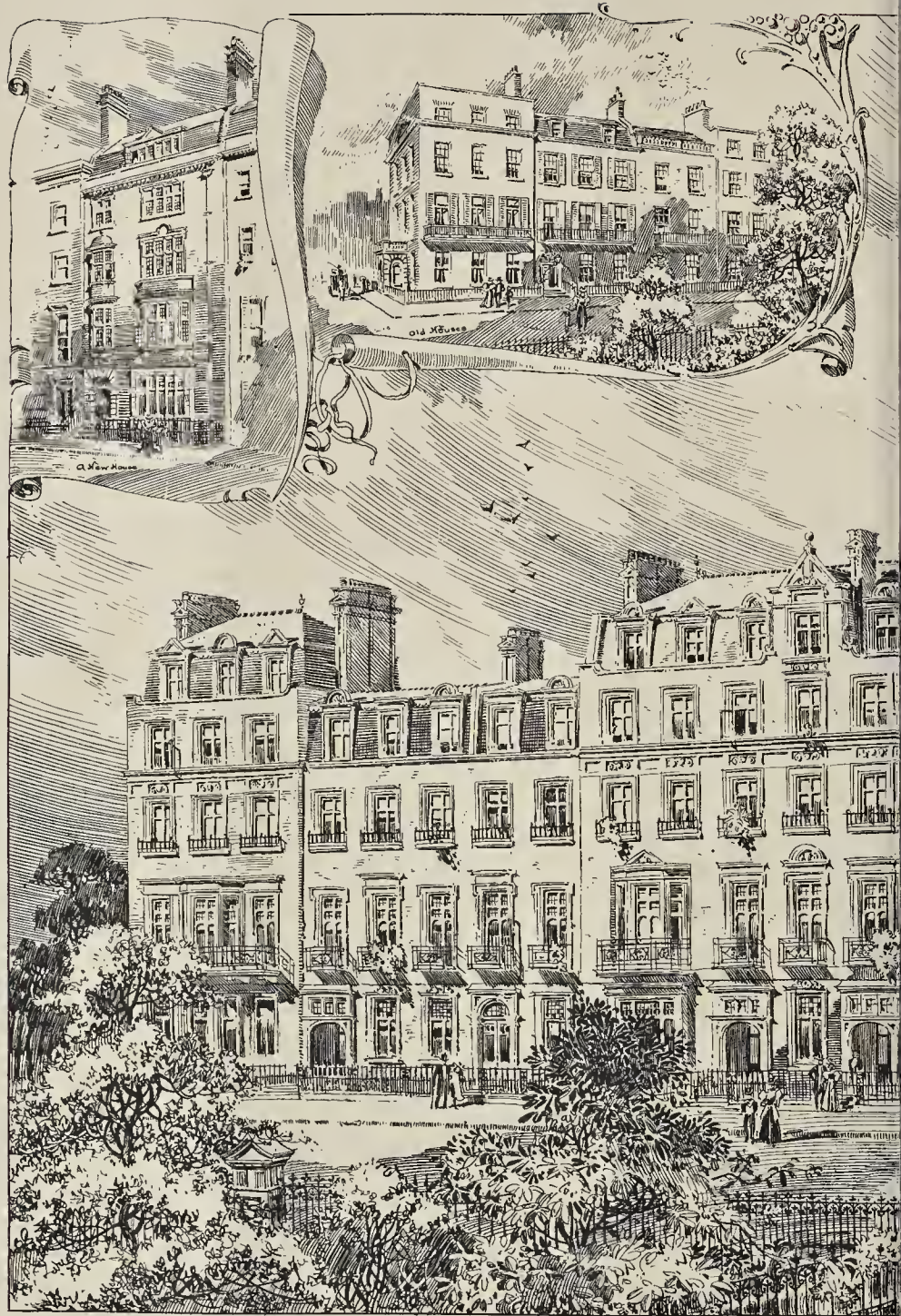
MONUMENT TO EMPEROR WILLIAM I.
MM. N. GEIGER, E. P.



INA. P. P. SPURKOV, & CO. P. A. S. (AS) BAYDING STREET FETTER LANE, E.T.

HÄUSER.—PROFESSOR BRUNO SCHMITZ, ARCHITECT.
A. VOGEL, SCULPTORS.





ALTERATIONS TO RUSSELL SQUARE (NORTH SIDE)

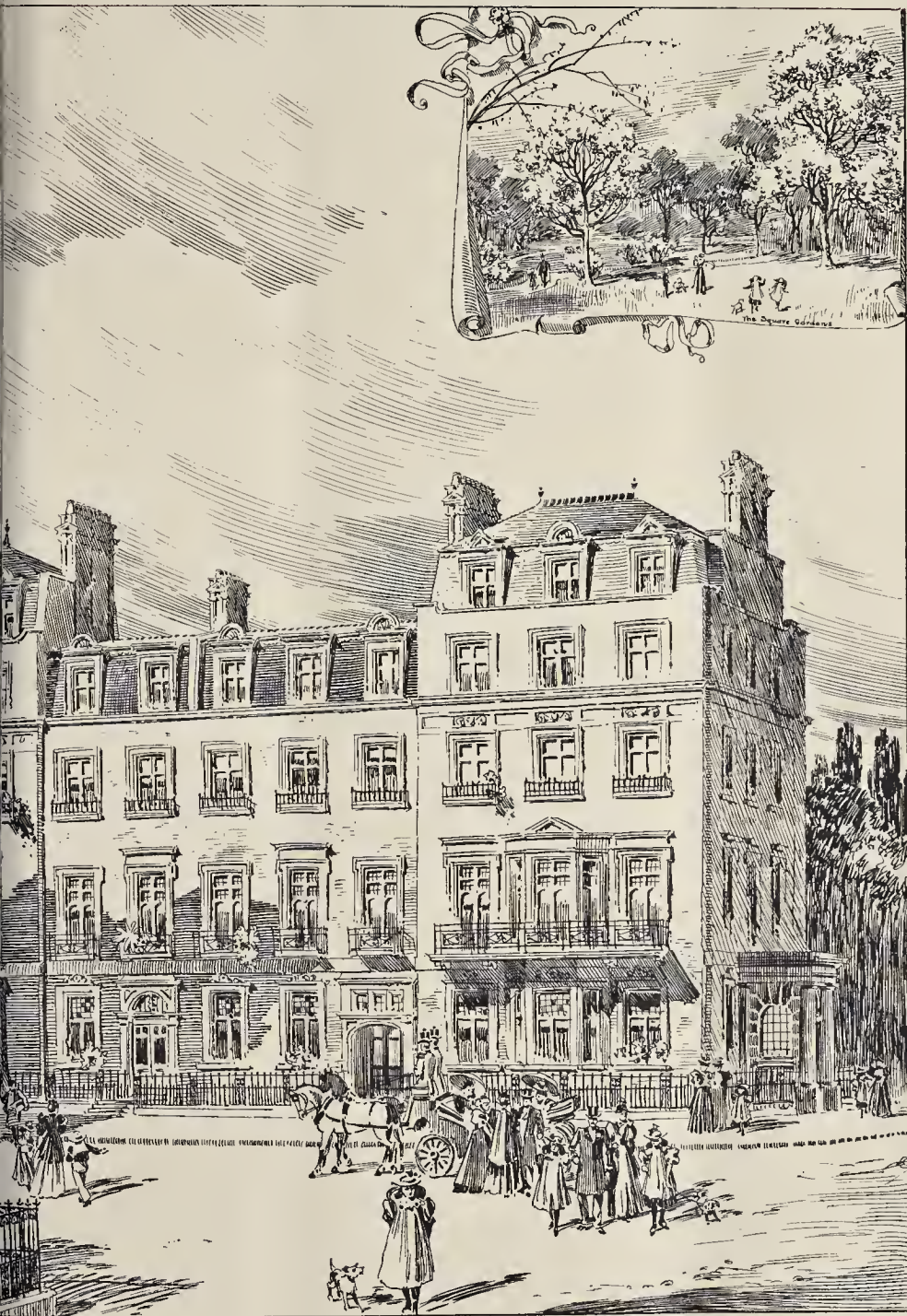
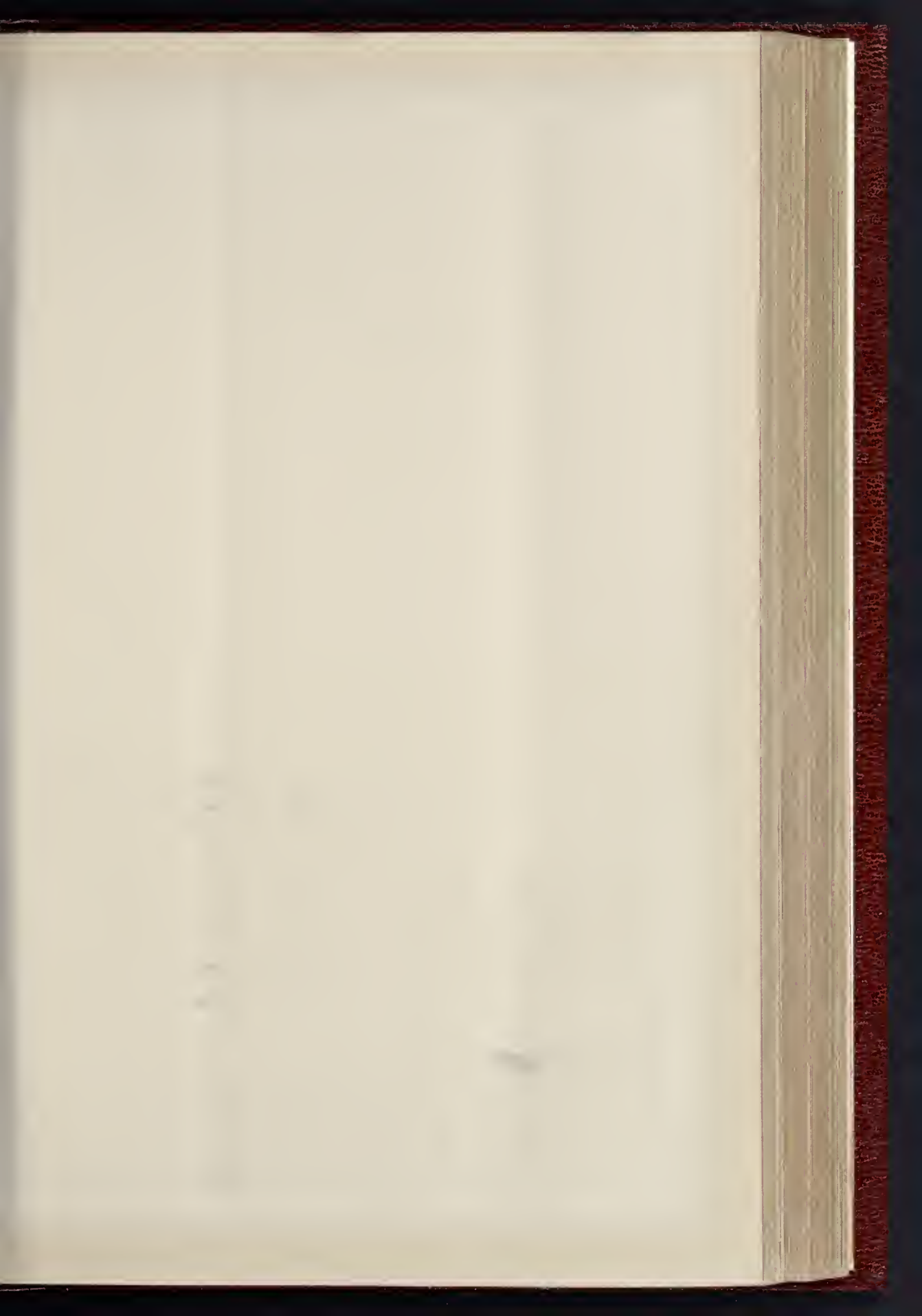









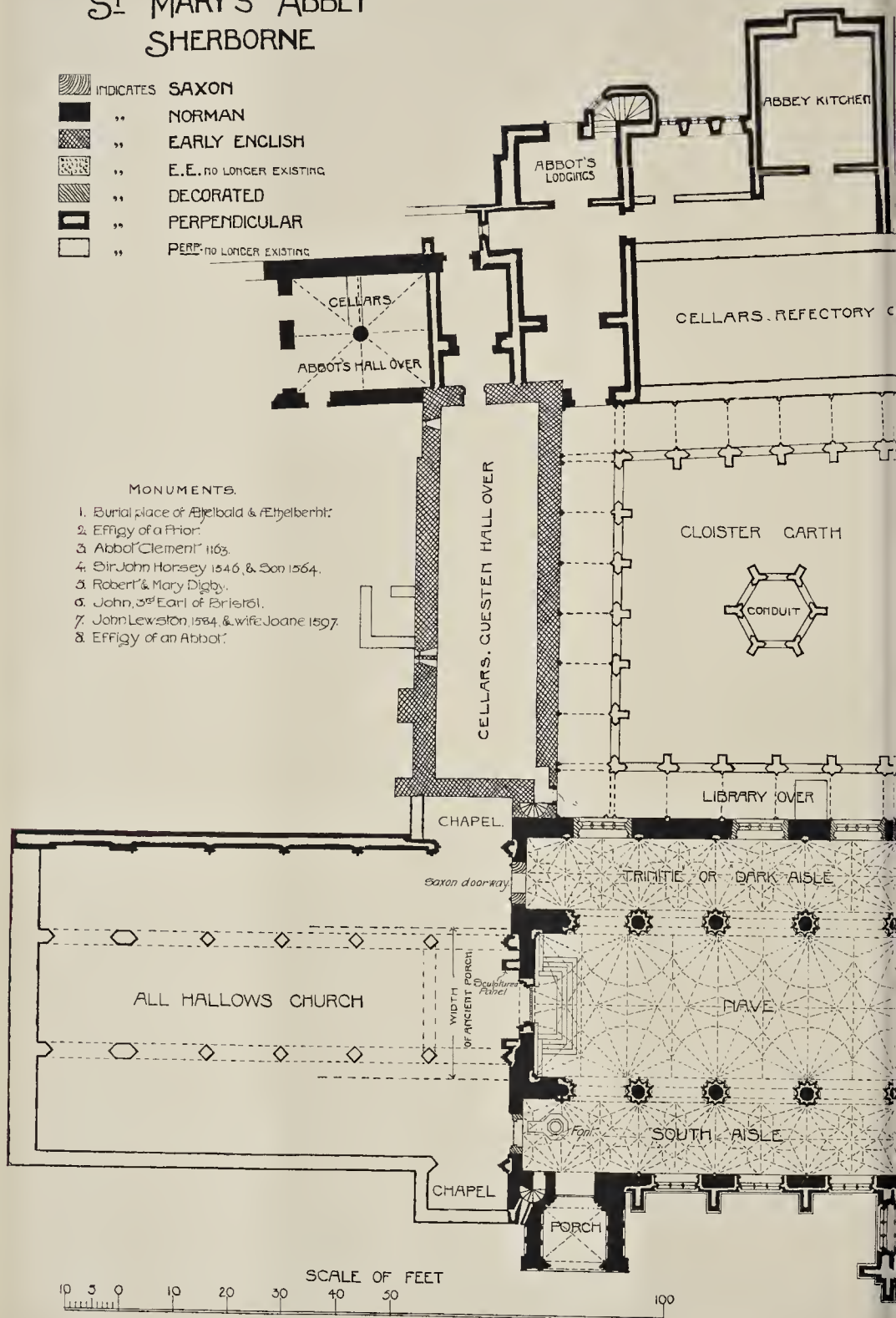
PHOTO-LITHO SPRAGUE & CO. 485, EAST HARDING STREET FETTER LANE, E.C.

BEDFORD ESTATE.—MR. PHILIP E. PILDITCH, ARCHITECT.



SI MARY'S ABBEY SHERBORNE

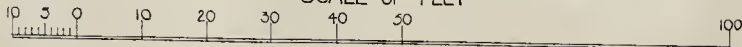
-  INDICATES SAXON
-  " NORMAN
-  " EARLY ENGLISH
-  " E.E. NO LONGER EXISTING
-  " DECORATED
-  " PERPENDICULAR
-  " PERE. NO LONGER EXISTING



MONUMENTS.

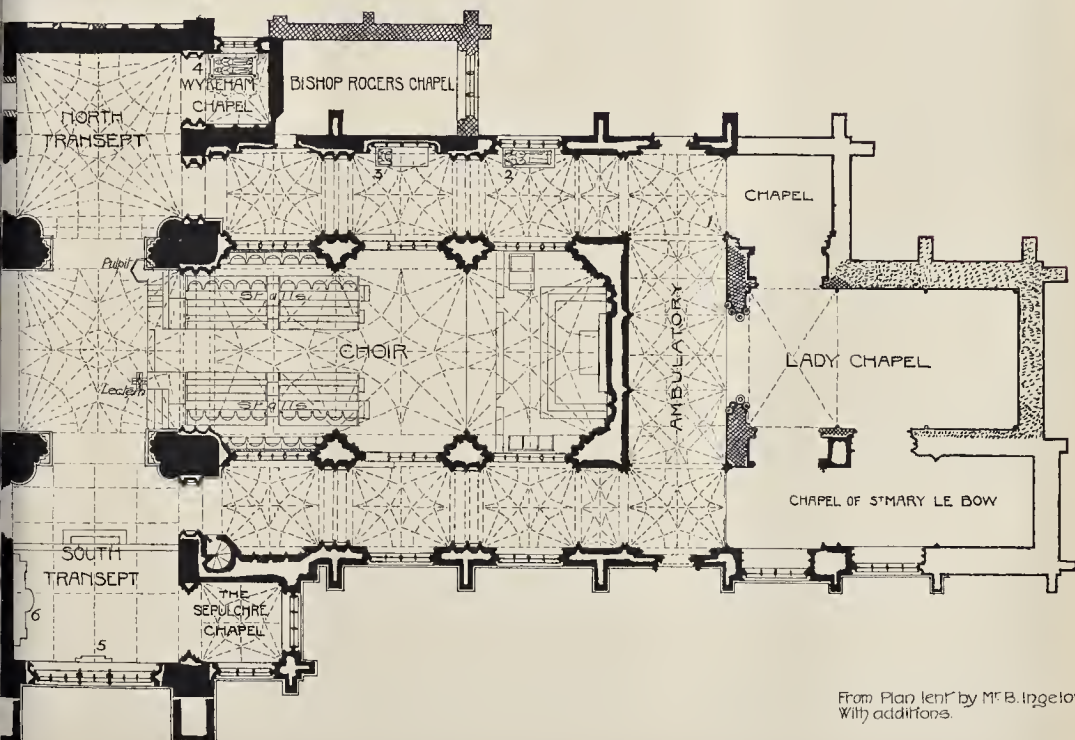
1. Burial place of Æthelbald & Æthelberht.
2. Effigy of a Prior.
3. Abbot Clement 1163.
4. Sir John Horsey 1546, & Son 1564.
5. Robert & Mary Digby.
6. John, 3rd Earl of Bristol.
7. John Lewiston 1584, & wife Joane 1597.
8. Effigy of an Abbot.

SCALE OF FEET

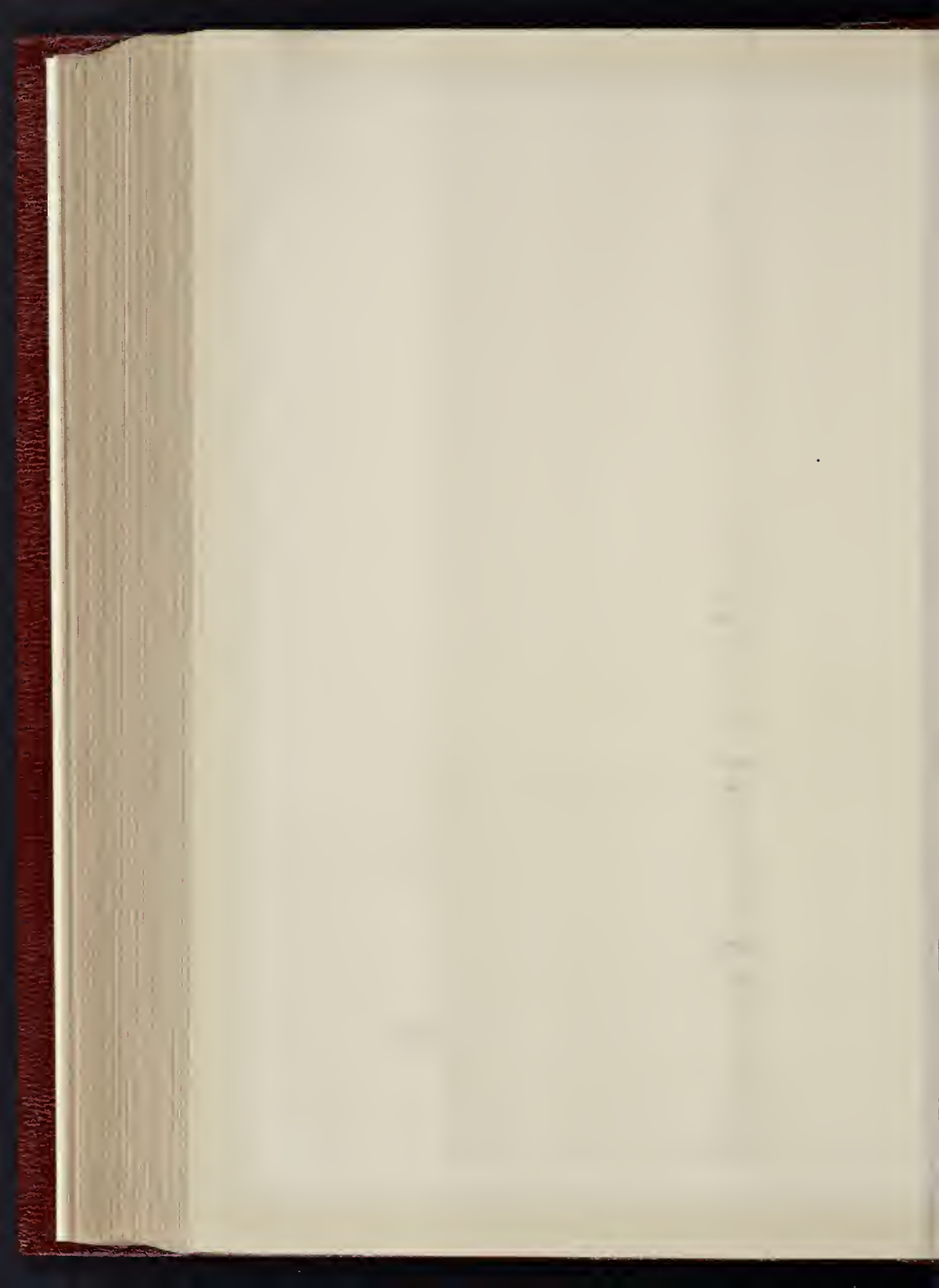




C E M E T E R Y



From Plan lent by Mr B. Ingelow
With additions.

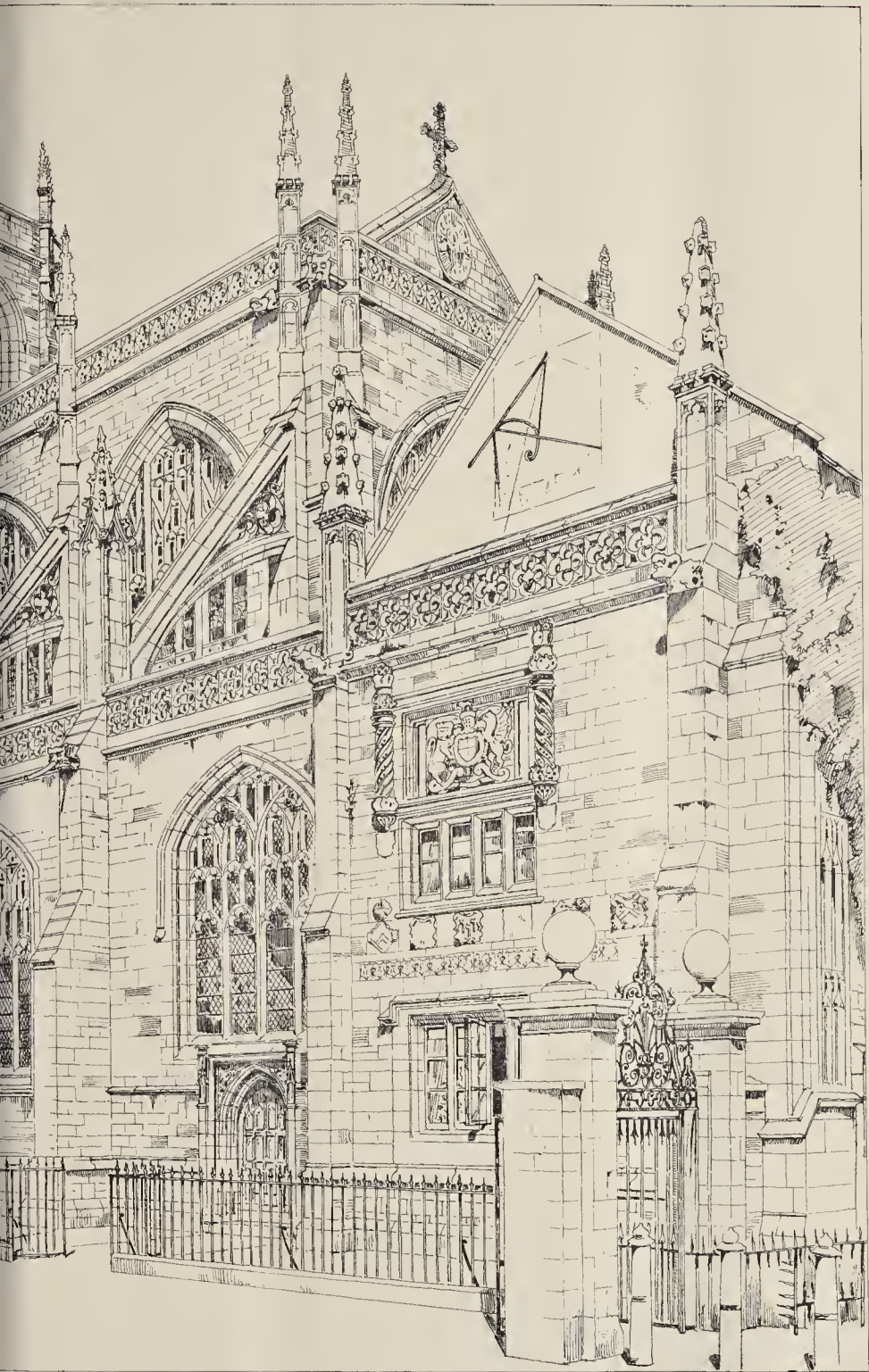






THE ABBEYS OF GREAT

DRAWN BY



INK PHOTO SPRAGUE & CO. 4 & 5 EAST HADDOCK STREET JETTER LANE F.C.

No. 21. SHERBORNE.

V. PAUL



in, we believe, on the 1st inst. Until then the aid of Messrs. Thomas & Son, 7, Queen Anne's Gate, Westminster, cannot be said to have been finally selected. Alderman Wilson is handed to the Town Clerk a notice of objection postponing the erection of a City hall, and Alderman McConnell is also strongly opposed to proceeding any further with the latter at present.

ARCHITECTURAL SOCIETIES.

CARLISLE ARCHITECTURAL, ENGINEERING, AND SURVEYING SOCIETY.—A meeting of this society was held in the Town Hall on the 3rd ult. A paper on the "Development of the Gas Engine," by Mr. F. H. Jewman, Assistant Gas Manager, on the "Origin by describing the history and construction of the earlier gas engines and the attempts to improve them, exhibiting drawings of the typical engines up to the present time, also describing the various ways adopted for starting large engines, and the use of gas producers or the same.

GLASGOW INSTITUTE OF ARCHITECTS.—The usual quarterly meeting of this Institute was held in the rooms, Pitt-street, on the 25th ult., Mr. John James Burnet, A.R.S., President, in the chair. The President reported that the Council had remitted the question as to the lighting of the lower church of Glasgow Cathedral to a committee of Council. He also reported that the Corporation of Sheffield had appointed a jury of three members of the Sheffield Society of Architects as assessors to adjudicate their competitive plans, and that it had been remitted to a committee of Council to consider the position of this Institute with regard to architectural competitions. The President also intimated that the Council had appointed himself and the Vice-President as delegates to attend a meeting of the Sanitary Congress to be held at Leeds in September. Mr. Colin Menzies was elected a member of the Institute.

EDINBURGH ARCHITECTURAL ASSOCIATION.—The Edinburgh Architectural Association met on the 17th ult, the President, Dr. Rowand Anderson, in the chair. After preliminary business, Mr. David J. Vallance, curator of the Museum of Science and Art, delivered a lecture on "Decorative Woodwork," chiefly taken from the Peyre collection recently acquired by the nation. The lecture for the most part was devoted to an exposition and exhibition by means of lantern photos of the collection of French woodwork recently acquired from M. Emile Peyre, of Paris. By a fortunate arrangement which enables Edinburgh and Dublin to share in such important additions to the art treasures of the nation as are conveniently divisible, the Edinburgh Museum and 1,300 of the purchase price, and Dublin a similar sum, each Museum receiving an equivalent share of the specimens, while the remainder found a home at South Kensington. The addition of a share of the Peyre collection to the furniture and woodwork in the Edinburgh Museum coincided, fortunately, with a structural change in the interior of the building, for this change has provided a suitable place for the display in collected form of all the decorative woodwork. At the north-east corner of the Museum there was, until recently, a hall which for many years has scarcely ever been used for the primary purpose for which it was designed. Some time ago the Director, Sir Robert Murdoch Smith, in view of the growth of the collections and of the certain necessity of their requiring at no distant day rearrangement and separation into sections, determined to make an effort to have this long closed hall put into such condition that its area might be added to the exhibition space of the Museum. His efforts were eventually successful. A floor of concrete, supported by iron girders and pillars, was laid and tiled on a level with, and in the same manner as, the rest of the Museum. The space below this floor forms an ample apartment for unpacking and storage, and to add to its convenience a large door has been broken through the wall facing West College-street. This alteration, which has been in progress for several months, under the charge of Her Majesty's Office of Works, has only now been completed. The new hall, when it is opened to the public, will be devoted to the display of the collection of furniture and woodwork in the Museum, and it was to a few of the specimens that would find a place there that Mr. Vallance directed attention. The lecturer then proceeded to show a

number of illustrations of decorative woodwork taken from the Peyre collection, arranged so as to show the changes of style from the Gothic days of the fifteenth century on to the modern decoration of the Regency and Louis XV. time.—*Scotsman.*

ARCHÆOLOGICAL SOCIETIES.

SURREY ARCHÆOLOGICAL SOCIETY.—The forty-second annual meeting of this Society took place on the 24th ult, at 8, Danes' Inn, Strand. The President, Viscount Midleton, occupied the chair. Mr. J. F. Eastwood moved, and Mr. P. Norman seconded, the adoption of the statement of accounts, which was agreed to. Viscount Midleton then moved the adoption of the report of Council, which stated that this was the forty-second annual report of the Society. The annual excursion was held on Wednesday, July 15, 1896, the meeting place being East Grinstead, whence Lingfield and Crowhurst were visited (see the *Builder*, July 25). The part of the Society's Collections (vol. 13, part 1) for the year 1896, was duly issued to all members not in arrears with their subscriptions. In this part are valuable papers by Mr. J. L. André, F.S.A.; Mr. F. L. Griffith, F.S.A.; Mr. F. Lasham; Mr. Philip Norman, F.S.A.; and Mr. S. W. Kershaw, F.S.A. The catalogue of church plate is still being continued by the Rev. T. S. Cooper, F.S.A., and the extracts from Surrey wills by Mr. F. A. Crisp, F.S.A. The Council regrets to report that the deficit on the yearly account shows a slight increase; this is partly owing to the increased cost which has fallen upon the Society since the loss of the part tenancy of the London and Middlesex Archæological Society. Up to the present the Society has been unable to secure another tenant. In order to lessen this deficit and to keep the annual expenditure within the annual income, it will be necessary, unless a large addition can be made to the number of annual subscribers, to cut down the size of the collections and reduce the number of illustrations. To a certain extent this has already been done, as the following table shows:—Cost of collections in 1890, 87*l.*; 1891, 120*l.*; 1892, 100*l.*; 1893, 97*l.*; 1894, 77*l.*; 1895, 74*l.*; and in 1896, 54*l.* To further reduce the expenditure on this item will only tend to impair the efficiency of the Society's work. The losses by death and resignation have been unusually heavy during the past year, and the number of new members elected has only been small. The number of members now stands at 297, viz.: annual, 202; life, 93; honorary, 2. During the year 7 new members were elected, viz.: 5 annual and 2 life, 3 life and 5 annual. By resignation, 10 members. Total 18. Loss over gain, 17. The Council for some time past has had under consideration the advisability of raising the life composition, as at the present rate of interest the composition is found to be unremunerative. It is therefore proposed to submit to the general meeting a resolution making the life composition 7*l.* 10*s.* instead of 5*l.* as at present. Of this sum it is proposed to fund 5*l.*, and to treat the balance as current account. Mr. Mill Stephenson, one of the hon. secretaries, finding that he is no longer able to give the time and attention required for the Society, will not offer himself for re-election. The Council desires to express its great regret at the loss of the services of Mr. Stephenson, which have been of great value to the Society. Mr. Ralph Nevill, F.S.A., seconded the adoption of the report, which was carried unanimously. The following gentlemen, Lieut.-Col. Godwin-Austen, F.R.S., Rev. R. M. Blackist, M.A., Hon. G. C. Brodrick, D.C.L., and Messrs. Robert Hovenden, F.S.A., J. J. Howard, LL.D., A. J. Style, and John Watney, F.S.A., were re-elected members of the Council, and Mr. Mill Stephenson was also elected on the Council to supply a vacancy. The retiring auditors, Messrs. C. T. Davis and W. F. Potter were also re-elected, as likewise the collector, Mr. W. P. Ivatts. The Rev. T. S. Cooper was re-elected Hon. Secretary. The Chairman proposed a vote of thanks to Mr. Mill Stephenson, and spoke highly of the way in which he had carried out his duties. Mr. R. Nevill seconded, and said Mr. Stephenson was not only a good business man, but a skilled antiquarian. This was carried. The meeting was then made special, and on the motion of Mr. R. Nevill, the following resolution was adopted:—"That the Life Composition be raised from 5*l.* to 7*l.* 10*s.* with the usual entrance fee, and that the sum

of 5*l.* be invested, and the balance treated as current account." The proceedings terminated with a vote of thanks to the Chairman.

ENGINEERING SOCIETIES.

THE INSTITUTION OF CIVIL ENGINEERS.—At the ordinary meeting of this Institution on the 30th ult, Mr. John Wolfe Barry, C.B., F.R.S., the President, in the chair, the paper read was on "Electric Lifts and Cranes," by Mr. Henry W. Ravenshaw. This communication referred to the application of the electric motor to the working of lifts and cranes. Where hydraulic power was available, its simplicity afforded many advantages, although in the ordinary form of hydraulic motor as great an amount of water was used with a light load as with a heavy one. The electric motor, however, only absorbed current in proportion to the work developed, and this fact alone justified its application in certain cases. The chief requirements of the motor were sparkless commutation, self-adjusting brushes, and automatic lubrication. Shunt machines were generally used on account of their regular speed with varying loads; a few turns of series winding were, however, sometimes added to give prompt starting. Worn-gearing was employed, and gave compactness and silent running, with a quick pitch for the worm; ball-bearings and an oil-bath were recommended. To give good results, however, the ball-races must be of high-class steel, and be ground perfectly true after hardening. A special form of rope-drum, made by Messrs. Easton, Anderson, & Goolden, Limited, and the Sprague screw elevator with ball-nut, were described. The regulating gear should provide prompt and accurate control, absence of jerks, small current consumption, and regular speed. Resistance was necessary in the circuit of the motor at starting to prevent a great rush of current; and this should be controlled automatically, as it was impossible for the attendant to tell the position of the switch when a hand-rope was used. The automatic controller used by the Otis Company was described, as well as an arrangement controlled by a centrifugal governor which had been designed and used by the author. Magnetic brakes were advocated, the cage being automatically stopped when the current was accidentally broken. The magnet should be fitted with non-conductive resistances to prevent sparking on breaking the circuit. Tests of an Otis elevator and a curve showing the energy consumed under varying loads were given. Electric cranes presented several marked advantages over those driven mechanically, owing to the flexibility of the control of the motor and the simplicity of the conductors for transmitting the power. The relative advantages of the use of a separate motor for each motion, and of a single motor and friction-clutches were discussed, the mechanical simplicity in the one case and the electrical simplicity in the other enabling either system to be used with good results. Tests were given of a 20-ton electric crane at Woolwich Arsenal, arranged on the single motor principle, friction-clutches being used to actuate the various movements. The collectors for the current, with the method used for insulating them, were described. Owing to the special requirements of this crane much gearing was necessary, and a heavy chain-block, weighing nearly two tons, was fitted. The efficiency was thus reduced, especially at light loads, and the horse-power delivered to the load, as well as that delivered to the block, was given to enable the mechanical losses to be more readily obtained. A total efficiency of 53.42 per cent. was obtained when the load on the hook only was considered, and of 58.28 per cent. when the weight of the block was included in the load. To drive the outer carriage at the rate of 54 ft. per minute, 8.4 c.h.p. was required, and 10.2 c.h.p. to traverse the load radially at the rate of 32.4 ft. per minute, both with a load of twenty tons.

LECTURE HALL, &c., PRESBYTERIAN CHURCH, ROATH PARK, GLAMORGANSHIRE.—The memorial stone of the new lecture-hall, school-room, and classrooms for the Presbyterian Church of England, which are to be erected on a site near Roath Park, was laid recently by Lord Windsor. The church and schoolrooms, &c., will have a frontage to Wellfield-road, the style of the buildings being Early English. The architects are Messrs. Habershon & Fawcaker, and the contractors Messrs. Knox & Wells.

Books.

Chemistry for Engineers and Manufacturers.
Vol. II. By Messrs. BERTRAM BLOUNT and
A. G. BLOKAM. C. Griffin & Co.

THIS is a well-written volume, devoted to the chemistry of manufacturing processes, and forms the companion volume to the "Chemistry of Engineering, Building, and Metallurgy," noticed some time since in these columns. The chapters on lime, cement, and clay industries merit special attention. We are reminded that commercial lime of good quality contains 85 to 90 per cent. free oxide of calcium, the remainder being calcium carbonate left unburnt or re-formed by exposure to air, calcium hydroxide (from absorption of moisture after burning), and calcium silicates and aluminates produced by the action of the lime on the siliceous constituents of the limestone and fuel ash.

The principles which underlie the setting of common mortar are clearly explained. When freshly slaked lime is allowed to dry, it sets to a hard mass, which, however, is considerably smaller in volume than the wet lime, and therefore, forms shrinkage-cracks. Admixture with sand prevents this. This first stage or "setting" depends on the general property of very finely divided amorphous substances, such as kaolin, of drying to a hard caked mass. This change takes place with lime, and then a further hardening occurs, due to the absorption of carbonic anhydride from the air, a coating of calcium carbonate being formed, the insolubility of which makes the mortar permanent under ordinary weather conditions. In brick walls access of air is so slow that uncarbonated lime remains in the interior for years. The desirability of carefully slaking the free lime in hydraulic limes by cautious addition of water, as is the custom in France, is referred to, otherwise there is danger of the slaking continuing after the cement has partially set, causing disruptive strains. In conclusion, we confidently recommend this volume as a practical, and not overloaded text book, of great value to students.

Supplementary Volume to Thermo-dynamics.
By J. PARKER, M.A. London: Sampson Low, Marston, & Co. 1896.

THIS volume is supplementary to the treatise on Thermo-dynamics which we reviewed last summer. It consists of ten chapters, which treat of various difficult problems in dynamics and physics. We are at a loss to understand for whose benefit the book has been written, and the preface gives us no help. The reader is irritated occasionally by a want of lucidity and a certain vagueness of statement. The last chapter is a recapitulation of the chief points of novelty or importance (in Mr. Parker's opinion) contained in this and the preceding volume. The following extract shows how closely its style approaches that of the "Shorter Catechism" taught to Scotch school children:—

"Q. What has Carnot's principle to do with tidal friction?"

"A. Carnot's principle leads directly to the theory of exchanges and the theory of tidal friction" (Articles 49, 71, 72).

Evidently, in the author's opinion, Thermo-dynamics is the parent science whose importance has been overlooked in this age of haste and worry.

There is a great deal about electricity in this book, mostly in disjointed fragments, which prove that Mr. Parker is not well read in technical electrical literature. He says, for example, that the position of the brushes on the commutator of a dynamo depends on the speed of the machine. This statement needs considerable qualification. It is shown that Lenz's law, in a case where it is not applicable, fails to give us the direction of the induced current. This is scarcely instructive. The author often assumes that his readers are ignorant of the most elementary electrical facts, and yet he defines inductances, and gives expressions for the electro-magnetic energy of circuits. Chapter 8, entitled "A case of Induction," gave us a great deal of trouble. When the sliding wire is protected by an iron cylinder and moves on the rails we understand Mr. Parker to say that it does not cut any lines of force. We fail to make sense of this. The rest of the chapter is a description of how to make a continuous current dynamo which has no commutator and needs only two collecting rings. It took us a considerable time to find this out, as the dynamo

is of a purely academic design. It was disappointing to find out that it is vitiated by a fallacy, and that in practice or theory the electrical output would be zero. We would not advise Mr. Parker to proceed with the designing of dynamos of this type before he has read descriptions of the Siemens Electroplater, the Forbes', and the Oerlikon dynamos, which have no commutator, and yet produce a continuous current. The efficiency of unipolar dynamos is, however, doubtful. This volume, like its predecessor, proves that the author has ability, but he has certainly not succeeded in writing either an interesting or a useful book.

Manual of Electrical Undertakings. 1896.
EMILE GARCKE, M.I.E.E. London: P. S. King & Son.

THIS book contains the accounts and other particulars of many electrical undertakings. They are arranged under the headings of Telegraph, Telephone, Electricity Supply, Traction, &c. Some interesting historical matter is included, and a very complete list of all the electrical companies registered in each year since 1856. Under the heading of Electricity Supply, there are a good many omissions. No mention is made of the supply stations at Aberystwith, Ayr, Bury, Bray, Cardiff, Exeter, Kingston-on-Thames, Shorefield, South Shields, or Walsall. Again, in describing the systems of electricity supply adopted, brevity is often obtained only by becoming ambiguous and inaccurate. For example, we are told that at Portsmouth the system is "Horizontal Turbo-generators coupled direct to Ferranti and Parsons dynamos." It is true there is a Parsons steam turbine coupled to a dynamo, but nearly all the rest of the plant consists of horizontal compound engines coupled direct to Ferranti alternators. In giving accounts of the traction companies, there is no mention of the various systems adopted, although such accounts would be of far greater general interest than in the case of electric lighting companies. However, for a work of this kind, it is remarkably free from errors, and can be recommended to all business firms and everyone financially interested in electricity.

Chemical Recipes, being One Thousand Modern Formule for Producing all Kinds of Colours and other Chemical Compositions. By THE ATLAS CHEMICAL COMPANY, Sunderland.

THIS is the third edition of a useful collection of chemical recipes, which has met with remarkable success. It is essentially a trade compilation, and none the worse for that, the information all through bearing the stamp of practicality. In a compact volume of nearly 400 pages, provided with a capital index, reliable and practical manufacturing details are given for the preparation of paints, dyes, varnishes, stains, fireproof compositions, greases, oils, lubricants, putties, lacquers, &c., which will be found invaluable to many of our readers.

We are glad to see that stress is laid upon the necessity for using as the basis of the majority of paints only the purest white lead of the very finest quality. White lead should also be kept in a perfectly dry place until required for use, or it will seriously deteriorate in quality. The same remarks apply to red lead and to litharge when these substances are employed. We can heartily recommend this book as one of the best compilations of practical recipes in existence.

The Practical Polish and Varnish Maker. By H. C. STANDAGE. Spon.

THIS is a compilation of receipts and formulae, and general information useful to makers and users of varnishes and kindred preparations. The object of the book is stated by the writer to be to make available information which will enable an intelligent mechanic to prepare successfully his own polishes, varnishes, lacquers, and japans. So far as we have been able to test the particulars given, the author seems to have done his work with care and discrimination.

The most important part of the work is that devoted to the fabrication of varnishes for special purposes. We are reminded that the following qualities must be taken into account in estimating the value of a varnish:—Quickness in drying, hardness of film, toughness of film, amount of gloss, permanence of gloss, and resistance to effects of weather. It is no easy matter to secure in the highest degree the

right combination of desirable qualities. There is nothing in which attention to the minutest details, and the skill which comes only after long practical experience, count for more, than in varnish making. For these reasons the professional manufacturer will always have the advantage of amateur and casual concoctors of these preparations. Allowing for this, Mr. Standage's book will be found very useful and suggestive to many.

Correspondence.

To the Editor of THE BUILDER.

A SOCIETY OF DESIGNERS.

SIR,—Will you permit me, while thanking you for the very kind reference to my lecture on "Design and Designers during her Majesty's Reign," which I gave at the Society for the Encouragement of the Fine Arts on February 25, to give the date, 1886 (not 1871), when I made an unsuccessful attempt to form a "Society of Designers." This was achieved however, by the combination of a few of the younger men as recently as 1896 in the executive of the Society of Designers, of which I have the honour to be President.

This Society, which must benefit designers and the art of design, cannot pretend to meet altogether the requirements of design as a national expression of the art, and I am now at work on a scheme for organising and establishing a national institute of design, and hope that I may rely on your valuable assistance when the time arrives for the matter to be brought before the notice of the public and manufacturers, upon whose support I rely.

Will you allow me also to point out that the names of Randolph Caldecott and William Morris were mentioned as typical names of the past in connexion with design. Throughout my lecture I confined my remarks entirely to deceased designers. The name of Mr. Walter Crane I ventured to give as the one departure from this rule.

GEO. C. HARTÉ.
. The term "Society of Designers" does not seem a very happy one. Every painter of a picture is a designer. "Society of Decorative Artists" or "Decorative Designers," would be more applicable.—ED.

WAXING FLOORS.

SIR,—Perhaps some of your correspondents interested in polishing methods would tell me if there is any special way of waxing floors with paraffin wax instead of the ordinary beeswax? Also if any special implement is used, and where it may be had?—VISCOUS.

The Student's Column.

SPECIFICATIONS.—XIV.

BELL-HANGER.

THERE are various methods in vogue in bell-hanging, of which the principal are:—

- A.—By means of wires and cranks.
- B.—Electric bells.
- C.—Pneumatic bells.

Commencing with the first, they should be specified as follows:—

Bells.—The bells to be of various tones, and an average weight of 14 oz., with steel spring and brass tee-plate, and back spring carriage, each fitted with pendulum and indicator, and fixed on bell-board placed in position where directed in kitchen.

Bell Board.—The bell-board to be 1½ in mahogany, French polished (or deal), with small ovolo moulding on edge, and with name of room written under each bell, showing to which it belongs. Size of bell-board to be by (number of) bells.

Wires and Fittings.—The wires to be No. B.W.G. (size may vary from about No. 10 to No. 15), well stretched, and fitted in concealed zinc tubing, with the necessary cranks, purchases, and levers (or, if the student likes to be very exact, he may specify number and nature of fittings to each bell).

Bells and Pulls.—Supply and fix the following bells and pulls. The whole list should then be given of the various rooms, with the number of bells and pulls to each, together with their position, and also the situation where the bells are to ring. As for example:—

Drawing-room.—No. 1 bell, with two-lever pull, to ring in kitchen.

Bedroom.—No. 1 bell, with ceiling pull, to ring in kitchen.

Boudoir.—No. 1 bell, with lever-pull, to ring in kitchen.

No. 1 bell, with lever-pull, to ring in house-keeper's-room.

The pulls to have iron boxes and mouth-pieces, and to be of the following p.c. value. (Give list of the pulls of each kind, with their p.c. value, including, of course, the street-door pull.)

Electric Bells.—There are various ways in which these can be arranged. Perhaps the most useful, at any rate for domestic work, is to have a single bell with indicator, and here again there are varieties. Some indicators have pendulum movements, others have a mechanical replacement, and others, again, have electric replacement. The specification should state: The bells to be electric, and to be fitted up with one good-toned bell of 3 oz. weight, and indicator box of polished mahogany, with gold lettered glass screen, fitted with relay and mechanical replacement to ring from No. points. The wires to be No. 18 B.W.G., best quality copper wire, tinned, insulated with gutta percha, double covered with cotton, and afterwards varnished and enclosed in zinc tubes. The insulation is not to be stripped back beyond points of connexion.

Buttons and Pushes.—Give a list of the various buttons and their situation specifying whether they are to be rosewood, ebony, china, or other material, and stipulate that they are to have German silver springs with platinum contacts; also enumerate the pendant pear presses, state of what wood they are to be made, and the length of flexible silk covered wire, and whether two, three, or four-strand bell-cord.

Battery.—The battery to be a Leclanché Battery, with No. porous cells, properly charged, and with zincs, &c. complete. Each cell of battery to have an E.M.F. of not less than 1½ volts. If there are to be any switch connexions, state where they are to be, as, for instance, the bell from the front-door may have a switch connexion, so that at night time it may ring in the servants' bed room, or on an upper landing, instead of in the kitchen. Similarly with some of the bells from bed rooms, bath rooms, and dressing rooms. State where the battery is to be placed, and specify its shelf or enclosure, if any is required. The battery should not be placed under the floor boards, as is sometimes done, but at the same time should be secure from too ready access to the middle-some. A small cupboard, with lock and key, and space for keeping a spare stock of sal ammoniac, and even other material, is a good arrangement. A glass panelled door is also an advantage, so that the cells can be seen.

Testing.—Provide the sum of 2l. 2s. to be paid for testing the electric bells and fittings by the expert to be appointed by the architect, who will not approve the electric bells until such testing has been done, and the expert's fee paid.

Pneumatic Bells.—Bells are to be fitted up on the pneumatic system by Messrs. whose p.c. price for this work is which amount is to be paid to them by the contractor within one month after the production of the architect's certificate. The bells will be fitted up before the plastering is done, and particular care is to be taken by the contractor that no damage is done to tubes, boxings, or other work in connexion with the bells.

N.B.—As pneumatic bell-fitting is rather out of the ordinary run, it is advisable to get a price from a reliable firm, and include that as a provisional amount, especially as the primary essential to successful working is careful workmanship and high quality in material.

Speaking Tubes.—Fit up speaking tubes from to with $\frac{3}{4}$ in. composition tubes (for other size, according to circumstances; $\frac{3}{4}$ in. is a good average. Zinc or copper tube may be used, but, taking all things into consideration, composition tube is generally the most satisfactory).

All bends in speaking tubes to be in cast zinc (or brass), and the tubes are to be finished at ends with brass screw collars, oval mouth-pieces, and whistles, with indicators (state whether the mouthpieces are to be in cocus wood, ivory, ebony, or boxwood). The ends of speaking tubes in to have silk braided flexible tubing, 3 ft. long, with brass clips, and $\frac{1}{2}$ in. mahogany board. (If, as may sometimes occur, any ends are to have mouth-pieces only, without whistles, enumerate them separately. Generally indicators are advisable with all whistles, but where there is only one whistle at any point, the indicator may be omitted if there is no danger of confusion).

Telephones.—It is scarcely advisable to specify telephone work for the ordinary contractor to find a sub-contractor who will do the work at the cheapest rate, and it is better for the archi-

tect to select the firm who are to actually do the work, and to include their price as a provisional amount. Should, however, the student be disposed to specify his work in detail he must deal with the following parts:—The receiver, the transmitter, the battery, the wiring, and, desirably, the lightning protector. The receiver and transmitter are usually, though not necessarily, in one instrument, the Gower-Bell, the Bell-Blake, and the Ader being all good examples. The battery is of the Leclanché pattern usually for private installations, with which alone we are dealing, and the cells should be for telephone work of the agglomerate block form rather than porous cells. The number of cells depends of course upon the length of wiring, and hence the electrical resistance. The E.M.F. of a Leclanché cell when newly fitted should be 1.6 volts. The wiring should be of No. 16 B.W.G. copper wire, tinned and insulated as described for electric bells. Switches should be provided where required. A fee for testing by an expert should be included. If our student architect chooses to qualify himself for the testing he is of course entitled to a distinct fee, as it means not only the necessary knowledge but the expenditure of capital in the purchase of delicate instruments.

OBITUARY.

M. EDMOND YON.—This eminent French landscape painter has died just at the moment when he was about to open an exhibition of his works at the Georges Petit Gallery. He was born in 1841, and was first known as a wood engraver and etcher for illustrated publications, but subsequently devoted himself exclusively to landscape painting, an art which he followed for thirty years, in oil, water-colour, and pastel. He was born at Montmartre at a time when that region was still a rural suburb, and, like Michel, devoted some of his early studies to views in its neighbourhood; but he subsequently painted in Holland, Normandy, and the South of France. The Luxembourg possesses a good example of his work, the Pont Valenti at Cahors; and he also painted a decorative landscape in the Hôtel de Ville of Paris.

M. HENRI GUÉRARD.—We have also to announce the death of this eminent engraver, who was president of the "Société des Peintres Graveurs," and one of the most brilliant representatives of the modern school of engraving. He excelled especially in the reproduction of paintings by the old masters, but also showed high powers as an original artist in engraving, both on wood and copper. He had made a large collection of paintings and other works of art, and was the inventor of the process called "pyrogravure."

THE REV. DR. SPARROW SIMPSON.—We have to record with regret the death of the Rev. Librarian of St. Paul's Cathedral, who was an archaeologist with a good deal of special knowledge, particularly in regard to the great cathedral with which he was associated, as well as in connection with other matters relating to the history of old London and its buildings. His historical knowledge about St. Paul's he had embodied in a book entitled "Gleanings from Old St. Paul's." Dr. Simpson was Rector of St. Vedast, Foster-lane, in the history of which church he had taken also great interest.

GENERAL BUILDING NEWS.

PROPOSED ADDITIONS TO SCHOOLS, BRONBURN, NEAR EDINBURGH.—Additions and alterations to these buildings are to be carried out. A new front of two stories, with ornamental central gable, and a dressed stone porch, have been designed for the addition. The architects for the additions are Messrs. Lendebetter & Fairley, of Edinburgh.

CLUB BUILDINGS, SOUTH SHIELDS.—New premises are about to be erected in Catherine-street, South Shields, to serve as a club for the Unionists of the Borough. The building will be four stories in height, with a frontage of 40 ft. and a depth of 55 ft. On the ground floor will be an entrance hall, with a broad staircase leading to the first floor. On one side of the hall there will be a reading room, while on the other side is a smoke room. To the rear of these rooms will be the cloak-room. The walls will be of glazed bricks. Beyond these again are the lavatories. On the first floor will be a billiard-room, 48 ft. long by 40 ft. wide, in which it is intended to place three tables. Above this will be situated the assembly room, of similar dimensions to the room below, and this is capable of being divided into three smaller rooms by collapsible partitions. The top of the building will be set apart for caretaker's quarters. A lift will run from the basement to the upper story, having communication with each floor. The whole of the basement will be utilised as cellars. The hall, cloak and other rooms will be heated by a system of steam coils, and the whole of the doors and woodwork will be of dark Spanish mahogany. The entrance from the street to the hall is reached by a lobby,

with bay windows on either side. The whole of the front up to the first floor windows will be of glazed faience work, and above this terra-cotta dressings, while the walls will be of deep red brick. The building has been designed by Mr. J. H. Morton, architect, South Shields.

PROPOSED DRILL HALL, BLAIRGOWRIE, PERTH.—Messrs. L. & J. Falconer, architects, Blairgowrie and Fort William, have completed plans for a proposed new Drill Hall at Fort William. The new building will be 115 ft. by 36 ft., and will comprise drill hall, armoury, orderly room, lavatories, &c.

MISSION CHURCH, OLDBURY.—On the 23rd ult. the foundation stones of a new mission church at Tat Bank were laid. The new church is to be erected in the Gothic style, at a cost of 1,000l., and will accommodate 250 persons. Mr. Lavender, Walsall, is the architect, and Mr. Kendrick, Walsall, the builder.

HEATH MEMORIAL CONVALESCENT HOME, LLANFAIRFECHAN.—On the 25th ult. these buildings, erected at Llanfairfechan (on a site overlooking Conway Bay), as a memorial to the late Mr. Robert Heath, were formally opened. The building, which is of local stone, with dressed stone facings and lined with bricks, comprises a three-storied block, containing day-rooms and dormitories for the accommodation of fifty patients, with suitable offices and servants' rooms, and a suite of rooms for the matron, advantage having been taken of the fall of the ground towards the sea to construct a basement floor. It contains a bagatelle-room, the dining-hall, lavatory, kitchen, scullery, larders, boot-room, &c. The rooms are provided with open fireplaces, and the corridors and principal rooms are heated by Messrs. S. N. Haden's low-pressure hot-water pipes. Bath-rooms are provided on each floor, and the sanitary fittings are by Messrs. Twyford, of Hanley. A gate lodge, with a washhouse and laundry connected to it by a covered way, has been built adjacent to the building. Mr. Thomas Bower, of Nantwich, is the architect, and Mr. Jobn Gallimore, of Newcastle, Staffordshire, the builder.

BUSINESS PREMISES, INVERNESS.—A block of buildings is to be erected in Academy-street, Inverness, by the trustees of the late Messrs. Strothers. The new block, which is to cost 7,000l., will have a frontage of 70 ft. to Academy-street, and a frontage of 50 ft. to the railway thoroughfare. On the ground floor of the building, which is to be four stories in height, there will be four large shops with cellars underneath. The first floor will be divided out into offices. The second floor will be similarly laid out, while the third floor will be constructed for family occupation. Both elevations will be faced in red sandstone from Ayrshire. The architect is Mr. William Mackintosh. The successful contractors are—Mason, Mr. Alexander Junor; carpenter, Mr. Peter Cameron; slaters, Messrs. James Gray & Son; plumber, Mr. A. J. Russell; plasterers, Fowler & Kennedy; painter, Mr. John Munro; and blacksmiths, the Rose-street Foundry Company, Inverness.

OPERATING THEATRE, SWANSEA HOSPITAL.—The foundation-stone has just been laid of a new operating theatre at the Swansea Hospital. The theatre is connected with the west corridor of the hospital, and is provided with two ante-rooms opening into the theatre, which is elliptic in form, and measures 26 ft. 6 in. by 22 ft. The walls are carried up to a height of 12 ft. All the sanitary fittings are to be supplied by Messrs. Adams & Co. The exterior of the building is designed to be in character with the present hospital. The contract has been entrusted to Mr. Henry Billings. The architects are Messrs. Wilson & Moxham.

HALL, EAST FREE CHURCH, BRECHIN.—A new hall has recently been erected at the East Free Church, Brechin. In the hall, accommodation is provided for 200 persons, and there is, besides, a vestry, with lavatory, &c., and a small scullery for the convenience of social meetings. Towards the street the building presents a gable containing a four-light window, filled with stained glass from the studio of Messrs. Ballantine & Gardiner, Edinburgh. The following contractors carried out the work from the designs and under the superintendence of Mr. T. Martin Cappon, architect, of Dundee and Brechin:—Mason work, D. A. Crabb; joiner work, George Ogilvie; plumber work, Charles Middleton & Sons; plaster work, J. & C. Thomson; slater work, James Scott; painting and glazing, J. C. Middleton; heating, A. L. Peacock.

FREE LIBRARY, THORNHIEBANK, RENFREWSHIRE.—The Free Library, built as a memorial to the late Mr. Alexander Crum, of Thornhiebank, has just been handed over to its trustees by Sir John Stirling Maxwell, Bart., M.P. The library is situated immediately opposite the Thornhiebank Print Works. The reading-room is 24 ft. by 48 ft. Behind the reading-room is a book store. Dr. Rowand Anderson, Edinburgh, was the architect of the building.

CO-OPERATIVE PREMISES, SACRISTON, DURHAM.—A branch of the Annfield Plain Co-operative Society was opened at Sacriston recently. There are five departments, with frontages to the Plaworth-road, the whole extending 200 ft. Over the shops is a hall providing seating accommodation for 700 persons, and behind is a yard with manager's house, warehouses, slaughter-house, stabling, and other out-offices. The whole are built of stone. The buildings, which have been designed by Mr. G. T.,

Wilson, of Blackhill, and erected by Mr. T. Hilton of Bishop Auckland, cost between 5,000*l.* and 6,000*l.*

GOLF CLUB-HOUSE FOR PETERHEAD.—The Committee of the Peterhead Golf Club have accepted the offer of Messrs. G. Scott & Son to erect a new club-house at Craigevan Links on the site of the former club-house recently destroyed by fire. The club-house is to be built from designs of Mr. James Taylor, jun.

BIBLE CHRISTIAN CHAPEL, EAST COWES.—A new Bible Christian Chapel has just been opened at East Cowes. The windows are of cathedral glass. Messrs. W. Brading & Son were the contractors, and the architect was Mr. J. Newnam.

FACTORY, NORTHAMPTON.—A new shoe factory for Messrs. Derham Brothers has been built on an elevated position on Brockton-street, near the Queen's Park Estate. The building has been erected, and the whole of the mechanical appliances arranged, in accordance with the plans of Messrs. Mosley & Anderson, of Northampton. The contract for building has been carried out by Mr. Robert Cosford; and the heating apparatus has been constructed by Mr. A. Marriott, of Higham Ferrers. The factory is lighted by electricity produced on the premises from plant laid down by Messrs. Whitney, Smith, & Co.

RUSTINGTON CONVALESCENT HOME, SUSSEX.—The Rustington Convalescent Home was opened recently by the Bishop of Chichester. The home is entirely for working men from all parts. It has been erected by Mr. Henry Harben, of Hampstead, at a cost exceeding 50,000*l.*, and Mr. Harben has also provided an endowment of 20,000*l.* The home is based chiefly on the separate system; there are seventeen rooms with one bed, ten with two beds, and two with four beds. It is lighted by electricity, stands in grounds of over nine acres, is set back 250*ft.* from the esplanade, and has a frontage of over 170*ft.* It is in the Georgian style, the architect being Mr. Frederick Wheeler, of London. The electric lighting is by Messrs. Drake & Gorham, from the designs and under the superintendence of Mr. W. H. Preece, C.B.; and Messrs. Bostel & Sons, of London, have done the plumbing and engineering work.

BREWERY, DUNDEEN, EDINBURGH.—A new brewery, for Messrs. Blyth & Cameron, has just been erected at Dunnington, from plans prepared by Mr. P. L. Henderson, Edinburgh.

MASONIC HALL, GLASGOW.—The new Masonic Temple, which has been built to accommodate the Glasgow brethren of the craft, was recently thrown open for public inspection. The site is on the north side of West Regent-street, and two buildings have been erected on it, the one fronting the street and the other on the back portion of the ground. The former has been almost entirely arranged in suites of offices. The other one is devoted entirely to masonic purposes. The designs were prepared by Mr. J. L. Cowan, who has adopted a free treatment, of the English Renaissance. The building is four stories in height. The basement is occupied by reception, cloak, and ladies' rooms, with a purveyor's kitchen, as well as a machinery-room containing the appliances for mechanical heating and ventilation. On the street level a hall has been constructed 144*ft.* long by 3*ft.* wide. There is a dado panelled in stained wood 9*ft.* high, and above the walls are treated somewhat elaborately, with capitals between the windows, which run round three sides. The lights are semi-circular headed, and are filled with stained glass on which are displayed the arms of Grand Lodge, the Provincial Grand Lodge, the arms of the City and various masonic symbols. The hall is seated for 400 persons. On the next floor there is a lodge-room 45*ft.* by 26*ft.*, and a large adjacent room with committee, smoking, and other rooms. There is a lesser lodge-room above, 30*ft.* by 24*ft.*, and there are a store-room and caretaker's house of three apartments on the top floor. The total expenditure was about 16,000*l.*

RENOVATION OF ST. IVES WESLEYAN CHAPEL.—St. Ives Wesleyan Chapel was re-opened on the 25th ult., after renovation. The pillars which stood in the centre of the chapel have been removed, and an iron roof now spans the entire building. The body of the chapel has been re-joined, and new pitch-pine seats have been fixed throughout. The gallery has also been re-joined with pews similar to those below, and the floors have been rearranged. Mr. O. Caldwell, of Penzance, is the architect, and Mr. W. J. Winn, of Helston, the contractor.

RENOVATION OF HAMPRESTON CHURCH, DORSETSHIRE.—The ancient parish church of All Saints, Hampreston, which has been undergoing complete renovation, was recently re-opened by the Bishop of Salisbury. The foundations throughout have been underpinned, the galleries taken down, a north aisle and porch of fourteenth century design and an organ chamber erected; the walls throughout have been straightened and re-cased with local red stone, the chancel arch heightened, the tower with its west window opened to view, with the old font on its floor, thus providing a baptistry; the nave roof has

been brought into sight, the chancel roof boarded in oak with carved bosses, the entire floor re-laid with wood block; and heating apparatus provided. The entire church has also been re-seated, while every ancient feature has been carefully preserved and re-instated. The restoration has been carried out by Messrs. Merrick & Son, builders, under the instruction of Mr. Romaine-Walker, of London.

ADDITIONS TO THE DRILL HALL, BRECHIN.—Additions are being made to this building. The new portion provides, on the ground-floor, two ante-rooms with lavatories, &c., and on the first floor a large officers' room and a lounge-room for the men, besides a wide balcony overlooking the hall, running the full width of the building. The exterior is somewhat richly treated with pilasters and stepped gable. The architect is Mr. T. Martin Cappon, of Dundee and Brechin, and the following are the contractors:—Mason, D. A. Crabb; joiners, Wm. Black & Son; plumbers, James Kincaid & Son; plasterer, James Gibson; slater, Wm. Fraser.

DRILL HALL, MONTROSE.—A new hall has just been erected for the accommodation of the Montrose detachment of the 2nd V.B.G.H. Plans were prepared by Mr. John Sim, C.E. The main hall is 77*ft.* by 58*ft.*, the roof being in one span. It is 23*ft.* high to the wall beam, and 30*ft.* to the crown of roof. Two 8*ft.* wide double doors give access to the old hall. At the end of the hall, fronting the street, an armoury, clothing store, lavatory, &c., have been provided, while the Instructor's house occupies the floor above that. The contractors were—Masons, Messrs. Ford & Son; joiner, Mr. John Davidson; plumber, Mr. A. Taylor; plasterer, Mr. Burness—all of Montrose. The contracts amounted to a total of 2,300*l.*

FREE GARDENERS' HALL, EDINBURGH.—The new Free Gardeners' Hall, in Picardy-place, Edinburgh, has just been opened. A spacious reception-room, or saloon, occupies the front part of the ground floor, and in the rear is the large hall, which is capable of accommodating an audience of over 500 people. Over the entrance to the hall is a small gallery, which is reached by a staircase from the inner hall. The two upper floors of the main building are planned to suit the requirements of the Society, and the basement will be used for commercial purposes, being entered from the lane at the back. The whole of the building is lighted by electricity. Altogether the premises have cost about 5,000*l.* Messrs. Dunn & Findlay were the architects.

COUNTY SCHOOL FOR GIRLS, BANGOR.—The memorial-stone of the Bangor County School for Girls has just been laid. The school, which will provide accommodation for 100 girls, is being built to the plans of Mr. J. H. Phillips, of Cardiff, the contractors being Messrs. P. & J. Williams, Upper Bangor.

ST. PAUL'S U.P. CHURCH, ABERDEEN.—The new church in Rosemount Viaduct, for the St. Paul's U.P. congregation has just been opened. The building has accommodation for 650 worshippers. A gallery runs right round the church, that portion behind the pulpit at the east end being set apart for the choir. In the basement are three halls, the largest capable of accommodating about 250 persons. A house for the church office is also provided in the basement. The contractor for the church, which will cost between 5,000*l.* and 6,000*l.*, were—Mason work, Leslie Smith; joiner, Hendry & Keith; painter, William Philip; plasterer, W. Ross; plumber, John Thom; heating apparatus and electric light installation, Shirras, Laing, & Co. The architects were Messrs. Ellis & Wilson.

BANK, HIGH-STREET, BELFAST.—New bank buildings have just been erected in High-street, Belfast, for the National Bank Limited. The general contractors were Messrs. H. & J. Martin, and the architect was Mr. W. Batt, of Belfast.

OFFICES OF THE NORWICH AND LONDON ACCIDENT ASSOCIATION.—This company will remove into new offices at 13, Waterloo-place (as their West-end offices), as soon as necessary alterations, decorations, &c., are carried out. The electric-lighting installation is being done by Mr. King, of Maidstone; the fittings by Mr. B. E. Nightingale, of Lambeth; the fascia lettering by Messrs. Clarkson Bros.; and the builders' work by Mr. H. S. Stephens, under the superintendence of Mr. Alfred E. Nightingale, architect.

ALTERATIONS AT ST. GEORGE THE MARTYR, SOUTHAMPTON.—A new ceiling has been erected in place of the old one, which was seriously impaired, if not actually unsafe. The design represents cherubs joining in the "Te Deum." The work has been carried out by Messrs. Bridgeman from the designs of Mr. Basil Champneys. The material used is carton-pierre. There is a frieze, including in its decorations the arms of various City companies which have contributed towards the cost, and those of London and the Borough of Southwark. The electric light has been installed by Messrs. Benson, of Bond-street, and the church has been cleaned and painted throughout.

SEVERN END, NEAR WORCESTER.—The quaint old residence of Sir Edmund Lechmere, Bart., which was nearly destroyed by fire last October, is now Messrs. Lewis Sheppard & Son, architects, Worcester. Messrs. Collins & Godfrey, of Tewkesbury, are the builders.

CHURCH OF ST. GILES, ROWLEY REGIS.—Plans for the rebuilding of the church and tower of St.

Giles, Rowley Regis, Staffordshire, at a cost of about 10,000*l.*, have been submitted and approved. Messrs. Lewis Sheppard & Son, Worcester, are the architects.

SANITARY AND ENGINEERING NEWS.

WATER SUPPLY, MORPETH COUNTY ASYLUM.—The Asylum Committee of the Northumberland County Council have accepted the plan of Mr. D. Balfour, M.Inst.C.E., of Newcastle, to prepare plans for and report on, a gravitation scheme of water supply for the County Asylum at Morpeth, to be procured from Upland Springs, six miles north of Morpeth, and delivered into an elevation tower for distribution.

SEWAGE PURIFICATION, MORPETH.—A special meeting of the Morpeth Town Council was held recently in the Town Hall, the Mayor, Councillor Anderson, presiding, when a report and plan were submitted by Mr. D. Balfour, M.Inst.C.E., of Newcastle, on the bacteriological purification of sewage. It was agreed to defer further consideration to another meeting of the Council.

CARSHALTON SEWERAGE SCHEME.—On Saturday, March 27, the foundation stone of the main pumping station and sewage disposal works in connexion with the sewerage of the Carshalton Urban District was laid by Mr. J. Tyler, Chairman of the Urban District Council. The works of which this was the inauguration have been contemplated for a considerable time. Mr. Baldwin Latham was first called in by the then local authority in May, 1892, to report as to the drainage of the town. He then advised them to take their sewage to a site of fifty-one acres in the parish of Mitcham, to which practically the whole of the sewage of the district would flow by gravitation, and there purify it by brood irrigation. Parliamentary powers were obtained in 1893 for the compulsory purchase of this site, but, owing to the strenuous opposition of the landowners, it was thought that the acquisition of this site would be very costly, so that the District Council abandoned the scheme and called upon Mr. Baldwin Latham to report on three sites which had been offered to them. Of these the present site of 20 acres on the west side of Wrythe Green-lane, in their own district, was selected, the small area necessitating some system of chemical treatment, and, owing to the levels of the ground, the sewage of two-thirds of the present population requires to be pumped. Further, a few houses will be drained into the Croxson Rural District Council's sewers. In the scheme in course of construction the sewage from the district is brought on to the site by two main sewers—high and low level. The high-level sewer, which drains a larger area, although at present a smaller population than the lower, is at the works an 18-in. pipe sewer, with an inclination of 1 in 600. It is at a sufficiently high level to discharge into a channel outside the building. The low-level sewer, which deals with that part of the district too low to drain into the other, is at the works an 18-in. pipe sewer with an inclination of 1 in 700. It flows into a pump well, and the sewage is raised 50*ft.* into the channel into which the high-level sewage flows by a duplicate set of three-throw pumps worked by 6-h.p. gas-engines and controlled by automatic hydraulic controlling gear, which puts the pumps in and out of gear as required, and has been used with much success at Rhyll. About ten low-lying houses on this sewer drain into a pump well under the Hackbridge-road, where the sewage is to be lifted 10*ft.* by a set in duplicate of Latham, Lengerke, & Riggs's automatic hydraulic pumps, worked by water from the Water Company's mains, which water is afterwards used for fishing. The sewage passing along the channel outside the buildings passes through a 12-ft. Latham's sewage extractor into a sewage-mixing channel, where lime in solution and sulphate of ammonia are added, then through continuous flow-settling tanks, of which three are provided, two always being in use, while the third is being emptied and cleaned. It then passes through artificial filters of 12 acres area, constructed in the same manner as those put down by Mr. Baldwin Latham at Friern Barnet Sewage Works in 1886. The effluent from these filters, to further purify it, is passed over the land and thence taken into the River Wandale at about 5,000 yards above Deeds' Mill by a 24-in. brick barrel drain 900 yards in length. The buildings at the works will be a block consisting of an engine-house containing the gas engines for the pumps, and two 13-h.p. gas engines to drive the machinery for chemical treatment and sludge pressing; a treatment house containing the necessary machinery for grinding the lime, pumping water, lifting, mixing, and pumping the sludge, all of which is driven from a main shaft by friction gear; also the extractor and duplicate 12-h.p. gas engine to drive it. A press-house, containing three sludge presses and cloth-washing machine; water tower, with tank; chemical stores, workshop, and offices, and two six-roomed cottages for attendants. They will be built of London stocks, ornamented with red brick gauged arches, corbels, and courses, with terra-cotta sprinklers and keystones, and bay roofs. The total estimated cost of the works is about 35,000*l.*

STAINED GLASS AND DECORATION.

WINDOW, ST. MARY'S PARISH CHURCH, LYNN.—A third light window has recently been fixed in the north aisle of this church, in memory of the late Mrs. Battersby, of Lynn Hall. It is from the studio of Mr. E. Kempe, London.

WINDOW, QUEENSTOWN, SOUTH AFRICA.—The large west window of St. Michael and All Angels' Church, Queenstown, South Africa, has just been filled with stained glass in memory of Sarah Agnew, the subject representing the Ascension of Our Lord. The work was carried out by Messrs. W. James & Co., of London.

MEMORIAL WINDOW, NEWCASTLE-UNDER-LYME.—A stained-glass window has just been dedicated at St. Giles' Parish Church, Newcastle-under-Lyme. The window has been supplied by Messrs. Hardman & Co., of Birmingham, the cost being about 1,000l. The design, occupying the seven principal lights is the Crucifixion.

FOREIGN.

FRANCE.—The jury of painting at the Champs Elysées Saloon have admitted only 1,600 pictures this year, as against the 2,400 admitted last year. There is a question of placing for the time being, all the exhibitions and competitions of the Salons in the garden of the Palais Royal, which will be altered for the purpose, whilst the new palace is being built in the Champs Elysées.—The annual exhibition of "Pastellistes Français" was inaugurated on Thursday last, April 1, by the President of the Republic.—The Government has just laid before the Chamber of Deputies a new project for the restoration of the Cour des Comptes. Abandoning the idea of rebuilding the old palace on the Quai d'Orsay, where it is now proposed to build a new station for the Chemin de Fer d'Orléans, the State intends to place the Cour des Comptes in the Rue Cambon, and at the same time install the Museum of Decorative Arts in the Pavillon Marsan.

The "Société des Artistes Indépendants" has opened its thirteenth exhibition, on Friday last, April 2, at the Palais des Arts Libéraux, at the Champ de Mars.—The town of Argenteuil has just opened a competition for the erection of a Hôtel de Ville and a Justice de Paix.—M. Cordonnier, sculptor, is at work on the monument to Pasteur which is to be erected at Lille, on the Place Philippe le Bon, in the centre of the University quarter. This monument consists of a female figure symbolising Science, who holds on her knees a young child whom she is inoculating with the virus for rabies. The inauguration of this monument will take place in June, 1898.—The sculptor, A. Lenoir, has been commissioned to execute the monument to Edmond de Goncourt commissioned for the town of Nancy.

The monument to the poet, Paul Verlaine, which is also to be erected in this town, will be executed by M. Carrière.—The death is announced, at the age of 46, of M. Xavier Ferrand, architect, of Cannes, brother of Stanislas Ferrand, architect, Conseiller-General of the Seine and Editor of *Le Bâtiment*. It is to M. Xavier Ferrand that Cannes owes its splendid system of drainage, which is now being carried out.—The death is also announced of M. Thibault, architect, of Paris.—The director of *Bâtiments Civils* has ordered the immense scaffolding to be erected again round the Arc de Triomphe, which were removed at the time of the Imperial Russian visit to Paris. M. Esquié, the architect who is directing the restorations of the monument, calculates that it will take about ten months to finish the necessary repairs.

GERMANY.—Statues are to be erected at the Royal Technical College of Alfred Krupp, the great iron founder, and of Siemens, the electrician.—The National Gallery at Berlin will henceforward be under the same administration which has control of the Government Museums in Prussia.—We understand that the "Cross Church," which was burned down at Dresden some time back, is to be re-erected at once, and the builders are already at work.—In connexion with the competition for the design of a new synagogue at Chemnitz seventy designs have been sent in. The premium has been awarded to a local architect.—The central administration of the Court theatres at Berlin are to occupy some special offices in the Dorsten-strasse, which is not far distant from the Royal Opera House.—The city of Basle will be the scene of several interesting ceremonies during the autumn, in relation to the celebration of the 400th anniversary of the birthday of Holbein, who was born in 1497. At the same time, the popular German painter, Arnold Böcklin, will be celebrating his seventieth birthday in the same city. Distinguished artists, who have been much divided of late years, and have held various exhibitions representing their different coteries, will this year unite for a general exhibition under the auspices of the Bavarian Government, an influential central council having been formed representing the various interests. The Government has undertaken to invite foreign artists to send exhibits.—The seventieth birthday of the German sculptor, Kopf, is being celebrated at Berlin. One of his best-known works is an excellent bust of the late Emperor William, belonging to the National Gallery at Berlin.—The late Herr Salzmann's place as cathedral architect at Bremen will be filled by Herr Ehrhardt, of Berlin, who is a well-known authority

on German church architecture.—We are pleased to record the able manner in which the Berlin Metropolitan Railways managed the traffic during the festivities early this week. It appears that the number of tickets sold was quite unprecedented; that there was no hitch anywhere. The automatic ticket distributors were found exceedingly useful, penny tickets being sold by these machines.—The weight of the Equestrian Statue of the new National Monument is 1,770 cwt. The whole of the bronze work is by Messrs. Gladenbeck and Messrs. Martin & Piltzing. We notice that all the students at the Royal Technical College at Berlin, with their Professors, took a prominent part in the celebrations.—In connexion with the great ceremonial at the Academy of Arts, a banquet was arranged for the Royal Academicians, at which Professor Otzen, the well-known architect, was entrusted with the principal oration.—At Charlottenburg the municipality recently decided to construct its own electrical works, and has voted for this purpose a loan of 850,000l.—Rapid progress is being made with the new Schöneberg Bridge at Berlin.—Recently there was considerable discussion in the Berlin Municipality as to the advisability of changing the entire system of horse tramways into electrical tramways, and the arrangement of a uniform charge for all distances one penny per ride.

AUSTRIA.—A new theatre, the "Urania," is to be erected at Vienna, on the principle of the similar institution at Berlin, and will be a solely for the presentation of scientific research in a popular form.—"Excursions to the Moon" will be subject of the first production.—Rapid progress appears now to be made on the municipal gas-works, and a large number of tenders are being constantly invited for different parts of the town. Nearly all the commissions, however, go to Austrian firms.—Following the example of Germany, the Austrian Government has decided to arrange for a good representation of its industries and arts at the Paris International Exhibition of 1900, and the general commissioner who has been selected to represent the authorities will have an influential committee to assist him.

WESTERN AUSTRALIA.—The Melbourne Trades Hall Council has received from the secretary of the Builders' Labourers' Society in Perth a letter describing the condition of the building trade and the position of working men in Western Australia. The letter stated that the wages for carpenters were 11s. per day; bricklayers, 12s.; plasterers, 11s.; and builders' labourers, 9s. All the trades were demanding 1s. per day extra, with the exception of the bricklayers, and it that was not agreed to a general strike was certain, both in Perth and Fremantle. The rates quoted might seem high, but the purchasing power of wages was exceedingly small there, and 6s. per day in Victoria or New South Wales would purchase more of the necessities of life than 10s. in Western Australia. Lately the price of provisions had gone up to famine rates, and as much as 17. per week was charged for a miserable three-roomed house, situated on sand-hills, with no roads and no regular supply of water, with the thermometer registering from 100 deg. to 108 deg. in the shade. A man with a wife and three children could not secure the necessities of life under 2l. 10s. per week.—*Morning Post*.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. H. O. Cresswell has changed his address from 30, Gray's-inn, Strand to 17, Buckingham-street, Adelphi, W.C.

"SKETCHES OF LONDON STREET ARCHITECTURE."—In regard to the correspondence in our columns as to the disputed authorship of the design of the house in Sloane-street shown in our issue of February 27, we have received a letter from Mr. Fairfax B. We, adhering absolutely to the statements in his former letter, and stating that as he wished to have no further communication with Mr. Williams either directly or indirectly he should take no further notice of any of his remarks except to take legal action against him. We have also received a letter from Mr. Francis, a draughtsman in Mr. Wade's office, confirming Mr. Wade's statement. We cannot print any more letters on the subject.

EXCAVATIONS IN THE BAIL, LINCOLN.—Digging operations were recently commenced close beneath the foundations of Mr. Wilson Blaze's house, to ascertain whether the column known to exist there is double, as has hitherto been supposed, or triple, like its neighbour unearthed a short time since.

ESTIMATES, 1897-8.—In the estimates for the twelve months ending March 31, next year, provision is made for "votes required for 1897-98," for sums in respect of the Record Office additional buildings, 30,000l. (3,887l. for completion), the Patent Office extension, 11,350l. (70,794l. for completion), the Admiralty extension, 40,600l. gross (55,938l. for completion), and the General Register House, Scotland, extension, 13,000l. (20,500l. for completion). The expenditure upon the new Admiralty buildings is given as being 183,247l. up to the end of November last. There is a vote of 3,000l. for completing (at a revised total estimate of 23,900l.), a new laboratory on the ground near Clement's Inn, instead of that at Somerset House. For the Survey of the United Kingdom an approximate amount of

220,571l. is assigned; the calculated cost of completion being a further sum of 3,244,435l. The survey will include the finishing of the new series of 1-in. maps, of the general revision of the 6-in. and 25-in. maps of Great Britain, which it is expected will be accomplished in thirteen years hence, and of the re-surveys of the counties of Scotland and Ireland to the 6-in. and 25-in. scales respectively.

We notice, moreover, a vote of 150l. for the maintenance and repair of the keeper's house, the boundary-walls, and the well-house, of Carisbrooke Castle. The castle, which, we understand, is in course of repair, as a memorial to H.R.H. the late Prince Henry of Battenberg, Governor of the Isle of Wight, was reconstructed temp. Elizabeth; and the keep was erected originally by, it is said, Cardif's nephew, Wightgar, circa 535. William Fitz-Osborne, lord of Wight, Carisbrooke, improved the defences in the eleventh century; the outworks of Elizabeth's reign were planned by Genebella, an Italian, who made the fortifications of Antwerp, destroyed forty years ago.

ROMAN REMAINS NEAR NUNEATON.—An interesting discovery has just been made at Hartshill, on the great Roman road running from London to Chester. One station, Manducandun, fell within the county of Warwick, and is now occupied by the village of Mancetter. Since 1773 there have been numerous discoveries indicative of the Roman occupation. About four years ago a Roman kiln was discovered, but the importance of the discovery was not realised until too late, and the work was too much destroyed to be of value or allow of a systematic examination. Recently, however, on the large side of the roadway, at what was known as the Caldecote Quarries, a second kiln was found, and in the uncovering very little damage was done. Other indications led to a careful search, and a third kiln, in a wonderful state of preservation, was unearthed. A quantity of pottery remains have been found, chiefly of the dark-blue slate colour, including a perfect specimen of a cinerary urn about 5 in. high. The kilns, which were discovered about 10 in. below the turf, are oval in form, and about 48 in. by 60 in.—*Sheffield Independent*.

ROYAL EXCHANGE PANEL PICTURES.—The clerk of the Merchant Taylors' Company and the clerk of the Skinners' Company write to us to say that, in addition to the gifts of pictures referred to in our last issue, the Merchant Taylors' Company and the Skinners' Company have jointly commissioned Mr. E. A. Abbey, A.R.A., to paint a picture commemorating an incident connected with the feud between these ancient Guilds, which was afterwards the subject of the well-known award of Lord Mayor Billesdon in 1484. We believe that Mr. Abbey, who is not in England at the present time, has not yet submitted his design for the approval of the two Companies and the Gresham Committee.

REFUSE DESTROYER, SHEFFIELD.—The Sheffield Corporation have built in the neighbourhood of Lumley-street, Attercliffe, a refuse destructor. The members of the Health Committee recently inspected the building, which was described by Mr. C. F. Wike, City Surveyor. The building has been erected by Messrs. Longden, at a cost of 6,000l., and the contract for the ironwork and cells was given to Messrs. Goddard, Massey, & Warner, of Nottingham. It has been necessary to make an approach road, paved with granite, at a cost of 4,000l. The road is built on girders and brick arches, and forms the roof for stores and workshops, a boiler-house and mortar-mills, the intention being to convert the cellars made in the destructor into mortar for building purposes. The Lumley-street approach level, but an entrance has also been arranged on the lower level. In connexion with the destructor is a weigh-house, and the depth of the foundation has been utilised in making a mess-room for the workmen. At present only six cells have been attached to the destructor. These will deal with 10 tons of ashpit refuse per day, but six more cells can easily be added on the other side. The flue is a specially designed one, and contains a chamber to capture the dust and deposit which might otherwise escape by the chimney. The shaft is 180 ft. high, but it is so designed that another 20 ft. or 30 ft. can be added to it.

THE SANITARY INSTITUTE.—At the annual meeting, held on the 24th ult., the Duke of Cambridge was re-elected President. Professor W. H. Corfield and Mr. Thomas Salt were elected new Vice-Presidents to fill the vacancies caused by the death of Sir George M. Humphry, of Cambridge, and Sir J. Russell Reynolds, President of the Royal College of Physicians. The report of the Council on the year's work was read.

IPSWICH BUILDING TRADES ASSOCIATION.—The annual dinner of the Ipswich Building Trades Association was held at the Crown and Anchor Hotel recently, the Chairman being Mr. A. Coe. In giving "The Town and Trade of Ipswich," Mr. C. E. Whitmarsh expressed pleasure that all differences in the building trade had by compromise been amicably settled. Mr. C. Borrett responded. Mr. Councilor Catchpole, in giving "Success to the Ipswich Builders' and Walton Building Trades Association," referred to the work performed during the past year. They had settled all matters without recourse to any drastic measures on the part of masters or employes, but he counselled the men to be tolerant in minor details, and not to create difficulties where no question of principle was concerned. He strongly

advocated the system of apprenticeship to all classes of their workmen. The Chairman and Mr. W. S. Clark replied, the former giving personal reminiscences of his early connexion with the building trade. His object during his year of office would be to increase the power of the Society, and he hoped that new members would join them, and so enable their Association to speak the united mind of the building trade. The toast of "The Chairman and Officers" was given by Mr. S. Kenney. Other toasts followed.

KENT BRICKMAKERS.—Monday, the 15th ult., marked the commencement of the brickmaking season, being an earlier period than usual. On that day also commenced an increased rate of wages, the principal employers having decided to give their workpeople a rise of 10 per cent. for the season. This will have the effect of causing a sum amounting to close upon 40,000, to be spent in wages in the Kent and Essex districts over and above the wages earned in the brickmaking districts last year. This healthy state of the brick industry is due to a steady and increasing demand for Kent bricks in the London market, the stock at the various yards having been almost worked out. At Sittingbourne, which is the centre of the Kentish brickmaking industry, a good season is anticipated, the prospects being brighter than at any period since the memorable lock-out.—*Kentish Express.*

GLASGOW BUILDING TRADES EXCHANGE.—At a general meeting of the Glasgow Building Trades Exchange on the 25th ult. in the rooms, 30, Gordon-street, a paper was read by Mr. William Oliphant on the subject, "Why is Scotland Fifty Years Behind in Heating and Ventilating?" Mr. Oliphant said that America to-day enjoyed what was beyond question the best heating, ventilating, and cooling appliances in the civilised world, and is indebted to her gifted Scottish citizens for most of them. He strongly advocated the adoption in Scotland of the American system of cooking and plumbing apparatus. He strongly advocated the American system of ranges for cooking on account of their cleanliness, facility for working, and economy of fuel. In America the greenhouse system of heating by a series of pipes had been abolished, and radiators were now generally adopted.

CO-OPERATIVE STORES, CASTLE NORTHWICH, CHESHIRE.—New co-operative stores have been opened at Castle Northwich. The new premises have been built from the plans of Mr. W. D. T. Mumford, architect, of Preston. Mr. T. Leicester, Northwich, was the builder.

THE BUILDING TRADES EXHIBITION.—Sir Arthur Arnold, who was accompanied by Lady Arnold, distributed the prizes on Saturday last to the successful craftsmen in the handicrafts' competitions held in connexion with the Building Trades' Exhibition at the Royal Agricultural Hall. The chair was taken by Professor Banister Fletcher, who remarked that the competitions in handicrafts had been most successful, and nearly 200 workmen had entered for them. Their object was to improve the standard of work for all schools and shops so as to benefit both the workman and the trade, and to enable this country to compete with foreign nations on more equal terms. Sir Arthur Arnold, after distributing the prizes, said that it was a matter of the highest importance that the building trade should be carried on in an enlightened and intelligent manner, and since the work in the workshops was more mechanical than it used to be, it was good to afford them such opportunities as these to display their talent and ability. Sanitary reform was once in a very different position to the one it held at present, but there was still further advance to be made, and he had seen examples in this exhibition of what might be done in the future. The proceedings terminated with the usual votes of thanks. Among those present were Messrs. Charles Barry, Thomas Blashill, Lewis Angell, Greville Montgomery, E. Benedict, C.E., and other members of the Consulting Council.

THE BUILDING TRADES EXHIBITION.—In mentioning last week the exhibits which bore on artistic work in this exhibition we had no intention of omitting any mention of the exhibit of Messrs. Diespcker & Co., whose mosaic work is well known. This and perhaps one or two other omissions which we should not have voluntarily made are to be traced to the want of proper system in the arrangement and cataloguing, a matter of which exhibitors have complained as well as ourselves. In regard to this subject we may observe that some exhibitors appear to think that the fact of their having put up a stand at the Building Trades Exhibition, even if it contains only what has been seen over and over again, gives them a definite right to claim a notice in our columns. In regard to that we have merely to remark that we undertake to give a critical notice of things specially worth notice, and not to furnish a catalogue of the contents of the exhibition, which our readers do not require.

THE INCORPORATED ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.—The twenty-third voluntary pass examination of candidates for the office of Municipal Engineers and Surveyors to District Councils carried out by this Association was held at the Institution of Civil Engineers, Great George-street, Westminster, S.W., on Friday and Saturday, March 26 and 27. Thirty-six candidates presented themselves for examination, the written portion of which was taken on the first day. The greater part of the second day was

occupied with the *viva voce* portion of the examination. The examiners were: 1. For engineering as applied to municipal work, A. M. Fowler, M.Inst.C.E. (past President); 2. Building construction, W. G. Laws, M.Inst.C.E. (past President); 3. Sanitary science, L. De Courcy Meade, M.Inst.C.E. (past President); 4. Public health law, C. Jones, M.Inst.C.E. (past President). Mr. Laws was the superintendent examiner. The next examination will be held in Birmingham on October 1 and 2, applications for which must be received by the secretary on or before September 5.

ENGINEERING CONTRACT DISPUTE.—A dispute has been pending in the High Court of Justice for some time between Messrs. Murdoch & Cameron, Limited, of London and Glasgow, engineers and contractors for public works, and the Corporation of Southend-on-Sea, over the erection of a promenade pier there, the contract price of which is about 20,000, and, in consequence, work has been suspended during the last five or six weeks. Sir William Arrol, with Mr. John Waugh, C.E., and Mr. William Jeffrey, M.Inst.C.E., having visited and inspected the pier and reported favourably as to the state of the work and the probability of the pier being ready for the ensuing season's traffic, terms have been arranged between the Corporation and the contractors, who are to receive 2,000, in addition to their original contract price. The action has been taken out of court, and work on the pier has been resumed under the direction of Mr. J. Wolfe Barry, the newly-appointed engineer for the Corporation.

APATHETIC WORKMEN.—Lecturing on Saturday last on "Technical Instruction in the Building Trade" at a meeting of the London and Provincial Builders' Foremen's Association, at the Memorial Hall, Mr. F. Chessel observed that if our artisans and workmen would show themselves willing to take up the subject of technical education in earnest there were numbers of workers who were willing to give them every assistance. But the workmen seemed too apathetic. He had often spoken to them on the subject, but he never met with such remarks as "We can't be all foremen," or "We have not time," and frequently similar excuses. He spoke from experience. He taught classes gratuitously for three years, and was sorry to say, with very unsatisfactory results. He often thought trade unions might have a vast influence in the furtherance of technical education. If only one-tenth of the energy now employed in the promotion of petty disputes was expended on the advancement of technical education not only would the individual workman reap the benefit, but so also would the community at large.

FIRE AT CHESTER TOWN HALL.—A disastrous fire occurred at Chester Town Hall last Saturday night. The outbreak commenced in the roof of the northern wing, which was quickly enveloped in flames, and despite the efforts of the City Volunteer Fire Brigade the fire spread with alarming rapidity. Part of the roof fell, and the Council Chamber was completely destroyed. The flames were prevented from spreading to the tower and other parts of the building. With two exceptions, portraits of City authorities and members of the Grosvenor family were saved. The civic plate and muniments stored in a fireproof room were only slightly damaged by water. The foundation-stone of the Town Hall was laid in October, 1865. The building is of stone.

CAPITAL AND LABOUR.

THE PLASTERING TRADE DISPUTE, DOUGLAS.—The situation of the dispute in the plastering trade of Douglas remains unchanged, and people may now make up their minds that no settlement will be arrived at before the end of the summer—if then. It is obvious that the jobs which have been stopped these last sixteen weeks cannot be finished for the season, and both masters and men have therefore resigned themselves philosophically to their fate. The Management Committee of the Masters' Federation have met a deputation from the men to consider the latter's final proposals, but, after a long discussion, no agreement could be come to.—*Manx Sun.*

LEGAL.

ARCHITECT AND BUILDER: SERIOUS ALLEGATIONS.

CASE IN THE QUEEN'S BENCH DIVISION.

THE case of Homer and Another v. Herbert came before Mr. Justice Vaughan Williams, sitting without a jury in the Queen's Bench Division, on the 26th ult., it being an action brought by Messrs. Homer & Ridler, architects and surveyors, carrying on business at No. 35, Bucklersbury, E.C., to recover from Mr. William Herbert, a builder, residing in East-bourne-terrace, Paddington, the sum of 512 10s., the balance of fees the plaintiffs alleged as being due to them from the defendant.

Mr. Howell appeared as counsel for the plaintiffs; and Mr. William Moyses and Mr. Heber Hart for the defendant.

It appeared from the opening statement of Mr. Howell that the plaintiffs, as architects, advised Mr. John Roycroft, the freeholder of certain land in the Ardville-road, Brixton, who proposed to erect on the same blocks of residential flats. In October, 1894, the defendant was introduced to Mr. Homer

by a Mr. Barnes, a surveyor, with a view to his undertaking the building of a block of the flats. Mr. Homer showed the defendant the plans and had been erected at that time, telling the defendant that the cost of building each block was about 3,000. Mr. Homer told the defendant the terms of the building agreement that Mr. Roycroft would enter into, the sums he would advance on certificates, and so on. He also told him that his firm's fees as architects would be at the rate of 3l. 3s. per cent. on the gross cost of the building, which would amount to 113l. 8s.; but in order to make it even money he would reduce his fees to 112l. 10s., that being the amount the other builders had paid them for the same work. The learned counsel stated that architects' usual fees were 2½ per cent. for the plans and specifications, and 2½ per cent. for superintendence; but in the present case the architects were only to superintend the work until the roof was reached, and a mortgage could be obtained by the builder, who, at that time, had the right to call for a lease from the building owner. After some further negotiations the defendant executed the building agreement between himself and Mr. Roycroft and also signed two specifications prepared by the plaintiffs, the last clause of which stipulated that the builder should pay the architects' fees at the rate of 3l. 3s. per cent. on the gross cost of the building, the same to be deducted by the lessor on the sums advanced by him and by him paid to the architects. After that the defendant commenced the work, Mr. Roycroft making the advances according to the building agreement, deducting from the advance on August 23, 1895, 11l., and on September 27, 24l. This was not the full amount the plaintiffs were entitled to, but they did not exact it then at the defendant's request. In October, 1895, the building had reached the condition when the builder was entitled to call upon the building owner for a lease. The plaintiffs at this time wrote to the defendant reminding him that 77l. 10s. was due to them for fees and asking him to pay it on account. The defendant did not reply to that letter, but the building owner, out of the next advance to the defendant, deducted for the plaintiffs a further sum of 25l. In May, 1896, Mr. Homer heard that the defendant was getting a mortgage upon his building, whereupon he wrote asking that the balance of his firm's fees should be remitted. The defendant replied to that letter declining in regard to the defendant's abusive expressions in regard to the plaintiffs. On June 24, 1896, the plaintiffs having been unsuccessful in obtaining their fees, issued a writ, and in July signed judgment against the defendant for the amount due. Subsequently the plaintiffs, not being able to get payment, instituted proceedings in bankruptcy against the defendant, who then came before the court and filed certain affidavits alleging that his then solicitor had been negligent, and he succeeded in getting the judgment set aside. On November 13, 1896, the plaintiffs received an abusive letter-card from the defendant.

Mr. Edward Chas. Homer, the senior partner in the plaintiff firm, gave evidence substantially bearing out the opening statement of counsel. The witness stated that he was present when the defendant signed the building agreement, and saw him sign the two specifications.

Cross-examined by Mr. Moyses: He was both an architect and surveyor. All he received from Mr. Roycroft was 25s., half a year's ground rent for letting the land of the block in question. Before the defendant came on the scene a builder named Legge had done some work on the site on which the defendant was to build. Mr. Roycroft deducted from the first advance to the defendant 70s. for the work done by Legge, and the defendant told Mr. Roycroft charged 6 per cent. for advances. He would not believe that the building cost only 2,000.

His Lordship interposed during the cross-examination of the witness, and said that he knew that architects were well paid, as he had seen the scale of the Institute. (To the witness) What do you say you did for 112l.? You copied it, appears, the old specifications and plans, but that is not a very troublesome thing. In addition to that he said the witness seemed to have gone a few times to look at the job.

The Witness remarked that the plans had to be altered and amended, and several copies made afterwards.

His Lordship: It seems to me to be a high percentage to get for the job. Under the scale of the Institute, if I remember rightly, it begins by saying that the architect shall receive 5 per cent. on the cost of the work executed; and then it says, "2½ per cent. upon the signing of the plans, and 2½ per cent. on the completion of the work." So the outcome of it is that 2½ per cent. goes to the plans, and 2½ per cent. goes to the superintendence.

Mr. Moyses: And then it expressly says that, in cases of repetition, the scale is to be less.

The Witness: May I say that when we did the plans for the previous builder he never paid us anything at all?

His Lordship: That may be so. Mr. Legge may not have paid you, but it is not the custom of the architectural profession, if they should charge their customers who do pay high fees in order to make up for those who do not pay. I think that doctrine is limited to the profession of tailoring.

Mr. Knight, a surveyor, gave evidence as to visiting the building in question for the purpose of estimating the gross cost of the same. The witness said that the cost at £2,512.

Cross-examined: His firm were surveyors, but not architects. He had not taken out quantities of the building in question as he had no time to do so.

In taking the survey he had estimated at 74 per cubic foot, which he did not consider too high a price for the building.

His Lordship: I used to remember the figures pretty well. Warehouses, 44 s.; ordinary villa residences, 6d.; 10 s. 6d. is a good price for it.

The Witness: If you wanted a jerry building: The Defendant, in his evidence, said that at the first interview he had with Mr. Homer he was not down copies of the plans or specifications.

Cross-examined: He had not taken out quantities of the building in question as he had no time to do so. In taking the survey he had estimated at 74 per cubic foot, which he did not consider too high a price for the building.

His Lordship: Are you quite sure of that? The Witness: I am quite sure.

Cross-examination continued: He began to build without any specification at all, and went on building for two months before he saw one.

Mr. Howell called the attention of the witness to an affidavit he had sworn in opposition to the plaintiff's signing judgment under Order XIV. In that affidavit the witness stated that he had never had a specification given to him, and also in another paragraph that he might have signed a specification, but that he did not recollect it.

By his Lordship's direction the witness was again asked the specification which it was alleged by the plaintiffs contained his signature. The witness, after again examining it said that he could not say that it was his signature.

His Lordship: Ah, but you cannot say it is not. The witness replied that he was quite sure that it was not his signature.

His Lordship asked the witness to sign his name on a piece of paper, and after he had done so the learned judge suggested that the witness should have another look at the signature on the specification. The witness again examined the signature on the specification, but adhered to his former evidence on the subject.

Mr. Frank Barnes, a surveyor, residing at No. 8, Colville-road, Bayswater, gave evidence as to introducing the defendant to Mr. Homer. The witness stated that at the first interview nothing was said about the building costing 3,600l., nor about Mr. Homer's fees. No specification was produced at that meeting. Mr. Homer did mention to the witness that his charges would be 3l. 3s. per cent.; but that was after the signing of the building agreement. Herbert did not sign the specification to his knowledge. He did not think that the signature on the specification produced was defendant's writing. He understood that the 3l. 3s. per cent. was to be paid on the amount of the advances from Mr. Roycroft, and that they were to be deducted as they went along. He should say that the cost of the building in question at the outside was 2,000l. or 2,200l.

His Lordship, in giving judgment, said that he had no real doubt that the signature to the flimsy specification was the signature of Mr. Herbert, and that Mr. Herbert knew it was, but he had very considerable doubt as to when that signature was appended and he was inclined to believe Mr. Herbert when he said that he had no recollection of signing that document at the meeting at the solicitors. Mr. Barnes had denied that it was then signed, and Mr. Barnes struck him as being a witness of truth. If the document in question was signed at that time why did not Mr. Wootton (Mr. Roycroft's solicitor) who witnessed Mr. Herbert's signature to the agreement also witness his signature to the specification. He could not understand also why the plaintiffs had not called either Mr. Wootton, Mr. Roycroft, or Mr. Roycroft, junior. The effect of his evidence upon him was that at the meeting in October mention was made that Mr. Homer's fees would be 3l. 3s. per cent., but he did not think that there was any mention of the sum of 112l. 10s. or of the 3,600l. He preferred to take Mr. Barnes's evidence on that point, and the inference he drew was that Mr. Herbert was perfectly well aware when he took up the matter that he would have to pay the architects' fees, and that their fees would be 3l. 3s. per cent., not on the advances, but upon the cost of the building. In the result, his lordship fixed the plaintiffs' remuneration at 94l. 10s., which, after giving credit for 60l. deducted for the plaintiffs by Mr. Roycroft out of the advances, left 34l. 10s. as the balance then due, for which amount he ordered judgment to be entered. His lordship said that he should have been disposed to have given Mr. Herbert at least some portion of the costs, inasmuch as Mr. Homer had failed in proving the special agreement which he alleged, but he should not do that as Mr. Herbert was not staunch enough in the witness-box to resist the temptation of telling only part of the truth instead of the whole truth. For those reasons he should not give costs to either side. Judgment was accordingly entered for the plaintiffs for 34l. 10s. without costs.

MEETINGS.

FRIDAY, APRIL 2.

The Architectural Association.—Mr. T. G. Jackson, R.A., on "Architecture in Relation to the Crafts," 7.30 p.m.

Royal Institution.—Mr. C. T. Heycock, M.A., on "Metallic Alloys and the Theory of Solution," 9 p.m.

Institution of Junior Engineers.—Paper to be read and discussed:—"Cycle Construction," by Mr. A. W. Marshall, 8 p.m.

SATURDAY, APRIL 3.

The Architectural Association.—Fifth Spring Visit, to the Royal Palace Hotel Extension, High-street, Kensington, 3 p.m. A visit will subsequently be made to 27, High-street.

St. Paul's Ecological Society.—Visit to the following City Churches, conducted by Mr. George H. Birch, F.S.A.:—St. Stephen, Walbrook, at 3 p.m.; St. Swithun, London Stone, at 3.45 p.m.; and St. Mary Abchurch, at 4.30 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Inspection at Aylesbury Dairy Company's premises, Hayswater, 3 p.m.

Sanitary Inspectors' Association.—Mr. T. W. Crocker on "Nuisances from Certain Offensive Trades," 6 p.m.

British Institute of Certified Carpenters.—Special Meeting at Carpenter's Hall, at 6 p.m. Paper by Mr. T. M. G. Lloyd on "Ancient and Historical Carpentry," 8 p.m.

MONDAY, APRIL 5.

The Surveyors' Institution.—Mr. Walter Simms on "London: An Appreciation," 8 p.m.

Society of Engineers.—Mr. P. M. Faraday on "The Rating of Electric Undertakings," 7.30 p.m.

Victoria Institute.—The Bishop of Ballarat on "Australian Aboriginal Art," 4.30 p.m.

Society of Arts (Lectures for Lecturers).—Professor W. Chandler Roberts-Austen on "Alloys," IV, 4.30 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Professor T. Roger Smith on "Sanitary Building Construction," 8 p.m.

Liverpool Architectural Society.—Mr. W. Henman on "Hospital Construction." Illustrated by Working Drawings, 8c. 6 p.m.

TUESDAY, APRIL 6.

Builders' Clerks' Benevolent Institution.—Annual Dinner, King's Hall, Holborn Restaurant, 6 p.m.

Institution of Civil Engineers.—(1) Further discussion on Mr. Henry W. Ravenshaw's paper on "Electric Lifts and Cranes," (2) the permitting Messrs. David Hill and Maurice Filman on "The Blackwall Tunnel," 8 p.m.

WEDNESDAY, APRIL 7.

Royal Archaeological Institute, of Great Britain and Ireland.—(A) Viscount Dillon on "An Inventory of Arms and Armour Belonging to Thomas Duke of Gloucester, in 1399," (B) Mr. C. E. Keyser, M.A., F.S.A., on "Aldersham Church, Berkshire," 4 p.m.

Manchester Health Protection Society.—Public meeting to form a society for the protection of the wild and natural beauty of Hampstead Heath.—Drill Hall, Heath-street, 8.30 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members, 8 p.m.

Sanitary Institute (Demonstrations for Sanitary Officers).—(1) Inspection at the Disinfecting Station, Chelsea, 2 p.m. (2) Inspection of the West London Paper Mill Company's Works, Fallopian Wharf, Loal-road, Chelsea, 4 p.m.

Edinburgh Architectural Society.—Mr. W. J. Anderson on "The Origins of Greek Architecture," 8 p.m.

Dundee Institute of Architecture, Science, and Art.—Exhibition of the Institute of Architects' prize drawings for 1896, and students' testimonies of study. Remarks on the drawings by the President, Mr. L. Over, and others, 8 p.m.

THURSDAY, APRIL 8.

Sanitary Institute (Lectures for Sanitary Officers).—Mr. J. Wright Clarke on "Details of Plumbers' Work," 8 p.m.

Society for the Encouragement of the Fine Arts.—Mr. Seymour Lucas, A.R.A., on "Making a Picture," 8 p.m.

FRIDAY, APRIL 9.

Institution of Civil Engineers (Students' Meeting).—Mr. Harold Herridge on "Poole Harbour," 8 p.m.

SATURDAY, APRIL 10.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at the Sewage and Destructor Works, Edin., 2.30 p.m.

Edinburgh Architectural Association.—(1) Visit to Niddrie Tower. (2) Visit to Duntarvie Castle.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

6,571.—WATER-CLOSETS: H. P. Thompson.—Inventor claims (1) the combination with a water-closet seat and with the seat so that the pad is compelled to yield under pressure; (2) the combination with the foregoing of depending brackets upon the seat, plates intermediate of brackets and pads; (3) the combination with the foregoing of yielding plates, carried by the bowl and provided with lugs and brackets, provided with recesses designed to be engaged by said lugs; and (4) a slight modification of same.

6,092.—SLIDING AND REVERSIBLE SASHES: J. Shaw.—Invention consists of outer window frame, sliding frame, sashes pivoted to revolve vertically or horizontally, made of wood or other material, with suitable fastening, racks and pinions for same.

7,023.—ROOF GLAZING: J. Mellor.—Invention relates to the system of horticultural glazing described in the specification of Patent No. 8,259 of 1884. By present modification inventor proposes to reduce the iron or steel bar of a cross section with a sheath of an alloy of lead and tin or other non-corrosive metal. This sheath is provided with longitudinal side flanges, which can be bent down at their edges to rest on the upper surface of the glass, thus securing a roof impervious to rain, &c., without the use of putty or paint.

8,400.—AUTOMATIC DOOR-CLOSING DEVICES: J. Cuggia.—Invention consists in securing automatic action in door closing (whether of one or two leaved doors) by means of cords and counterweights; the latter being so arranged as to be invisible.

10,372.—VENTILATOR: H. Mestren and Another.—The material part of invention is a peculiar dispersing blast or jet-pipe needing but little water. The blast or jet-pipe has on its lower part a small hole, and is provided internally with spiral ribs of vulcanized india-rubber, which imparts to the water jet a rotary motion. Between jet and blast pipe and the upper part, which is screwed into the water-supply pipe, is placed a fine hair sieve to detain impurities. Each ventilator is provided with two such blast pipes projecting into the elbow pipes, which form the ventilator itself.

25,027.—FLOOR CONSTRUCTION: F. L. P. Kadeck.—Invention consists in floor construction in an intermediate layer between the joists, consisting of a wire-netting interlarded, a sheet or cardboard layer consisting of overlapping strips, the edges of the cardboard layer and wire-netting being secured to the joists by means of planks (or angle irons) and a filling of sand or the like above the cardboard.

28,664.—MECHANISM FOR OPENING WINDOW SASHES, &c.: D. Fletcher.—The chief object of this invention is to enable an invalid to control ventilation while in bed. The invention consists in a sash-lifting, lowering and locking mechanism the combination of a lid, having a locking lug with a drum, handle wheel, and cords, the cords being connected to window-sash. The use of the device is not confined to invalids, nor is vent-raising out of the question.

30,109.—FIRE GRATES: J. D. Hood.—The object of this invention is to enable the air admitted to the under side of the glowing fuel supported on the grate used to become very highly heated before reaching the acid fuel. The inventor obtains this by forming certain of the "furnace" or "air" bars of the bottom of the grate with "lugs" or vertical projections, either solid or perforated, straight or curved. Thus each pair of bars and air bars, with their lugs, form an air-chamber or passage from the front into the body of the fire.

NEW APPLICATIONS FOR LETTERS PATENT.

MARCH 15.—6,701, J. Peckover, Stone Slabs, —6,750, A. Gibbon, Flushing Closets, —6,761, S. Christmas, Device for Exhibiting Wall Paper Patterns, &c.

MARCH 16.—6,834, W. Thompson, Constructing Cased Windows, —6,859, J. Kuhler, Press for Making Tiles, and Blotting or Water Colour Decorations, &c.—7,169, J. Shanks, Trough Closets or Latrines.

MARCH 17.—5,996, K. Ewered, Water Closets, —7,017, W. Hewitt, Manufacture of Tiles.

MARCH 18.—7,038, H. Pitt, Fastening of Locks and Latches, —7,062, T. Parker, Brick Making Machines, —7,115, S. Page, Cows for Chimneys, Ventilating Shafts, &c.

MARCH 19.—7,157, W. Keys, Manufacture of Certain Bricks, Tiles, &c.—7,160, N. Taylor and others, Preparation for Removing Dust and Smoke from Wallpapers, and Blotting or Water Colour Decorations, &c.—7,169, J. Shanks, Trough Closets or Latrines.

MARCH 20.—7,266, S. H. and H. Fildes, Window Fasteners, —7,268, H. Clay, Water Closets and Flushing Apparatus, —7,273, F. Kraun, Window Hinge, —7,322, W. Chappell, Joiners' Sash Cramp.

PROVISIONAL SPECIFICATIONS ACCEPTED.

29,904, G. Gregory, Ball Inlet Ventilator, —1,187, J. Ferguson, Fire-proofing Buildings, &c.—9,942, M. Maylard, Water Closets, —2,959, M. Holt, Weightless Window-sash and Frame, —3,024, J. Berry, Patent Brick Die or Press, —3,389, H. Gibbon and W. Tyler, Windows and Window Frames, —3,823, J. Shanks, Cisterns, Sinks, Baths, &c.—4,036, W. Griffiths, Automatically Flving Windows at any desired height, —4,667, F. Harrison, Cutter Heads for Wood-working Machinery, —4,871, L. Wells, Ladders, —4,656, S. Adams, Flushing Chambers, &c., and Fittings connected therewith, —4,738, R. Ames, Marble Frames and Covers, —4,838, G. Vogel, Sinter Fasteners, —4,854, E. Ebenheis, Ventilators, —4,222, A. Eric, Cutting and Planing Mitres and similar Joints in Picture Frames, —4,913, T. Sullivan, Ladders, —5,001, W. Sugh, Ventilators, —5,043, V. Burritter, Erecting Scaffolds, —5,314, A. Boulé, Greenhouses, Hotheuses, &c., —5,380, H. Jardine, Stone-cutting Tools, —5,518, F. Ryan and others, Ties and Building Scaffolding, —5,839, T. Kemp, Drain-pipe Inspection Cover and Frame, —5,881, W. Osmont, Sliding Window Sashes.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

6,648, A. Gartner and W. Alberton, Shuttle-box Operating Mechanism for Looms, —7,271, J. West and W. Jenkins, Kilns, —3,823, J. and W. Place, Pans or Basins of Waste or Stop-water Closets, —18,376, W. Wheeler, Syphon Chambers, —26,325, G. Geisel, Concrete Bridges, —27,819, F. Smith, Fastenings for Windows, &c.—2,762, L. Dolig, Door Checks.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

March 17.—By Messrs. BIDWELL (at Cambridge).

Cambridge.—St. Tibb's-row, "Vicars' buildings," area 1,833 ft. 1, r. 137 1/2 s., £1,600

March 18.—By Messrs. BIDWELL (at Ely).

Strettham, Cambs.—Main-st., "The Royal Standard," 4 h., with brewery, beer store, &c., &c., er. 251, £1,670

Pump-plane, &c., six freehold and copyhold cottages, £330

By H. H. Atcheson & Sons, £700

Bethnal Green.—162, 164, and 166, Green-st., f, r. 130l., £2,000

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Table with 4 columns: Nature of Work, By whom Advertised, Premiums, Design to be delivered.

CONTRACTS.

Table with 4 columns: Nature of Work or Materials, By whom Required, Forms of Tender, so Supplied by, Tenders to be delivered.

CONTRACTS—Continued.

Table with 4 columns: Nature of Work or Materials, By whom Required, Forms of Tender, so Supplied by, Tenders to be delivered.

PUBLIC APPOINTMENTS.

Table with 4 columns: Nature of Appointment, By whom Advertised, Salary, Applications to be made.

Those marked with an asterisk (*) are advertised in this Number. Competitions, p. iv. Contracts, pp. iv. viii. & xxi. Public Appointments, pp. xviii. & xxi.

Table of property listings with columns for location, area, and other details.

PRICES CURRENT OF MATERIALS.

Table listing prices for various materials including timber, iron, and other building supplies. Columns include item names and prices per unit.

BRIDGEWATER.—Schedule received for the supply of paving, roadstone, &c., for the year ending March 25, 1898. Mr. Francis Parr, Borough Surveyor, Town-hall, Bridgewater.—

Table for BRIDGEWATER showing prices for ROADSTONE and PAVING, &c. Columns include material types (Unbroken stones, Hand-broken stones, etc.) and prices per cubic foot.

* Accepted. † Blue Lias stone. ‡ Pennant stone. § Accepted for 4,000 tons at 4s. 2d. ¶ Accepted about 1,700 tons at 4s. 4d.

CARDIFF.—For the construction of filter beds, erection of houses, &c. at the Heath, for the Corporation. Mr. C. H. Priestley, C.E., Town Hall, Cardiff. Quantities by the Engineer—

LONDON.—For the execution and completion of the Broadway Theatre, Deptford, for Messrs. David Allen & Sons. Mr. W. R. G. Sprague, architect—

TENDERS.

Communications for insertion under this heading should be addressed to 'The Editor,' and must reach us not later than 10 a.m. on the day of the closing.

DUKINFIELD.—Accepted for the erection of school buildings, for the School Board. Messrs. Eaton, Sons, & Cantrell, architects, Ashby-under-Layer.—

LONDON.—For making-up private roads, for the Hornsey District Council. Mr. H. J. Lovegrove, Engineer and Surveyor—

SHIPPING.

ARNLEY.—For widening Canal Pit-lane, Darfield, and other works for the Urban District Council. Mr. Hamerton, Surveyor, Darfield.—

GLOUCESTER.—For the erection of show rooms, &c., George-street. Mr. R. Read, City Surveyor, Guildhall, Gloucester.—

LONDON.—For the erection of two houses and shops in Marlton and Tapbridge roads, Clapham Common, for Mr. Charles Stoney, Mr. John Job Wood, architect and surveyor. Quantities supplied—

SHOPS.

SHOP AUCTION.—For laying 2,350 yards pipe sewers, and for the connection therewith, Witton Park, for the Rural Sanitary Council. Mr. C. Johnston, surveyor, 3, Graddick-street, on Auckland.—

GUILDFORD (Surrey).—For flagging and kerbing footpaths, Bedford-road, for the Corporation. Mr. C. G. Mason, Borough Surveyor, Tinsgate, Guildford.—

LONDON.—For additions to the Nursing Institute at the Homeopathic Hospital, Great Ormond-street. Mr. William A. Pike, architect—

RAILWAYS.

BRADFORD (Yorks).—Accepted for the erection of six houses, next-road. Mr. J. H. Dixon, architect, 93, Heap-lane, Bradford.—

HARWICH.—For the construction of a concrete reservoir, &c. Mr. H. Ditcham, Borough Surveyor, Harwich.—

LOWESTOFT.—For the erection of an hotel at Carlton Colville, near Lowestoft, for Messrs. E. & G. Moore. Mr. Chas. Crozier, architect, Victoria-chambers, Lowestoft. Quantities by the architect—

WORKS.

FRITHAM-ON-CROUCH (Essex).—For providing and laying 150 tons of iron, Church Walk, Essex, for the Malden Rural Sanitary Council. Mr. H. G. Keywood, Engineer and Surveyor, 1, St. Andrew-street, Reading. Quantities by the Engineer—

HULL.—For the construction of sewers, &c., at Workhouse, Anby-road, for the Union Guardians. Messrs. Freeman, Son, & Casella, architects, 11, Carr-street, Hull.—

MITCHAM.—For the erection of new laundry and other buildings at M1-cham. Mr. C. Evans-Vaughan, architect—

HOUSES.

MERLEY.—For the erection of two pairs of cottages at Eversley, Surrey, for Mr. H. W. Harris. Mr. Joseph Greenway, architect, 10, St. Andrew-street, Reading. Quantities supplied—

LEEDS.—Accepted for the erection of twenty-one houses, New-road-side, Horsforth, for the Leeds Industrial Co-operative Society, Limited. Mr. J. P. Kay, architect, Presidential Buildings, Leeds.—

MORLEY (Yorks).—Accepted for the erection of club premises, Fountain-street, for the trustees of the Working Men's Club. Mr. S. E. Birds, architect, 47, High-street, Morley. Quantities by the architect—

WORKS.

BRADFORD.—For the construction of sewers and formation of 150 feet of trench, for the Corporation. Mr. J. H. Dixon, architect, 93, Heap-lane, Bradford.—

LEEDS.—Accepted for alterations, &c., Headingley Pumping station, for the Corporation. Mr. Theo. Hewson, City Engineer, Municipal Buildings, Leeds.—

ORPINGTON.—For alterations and additions to 'The Gables,' Orpington, for Mr. S. Baker. Mr. Horace R. Hyde, architect, 17, G-eochurch-street, London, E.C. No quantities supplied—

WORKS.

BRADFORD.—For the erection of a superintendent's house, North Street, for the Corporation. Mr. W. Harpur, C.E., Borough Engineer, Town Hall, Cardiff. Quantities by the Borough Engineer—

LONDON.—For additions to villa residence at Oakleigh Park, N. Mr. R. Beresford Pitt, architect—

PENZANCE.—Accepted for the execution of paving work, Western Promenade. Mr. Geo. H. Small, Borough Surveyor, Town-hall, Penzance.—

PETERBOROUGH.—For the erection of a dwelling house, Stanground, for Mr. T. Frear. Mr. J. G. Sallibrass, architect, North-street, Peterborough.—
 Craswell £250 0 Bailey £250 0
 Nichols 450 0 Sibley, Peterboro (accepted) 250 0

READING.—For the erection of a nurses' home at the Reading Union Workhouse, for the Guardians. Mr. Joseph Greenaway, architect, 79, Duke-street, Reading. Quantities supplied:—
 McCarthy & Pitt £550 0 G. Beadle £1,400 0
 Collier & Catley 1,489 0 John Bottrill & Son 1,380 0
 W. Bourton 4,420 0 W. Stokes 2,378 0
 C. H. Tucker 2,441 0 J. P. H. H. 1,075 0
 G. Dixon 1,427 0 W. Hawkins 1,335 0
 H. Higgs & Sons 1,420 0 D. Taylor (accepted) 1,300 0
 [All of Reading.]

RUABON (Wales).—For the erection of eight houses at Cefn, Ruabon, for Mrs. F. R. Roberts. Mr. J. W. Jones, architect, Brook Lea, Acrefield, Ruabon. Quantities by architect:—
 J. T. Jones £1,520 0 J. Carden £1,520 0
 J. Davies 1,520 0 R. Honey, Cefn, Ruabon 7,350 0
 Accepted.

SEDBERGH.—Accepted for the erection of an entrance lodge to "Akay," for Mr. C. E. Taylor. Mr. John Hutton, architect, Kendal. Quantities by architect:—
 Brassington, Bros., & Corney, Settle, Yorkshire £420 0

ST. LEONARDS-ON-SEA.—For alterations and additions, repairs, sanitary, hot-water, and other work at "The Grange," Naze Hill, St. Leonards-on-Sea, for the Trustees of St. Peter's Hosp., Mortmain-road, Kilburn. Messrs. C. A. Pigott & Oxley, architects and surveyors, St. Leonards.—
 P. Jackson £2,310 0 E. G. Hattin £2,920 0
 C. Hughes 2,350 0 T. Salter 2,238 0
 Eldridge & Crutenden 420 0 W. Hawkins 425 0
 J. Simonsen 2,275 0 A. H. White (accepted) 2,182 0
 [All local builders.]

SHIPLAKE.—For the erection of an entrance lodge at "Fairholme," Shiplake-on-Thames, Oxon, for Mr. H. M. B. Davies, Mr. Joseph Greenaway, architect, 79, Duke-street, Reading. Quantities supplied:—
 John Bottrill & Son £520 0 W. Bourton £425 0
 G. Senada 420 0 W. Hawkins 425 0
 W. Stokes 420 0 D. Taylor 250 0
 [All of Reading.]

SURBITON.—For the execution of road works, Douglas and four other roads, for the Urban District Council. Mr. Sam. Mather, C.E., Victoria-road, Surbiton:—
 Sidney Hudson £420 0 S. Kavanagh, Surbiton £3,877 0
 Free & Sons 4,650 0 J. Bilton £3,877 0
 W. Adamson 4,397 0 0
 [Surveyor's estimate, £3,816 10 12.]

YNYSHIR (Wales).—For the erection of a chapel, cottage, &c., Watstown, Rhonda, Glamorgan, South Wales, for the trustees of the Sacred Congregational Chapel. Mr. Edwin Jones, architect, Cymmer, Porth:—
 C. Jenkins & Son £670 0 Henry Williams £275 15
 William Swatt 628 0 Thomas & Farr, Porth 570 0
 David Richards 630 0 Accepted.

LONDON SCHOOL BOARD TENDERS.
 At the last meeting of the London School Board the following lists of tenders were submitted by the Works Committee:—
BREWHOUSE-LANE.—Interior cleaning. (Second competition):—
 A. E. Symes £101 10 0 G. Wales £69 5 0
 Jones & Groves 85 0 0 J. P. Holliday 58 10 0
 Johnson & Co. 69 0 0 D. Gibb & Co. 52 10 0
 W. Banks 64 74 6

BELINTON-ROAD.—Exterior painting and interior cleaning:—
 Johnson & Co. £284 0 0 W. Horner £284 0 0
 G. Barker 373 0 0 C. Foreman 234 0 0
 W. Banks 358 18 0 J. H. Hoogh 333 0 0
 T. Cruwys 284 0 0 E. Proctor 285 0 0

EVERINGTON-STREET.—Exterior painting and interior cleaning:—
 E. T. Folley £427 0 0 T. Cruwys £368 0 0
 W. Horner 392 0 0 Marchant & Hilt 363 0 0
 F. F. Minster 390 0 0 W. R. & A. Hilt 357 10 0
 F. F. Chichen 385 0 0 W. Chappell 355 0 0
 C. Gurling 383 0 0 W. Hammond 348 0 0

C. B. N. SNEWIN
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FLORA-GARDENS.—Exterior painting and interior cleaning:—
 T. Hooper £258 0 0 T. Cruwys £285 10 0
 W. Hammond 249 0 0 W. Brown 267 0 0
 F. G. Minter 300 0 0 W. R. & A. Hilt 257 10 0
 W. Horner 291 0 0 F. T. Chichen 257 0 0
 W. Chappell 285 0 0 E. T. Folley 247 0 0

GREENWICH (Pewis-street).—Interior painting:—
 J. H. Hoogh £251 0 0 E. Proctor £255 10 0
 G. Summers 245 0 0 W. Banks 219 17 6
 A. J. Penn 245 0 0 Holding & Son 197 0 0
 J. Jones & Co. 232 12 0 B. Foreman 172 0 0

HAGUE-STREET.—Exterior painting and interior cleaning:—
 W. Shumour £450 0 0 J. F. Holliday £230 15 0
 A. W. Derby 390 0 0 J. Kybett 227 0 0
 I. T. E. Bayly 255 0 0 G. Bunter 250 15 0
 W. Sisk & Son 314 0 0 S. H. Corfield 224 0 0
 W. Lawrence 241 7 0

MINA-ROAD.—Interior cleaning:—
 W. V. Good £245 0 0 J. F. Ford £245 0 0
 W. E. H. Castle 294 0 0 Johnson & Co. 238 0 0
 H. Lane 235 0 0 B. E. Nightingale 235 0 0
 W. Smith 240 0 0 Holliday & Greenwood 205 0 0

SALTER'S HILL.—Exterior painting and interior cleaning:—
 A. J. Acworth £259 17 6 J. J. Garrett & Son £298 0 0
 Rice & Son 212 0 0 E. P. Bullard & Co. 269 0 0
 Maxwell Bros. 210 12 0 B. J. Tucker 254 0 0
 J. & C. Bowyer 225 0 0 H. Somerset & Son 233 0 0
 G. Kemp 225 7 0 Holliday & Greenwood 214 0 0

ST. DUNSTON'S-ROAD (new and old portions).—Exterior painting and interior cleaning:—
 W. Brown £238 0 0 C. Gurling £320 0 0
 E. G. Minter 251 0 0 W. Chappell 309 10 0
 T. Cruwys 248 0 0 W. Hammond 329 0 0
 E. T. Folley 237 0 0 F. T. Chichen 323 7 0
 W. Horner 237 0 0 W. R. & A. Hilt 328 10 0

WOODLAND-ROAD.—Exterior painting and interior cleaning:—
 A. J. Acworth £265 4 9 Maxwell Bros., Ltd. £275 0 0
 Rice & Son 242 0 0 H. Liberty 295 7 0
 J. & C. Bowyer 219 0 0 Holliday & Green 249 0 0
 E. P. Bullard & Co. 219 0 0 B. J. Tucker 249 0 0
 J. Garrett & Son 264 0 0 E. B. Tucker 238 0 0
 G. Kemp 222 0 0 0
 Accepted.

TO CORRESPONDENTS.
 S. A. G. M. & F. (Amounts should have been stated).—W. W. W. (It is a legal question; consult a solicitor).—E. J. B. (sent too late).
NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.
 We cannot undertake to return rejected communications. Letters or communications (beyond mere receipts), which have been duplicated for other journals are NOT DESIRED.
 We are compelled to decline pointing out books and giving addresses.
 Any communication to a contributor to write an article is given subject to the approval of the article when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.
 All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and not to the Editor.

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The Choir Screen	Single-Page Tone Block.
Tombs of Margaret of Austria, Philip le Beau, and Margaret of Bourbon	Single-Page Tone Block.
Tomb of Margaret of Austria	Single-Page Tone Block.
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The Church of Brou-en-Bresse.



IN a suburb of the little town of Bourg, in Burgundy, twenty-three miles from Mâcon, en route to Mount Cenis and Turin, is one of the most remarkable of the later Gothic churches of Europe, built at an interesting period when architecture was in rapid transition from Gothic to Renaissance. It derives additional interest from the fact that it is all of one date and style; there is no break in the unity of the design; architecture, statuary, tombs, stalls, pulpit, rood-screen, reredos, glass, pavements, were all executed between 1511 and 1536. It is a monument and memorial of the love and piety of Margaret of Austria, for her mother-in-law, Margaret of Bourbon; and yet more for her husband, Philibert, Duke of Savoy. The story, well known through Arnold's poem, is that Philip II., Duke of Savoy, broke his arm when hunting, in 1490; and Margaret, his wife, vowed to build a Benedictine abbey and church if he recovered. He recovered; but she died three years after, before she could fulfil her vow. Her daughter-in-law thereupon undertook to accomplish the project of the Duchess.

Margaret of Austria, the real foundress, played a very important part in European affairs; and her office of Governor of the Netherlands brought her into close connexion with the foreign policy of our own country. She was the daughter of Maximilian I., Emperor of Germany, and Archduchess of Burgundy; the Emperor, Charles V. of Spain, was her nephew. This explains the Imperial scale and splendour of the church; its location in Burgundy; and the fact that it is a Flemish church, indeed, almost the only Flemish church in France. Margaret sent her own subjects from the Netherlands to do the work; architect, sculptors, and probably the workmen, were Flemish. The architect was Van Beughen, or Van Boglem; he is said to have copied, but to have greatly improved on, the work of Antwerp Cathedral. The chief sculptor was Conrad Meyt. There has been found at Lille the original agreement between

the foundress and Conrad for the execution of the statues of Philip and the two Margarets; it is dated 1526; its specifications are closely followed in the existing tombs. The whole church is a memorial to the love of Philip and the two Margarets; the initials P. and M. are everywhere, interwoven with daisies or constructed of the cordon which the Duke was entitled to wear. Everywhere daisies, or rather, marguerites, are carved; in fact, the whole church is a glorification of marguerites. There is still kept up the pretty custom of adorning the altars with marguerites; all the year round marguerites are grown for the purpose in the adjacent convent. Constantly repeated, too, is Margaret of Austria's proud punning motto: "Fortune infortune forte une," which may English: "Come weal, come woe, I fear no foe." Margaret did not live to complete her work, and it was handed over to Augustinian instead of Benedictine monks. To save the church from the destruction in the French Revolution, by which it was menaced, it is said to have been filled with hay by the people of Bourg. It is now a National Monument; and was sumptuously restored by M. Dupasquier, who published a large monograph on it, containing plan and details and some fine chromolithographs of the pavement and the glass. In 1856 the vaults were discovered, belonging to the three tombs, and it was found that the two Margarets had not been buried in their own vaults, but in that of Philip le Beau. "In their deaths they were not divided."

The church is, internally, 230 ft. long, 98 ft. 6 in. broad, and 65 ft. 6 in. high. It consists of a southern tower, nave, aisles, and chapels of four bays; transept of two bays, with eastern aisles; choir and aisles of three bays, and pentagonal apse. On either side of the choir are magnificent stalls; it is separated from the nave by a broad and massive rood-screen (see illustrations; plate 3). In the middle of the eastern part of the choir is the tomb of Philip le Beau; it is the cynosure and masterpiece of the whole building; but owing to the heavy railings which surround it it is inaccessible to the photographer. (Plate 4.) Above, on a slab of black marble, rests the duke, an effigy in white marble, represented in all the pomp and splendour of life, in armour, his head resting on an embroidered cushion, a lion at his feet gripping the scabbard of his sword

in most life-like fashion. On his left is the tomb of the foundress, Margaret, his wife; towards her his head inclines. On his right is the tomb of his mother, Margaret of Bourbon; his clasped hands lean towards her. The slab rests on twelve pillars, exquisitely sculptured and containing figures of the Sibyls in alabaster. Round him stand six delightful little boys in white marble, bearing epitaph and arms; the Pagan genii of the Renaissance. Below he appears dead, shorn of all his mundane splendour, a corpse, naked, but for a cincture round the waist; a wonderful study in anatomy. Both the other tombs have canopies. (Plates 5 and 6.) That on his right represents Margaret of Bourbon; above, with ducal mantle, and with crown on her head, her greyhound at her feet, her face turned towards her son; below, she appears in her shroud, dead, with hair unbound. The tomb on his left is that of the foundress, represented also above, as in life, below, in death. In the Lady Chapel, which occupies the eastern bay of the north aisle, is a marvellous reredos in alabaster—18 ft. high and 13 ft. broad; and so deep that it admits, among other things, of a representation of Our Lady's four-post bedstead, whose frieze and cresting are curiously like Elizabethan work. The reredos contains scenes from the life of the Virgin; its great dimensions, and the wealth and minuteness of the work in it, remind us of the retabes of Spain, of which, at that time, the Netherlands were a dependency. In the same chapel is a superb window, representing the Assumption of the Virgin; the Father and the Son are shown in most realistic, but reverent fashion, placing the crown on her head. The glass of this window is in drawing and colour one of the finest examples of later work. Magnificent heraldic windows are to be seen in the choir; two of them are shown in colours by M. Dupasquier, who has an admirable plate of the pavement, chiefly pale blues and pale greens. Carved work is everywhere. Capitals, archivolts, the mouldings of piers, buttresses, and ribs, gables and cornices, windows and doors, are a mass of leafage and bloom, always solid, massive, and vigorous, always original and interesting. Equally spirited is the zoology; a kid munching a cabbage-leaf, a lion's cub wearily yawning, a crowd of little beasts scratching their wings or biting their tails, monsters bearing up heavy gargoyles, dwarfs

and masks grimacing, sleeping, playing, eating, drinking, reading, meditating, praying, all alive. Less Gothic, but still more beautiful, is the figure sculpture, especially the mourners round the base of the tombs. They comprise the Sibyls as well as the saints who were patrons of the defunct. Thanks to the strong iron railings, this work is in a remarkable state of preservation.

The church of Brou is compared by Mr. Fergusson with the chapel of San Juan de los Reyes at Toledo, built by Ferdinand and Isabella for themselves, and with Henry VII.'s chapel at Westminster. All are royal sepulchral chapels; they are nearly contemporaneous; their founders were among the richest and most prosperous sovereigns in Europe. All that wealth could do was lavished on their ornamentation. With these great sepulchral chapels Gothic architecture perished, not in decadence, but in meridional splendour. The interior of Brou is simple and, on the whole, restrained, though Van Boglem could not resist the temptation of turning the trefoils in the parapet of his rood-screen upside down, by way of novelty. (Plate 3.) It is just this desire for novelty which makes the last days of Gothic so fascinating to many of us just now. In the crowning and culminating period of Gothic architecture there is much uniformity. After Amiens and Rheims one knows what to expect at Beauvais and Cologne; after the Percy shrine at Beverley, there is no great novelty in the arcading of the Lady Chapel at Ely. The charm of the unexpected is absent. But at periods of transition—as from Romanesque to Gothic, between 1245 and 1300, and from Northern Gothic to Renaissance in the sixteenth century—one never knows what to expect; there is no longer any recognised legitimate path; every one is experimentalising; men are obliged to use their wits; the work is fresh and original and vigorous; always interesting, however wrong-headed. In Brou, however, after all, there is, setting aside the figure sculpture, very little Renaissance feeling. It is really a late Gothic design produced by a clever man too proud and ambitious to be a mere copyist; anxious to show off his cleverness; determined at any cost to be original. See how he plays with the façade. (Plate 1.) It is simply a series of little jokes in stone. The restraint which he has to some extent imposed upon himself in the interior of the building, he throws to the winds in the façade. Take the tower. There would be no credit to be gained for originality if he had built two western towers as at Notre Dame de l'Épine, or one western tower as at St. Riquier, or three towers like those of St. Ouen, or a single central tower. So he locates his tower in an extraordinary position, south of the centre of the choir. Delightful, too, is the central gable with its gentle curves; while by way of contrast, the gables of the aisles are straight-sided, with flying buttresses plumped down anyhow on to the inner side of each. Then he designs for the window of the aisle-gable a spherical triangle; and finding that his flying buttress would thrust it out, he slices off one half, and just leaves it so. It is just these little quips and cranks which endear a late design to us; a man of genius may perpetrate them, but no one else. It was certainly a genius who designed the Church of Brou-en-Bresse.

THE REPORT OF THE L.C.C. WORKS COMMITTEE.



E give on another page the recommendations arrived at by the majority of the members of the Special Committee appointed to inquire into the causes of the recent scandal in connexion with the Works Department of the London County Council. It will be seen that they affirm the principle that some definite organisation for the direct employment of labour and the direct execution of public works by the Council is desirable, but not exactly in the form of a works department. They evidently think that the Works Department is too numerous a body for the purpose of directing the carrying out of building work; moreover, that its constitution is very bad, as it is generally composed of two sections of members of about equal numbers who have opposite ways of thinking and opposite sympathies in regard to labour policy. That is only saying that the vice which has run through the whole attitude of the London County Council in regard to building work, that of thinking of the carrying out of a special social policy rather than of the best way of getting work done, has been present in the most marked form in the Works Committee itself. It would be strange indeed if large building works, especially of a complicated nature, were efficiently carried out under the management of a body so constituted. The Special Committee propose to substitute for this unwieldy and semi-political Works Committee a Works Board of nine members, one from each of nine committees named, and a Works manager, who would be subject to the control of the Works Board, would conduct all operations of the department, to whom estimates for proposed works should be referred, and who would report progress from time to time to the Board, which would in turn report progress to the Council. This would no doubt be an improvement on the Works Department, as hitherto constituted. The matter of the manipulation of the accounts does not turn out to be any worse than what we have heard of already, and has evidently arisen not from the desire of any one to put money unlawfully into his pocket, but merely from the desire to conceal the fact that in some cases the department was an economical failure, and that more instead of less money was being spent than would probably have been spent under the ordinary system of receiving tenders from outside contractors.

This, however, is all part of the same vice, that of making the execution of building work subservient to the demands of a policy. It is impossible to resist the conclusion that if the County Council, or a certain proportion of them, had not been so anxious to promote the cause of the working man, which may be a very good cause in itself but which they were not elected in order to support, better work and better terms, taken all round, would have been obtained from ordinary contractors, and there would have been no suggestion or excuse for the foundation of a Works Department at all. The County Council clogged their contracts with conditions which independent contractors did not like, and which some of them regarded as offensive to their self-respect as well as injurious to their business interests; contractors began to refuse tendering for County

Council work; and then came the idea that if builders were recusant the County Council would be its own builder, and carry on work in accordance with its own policy.

We do not think that either the Council or the ratepayers have reason to be very well satisfied with the result, nor do we seem particularly satisfied with the Special Committee's Report. It is a half-hearted document, evidently drawn up with the intention of making the best of a bad job. In our opinion the minority Report, issued by four members of the Committee, Mr. Beachcroft, Mr. J. S. Fletcher, Dr. Longstaff, and Sir Godfrey Lushington, is by far the most important document of the two, and gives the impression of representing the views of persons who want to say the truth about the question rather than to smooth matters over and prop up a particular policy. With this should be taken the special statement by Mr. Gruning, and we advise those who are interested in the subject to pay attention to these two documents, which are much more instructive than the main Report. Indeed it is impossible to reconcile some of the opinions expressed in the main Report with some of the statements of fact made by Mr. Gruning. The Report quotes some statements of Mr. Gruning and omits others of equal importance. It quotes him as saying that the buildings erected under the Works Department "were structurally sound and substantially and well built," but omits a mention of his repeated condemnation of the joinery in the Council buildings, as roughly executed, made of unseasoned wood in many cases, &c. Why the failures should especially be shown in the joinery it is very easy to understand, but it seems to point partly to mistakes or carelessness in the purchase of material.

The general question as to whether public building works can be carried on by a Corporation with greater efficiency than through outside contractors is put thus by Mr. Gruning:—

"The initial difficulty which arises in carrying out works or factories by a Corporation is that no one can be made responsible in a pecuniary sense for non-success or loss, nor does any one derive profit from success otherwise than in reputation.

In this sense the greatest incentive of all to success, *viz.*, the desire of gain, is entirely absent."

The desire, on the other hand, to escape moral liability for losses has been clearly shown, by the incident of the fictitious transfers, which led to the appointment of this Committee of Inquiry.

I assume that the objects of a Corporation carrying on works or factories for producing buildings or goods required in preference to contracting for or purchasing them, are twofold, *viz.*—

1. To obtain better results as to quality.
2. To economise the funds with which a Corporation is entrusted by the ratepayers.

If neither of these objects is attained, the only result is the waste of time, thought, and labour devoted gratuitously to the service of a Corporation by the elected representatives of the constituency."

Mr. Gruning considers, in regard to the second question, that a Works Department ought to save the profit of the contractor; but the statistics given certainly do not tend to confirm this view. Some other light is thrown on this subject by the Minority Report. "A contractor would not have spent 40,000*l.* on workshops where no high-class work was to be done. . . . The workmen, and especially the skilled workmen, showed a lack of energy over their work, apparently considering that less was

* The italics are ours.

to be expected of them towards a municipality—a tendency which, in Mr. Binnie's opinion, can never be entirely overcome." With regard to trades-unions, and the position professedly taken up by the Council, that the interests of trades-unions and employers were to be equally considered, and that the Council was to hold the balance between unionists and non-unionists, the Minority remark "If this was the intention, we must say it has been but imperfectly realised."

An important point touched on in the Minority Report is in regard to the difference in the complication of architectural work as compared with such work as tunnels, sewers, &c., in consequence of which it is suggested that engineering works of that nature may be successfully carried out by a Works Department, but not architectural works.

The following are the recommendations of the Minority Report:—

1. That the Works Department be placed under the Chief Engineer.
2. That no works, whether estimated or "jobbing," be undertaken which come within the definition of architectural works.
3. That the Works Committee be abolished.
4. That the Chief Engineer be responsible to the Spending Committee for the execution of all works undertaken by the Council.
5. That for the purpose of financial control a Sub-Committee of the Finance Committee be formed, to be styled 'The Works Branch of the Finance Committee.'
6. That all materials be purchased by the Chief Engineer, who shall be responsible to the Finance Sub-Committee for the same and also for the custody of all stores.
7. That the Central works, so far as they are not required, be disposed of.
8. That the system of tendering by selected firms be adopted wherever practicable.
9. That the form of contract be revised so as to remove the main objections raised before the Committee on behalf of the contractors.
10. That the above recommendations be not held to restrict the Parks Committee from undertaking, with the sanction of the Council, such works as have hitherto been carried out by that Committee."

We confess that we think this is much the more sensible and practical Report of the two, and its recommendations much more in the public interest.

NOTES.

The North-Eastern Railway Co. and all concerned are to be congratulated upon having steered clear of a great strike. Since we referred to the matter a few weeks ago,* the fate of the arbitration proposals has several times trembled in the balance; and a very little "stiffening" on either side might have resulted in a prolonged and bitter struggle. It is, therefore, greatly to the credit both of the management and the men that they refrained from adopting an unyielding attitude, eventually agreeing to submit most of the disputed points to arbitration. This decision will come as a great relief to the North-Eastern shareholders and to the commercial community of the districts affected, the latter of whom have just had a foretaste of the disastrous results of a suspension of work, while the former are not likely to have forgotten the effect upon their dividends of former great labour struggles in the North of England. Nor will the general public neglect to note with satisfaction the decision to resort to arbitration, as affording another proof that the superiority of common-sense methods of

approaching disputes of this nature is becoming increasingly recognised.

REFERRING to the Kyffhäuser Monument, illustrated in the preceding number, we observe, from our official German contemporary, the *Centralblatt der Bauverwaltung* of Saturday last, that there is a scheme on foot to arrange some extensive grounds for the purposes of great fêtes and ceremonies, and also for athletic competitions, somewhat like the Olympia ground at Athens, and the site selected is in the valley at the foot of this memorial. The illustrations in the *Centralblatt* show a large amphitheatre facing the monument, and flanked by viaducts crossing the valley. Accommodation is to be provided for three or four hundred thousand people, and the dimensions of the ring proper are 470 mètres by 314 mètres. A special committee has been formed, in which Herr W. Boeckmann, late of the firm of architects Messrs. Ende & Boeckmann, together with Professor Bruno Schmitz, are among the more prominent members. A small pamphlet has been issued in their name, describing the object of this new institution.

The Municipal Council of Paris has formally recorded its vote in favour of the installation of the annual Salons, till after the 1900 Exhibition, in the garden of the Palais Royal. According to the approved scheme drawn up by M. Pinat, architect, the necessary structures will include two large parallel galleries terminated by four pavilions surmounted by small domes. These two galleries will be connected, in the middle of the garden, by a "Salle des Fêtes," of rectangular form, occupying the position now occupied by the central basin. These two galleries will contain thirty separate rooms with a total floor area of 4,094 square mètres, and a wall surface of 7,466 mètres. These constructions will only occupy about a fifth part of the area of the gardens, and will be designed to harmonise architecturally with the Palais Royal buildings. Other schemes have been presented by M. Delort de Gléon and M. Bivort, but they were passed over as more difficult to carry out and more costly.

The last number of the *Bulletin de Correspondance Hellénique* contains the full publication of the theatre of Delos recently excavated by the French. In addition to the detailed plan, two very interesting views of the present state of the ruins as now exposed are given. This theatre, as is well known, presents special peculiarities unparalleled elsewhere. The *skene* building is surrounded on all four sides by a colonnade, and shows no traces of having had any internal divisions. Moreover, unlike the theatres of Athens and Epidaurus, there are no *paraskenia*; this is the more noticeable, as inscriptions have been found relating to the theatre, in which *paraskenia* are mentioned. The inscriptions can only be explained on the supposition that temporary wooden *paraskenia* are referred to. The theatre of Delos is discussed in Dr. Dörpfeld's great work on the Greek theatre, to which we hope to return on a later occasion. His plans are necessarily not so detailed as those now given to the public. Dr. Dörpfeld finds in the Delos theatre new

confirmation of his "logeion" theory, but in the *Bulletin* M. Chamonard arrives at a different conclusion.

The Congress of Classical Archæology which was to have been held this month at Athens, and to which we drew attention some weeks ago, is now definitely postponed till the autumn. M. Homolle, the Director of the French School, suggests the end of September or beginning of October, by which time it is hoped Cretan complications may be resolved. September will perhaps, as a vacation month, secure a larger attendance, but the autumn heat, which at Athens is intense, will be apt to paralyse effort, and is even not without risks to those unacclimatised. Meantime, the *Athenæum* of April 3 reports that the antiquities at Candia are in some danger. As among them are some very curious unpublished *psiltoi* adorned with mythological subjects, this is much to be deplored.

In last Saturday's lecture at the Royal Institution Lord Rayleigh first considered the various methods of measuring the frequency of rapidly alternating currents, and then showed some interesting experiments illustrating their action. He described a method of measuring frequencies as high as a million per second by means of a polished steel mirror and a photographic plate, the mirror being made to rotate rapidly by a powerful alternating current magnet. In a great many cases, however, the frequencies are so high that they can only be calculated mathematically from the known constants of the apparatus producing the vibrations, and cannot be actually measured. Hertz's experiment of how the light produced by the sparks from an induction coil increased the spark produced in a resonating coil near it, excited great interest. When a plate of glass was interposed the sparks ceased almost entirely, but when a quartz lens was used, so as to concentrate the ultra violet light on the spark gap, the sparks were large and brilliant. An experiment, due to Professor J. J. Thomson, was also shown, of how a coil, carrying a high frequency current, produced by electromagnetic induction a ring of light inside an exhausted bulb containing traces of vapour. In this case the path of the discharge was wholly gaseous, and there was no anode or cathode. Lord Rayleigh is certainly to be congratulated on the choice of his experiments, as they bring into prominence most interesting points connected with electrical theory.

The recent prevalence of typhoid fever and other infectious diseases in Chelmsford has led to the preparation of a special report to the local Government Board, prepared by Dr. Richard J. Reece. From this Report it appears that the main evil in Chelmsford is deficiency and (under some conditions of weather) uncertainty in the water supply, which is drawn from three sources, an artesian well and two natural springs. The artesian well has not yielded as much as was at first expected, and of the springs, one is liable to contamination, the other to fluctuation as to quantity. The distribution of water is very unsatisfactorily carried out (partly no

* See p. 215, ante.

doubt in the effort to economise an inadequate supply); "many houses are supplied from a single cistern, furnished with a tap and placed in a yard common to the houses, or at some spot accessible to the inhabitants. When these cisterns are empty the people are without water, unless they have access to one of the many pumps of which mention will be made hereafter. In many houses that are separately supplied the cistern is placed over the closet, and from this the domestic supply is drawn, as well as the water for flushing the closet." The provision for excrement removal is not so bad as we frequently find recorded in such reports, but there is evidently a great deal that requires amending; badly constructed water-closets with insufficient supply of water; ashpit privies which, though cleared by the public authority, are not cleared often enough. But insufficient water supply is evidently the leading evil at Chelmsford. The pumps referred to in the above quotation—pumps drawing from private wells—are the resource of inhabitants who cannot get a sufficient or regular supply of water from the public sources; and the water of these private wells is often contaminated.

The interesting paper by Mr. Baylor, on "Recent Developments in Electric Traction Appliances," which was read on Wednesday evening at the Institution of Electric Engineers, is a most important one. We have heard too much lately of the opinions of Town Councillors on electric traction after their trips abroad, and too little of expert testimony. Mr. Baylor first drew attention to the growing practice of driving the electric generator direct instead of by ropes or belts, and rightly pointed out that not only is the efficiency of the plant increased by direct coupling, but also, since it requires less space, the buildings may be smaller and less expensive. There are a few engineers who still consider the direct coupling of traction units unsafe practice, but seeing that there is some 300,000 h.p. of such machinery in successful operation, they will probably soon change their views. Mr. Baylor's remarks on the overhead trolley were thoroughly sensible, and devoid of any special pleading. His arguments in favour of alternating current systems as against three-wire systems we did not quite agree with. Professor Kennedy has recommended a three-wire system for the Brompton and Piccadilly underground electric railway. The most valuable and novel part of the paper was on electric brakes. The old emergency electric brake put a great strain on the motor and spur gearing; often the gear wheels were stripped and the armature burnt out. The new electric brake replaces mechanical brakes altogether; there is no wearing of the wheels by a brake-shoe, skidding is impossible, and there is very little strain on the gearing and armature.

The business with this sign, now known as "Martin's Bank," and previously as that of "Martin & Co.," is believed to be the oldest private bank in the City, and to represent the business house in that street of Thomas Gresham, whose crest forms its sign. The rear portion of the present premises, in Change-alley, was built in 1874,

"The Grass-hopper," Lombard-street.

after the designs of Mr. R. Norman Shaw, R.A. They stand upon the site of the old "Garraway's" Coffee House, burnt, together with "Jonathan's" and "Robin's," in March, 1748. The late Mr. J. Bidolph Martin published, in 1892, an illustrated history of the firm, to which he was admitted as a partner in 1864. It is said that Matthew, father of Jane, Shore, goldsmith, kept his shop, more than four hundred years ago, on the spot where is now the bank's public office; there was a Martin, a goldsmith, in Queen Elizabeth's reign; but as the chronicle comes down to the times of Duncombe, Kent, the Blackwells, the Leavers, and the Stones it runs with a surer tale.

The Guildhall Exhibition. The Exhibition this year at the Guildhall has a special interest, as it is intended to be a representative exhibition of the art of Queen Victoria's reign. It is not in this respect a complete or all-round one, but it affords interesting opportunity of comparing one's present impression of works of the earlier period of the reign with the impression they made on their first appearance, and we shall return to it in this sense.

The Minor Exhibitions in London. The exhibition of the New English Art Club at the Dudley Gallery is much as usual—a collection of ugly and eccentric works, with a few clever and powerful things interspersed among them. Mr. Furse has two or three brilliant and broadly-executed portraits, of which that of Mrs. Marshall (37) is the best as a picture, but the general effect is much better than the painting of the head and hands. Mr. Guthrie's "Vanity Fair" (70) lent by the Corporation of Glasgow, is an exceedingly clever sketch on a large scale, rather than a picture. One or two members have made experiments in architectural subjects; Mr. Walter Sickert sends a large elevation (one may call it) of St. Mark's, Venice, flat in appearance and dull in colour; Mr. G. Thomson paints Westminster Abbey with more force, though the picture certainly does not represent the colour or appearance of the building as we have ever seen it. Mr. Lindner's experiment with sea surface is not successful in "Christchurch Bay"; it looks like sea with patches of some coloured stuff floating on it. Among things that one could find pleasure in may be mentioned Mr. Fred Brown's "The Mirror" (87), a real picture; Mr. Buxton Knight's "Autumn's Threshold" (88), fine in colour though rather ragged-looking; Miss Fanner's "The Chestnut Tree" (98), with a fine sky and light in it; and M. Renoir's "Tête d'enfant" (115). At 14, Brook-street is to be seen a very different exhibition, that of about seventy works by Mr. Legros, full of originality, power, and expression. Among the five oil paintings "Femmes en Prière" was seen some years ago at the New Gallery; it is a most interesting and remarkable study of character and expression in faces and figures. The "Effet du Matin" is a fine and truthful representation of a landscape under early morning light, before sunrise. The drawings include many effective and original landscape studies, in a method peculiar to the artist—a mixture of wash and pen line; there are also some interesting studies of figures and heads. The two or three studies called "La Mort," each grouping a nude girl with a figure of Death, have a

remarkable and weird effect, and are admirably drawn. The collection is one which should not be neglected.

THE third exhibition of the Minor Exhibitions in Paris. "Pastellistes" is the most brilliant they have given. It includes about 150 pastels, of which thirteen are exhibited by M. Besnard among the most remarkable things he has ever produced. Among them the "Femme Drapée," the "Collier," and the "Jeune Espagnole" are especially fine, both in drawing and colour, and they are free from the tendency to sensational exaggeration which has often been the weak point in this artist's works. There are some fine portraits, by M. Georges Callot, a good one by Mme. Madeline Lemaire, some scenes in rustic life by M. Lhermitte, flower paintings by M. Elliot, and various admirable landscapes by MM. Pierre Lagarde, Billotte, Nozal, Montenard and Gaston Guignard. The "Artistes Indépendants" have also opened their exhibition in the Palais des Arts Libéraux, but of this the less said the better. This exhibition was formerly amusing, in a way, from its eccentricity, but now even this attraction has departed, and the collection is simply dull.

THE ARCHITECTURAL ASSOCIATION: ARCHITECTURE IN RELATION TO THE CRAFTS.

An ordinary fortnightly meeting of this Association was held on the 2nd inst., in the Meeting-room of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street, Mr. W. H. Seth Smith, Vice-President, presiding. The minutes of the previous meeting having been read and confirmed, and Messrs. W. M. How and W. H. Purchase having been elected members of the Association, Mr. E. Howley Sim, Junior Hon. Sec., proposed a vote of thanks to Mr. R. Greville Montgomery for allowing the members to visit the recent Building Trades Exhibition, and for providing tea on the occasion.

The vote of thanks having been cordially agreed to, and Mr. Banister F. Fletcher having announced some donations to the library, the Chairman read the House-list for the coming session, as follows:—

House-List for New Session.

President, Mr. H. W. Pratt; Vice-Presidents, Messrs. B. F. Fletcher and A. H. Hart; Committee (ten to be elected), Messrs. R. S. Balour, W. D. Caröe, H. B. Creswell, A. S. Flower, F. T. W. Goldsmith, C. de Gruchy, F. G. F. Hooper, E. H. Parkes, H. Passmore, Beresford Pite, G. H. F. Pryme, W. H. Seth Smith, J. W. Stonhold, A. B. Thomas, and J. L. Williams; Hon. Treasurer, H. W. Pratt; Hon. Librarian, C. H. Freeman; Hon. Secs., E. H. Sim and G. B. Carvill; other officers: Hon. Solicitor, W. H. Jamieson; Hon. Assistant Librarian, E. W. M. Wonnocott; Hon. Auditors, M. Garbutt and H. P. G. Maule; Assistant Sec. and Registrar, D. G. Driver.

Mr. T. G. Jackson, R.A., then read the following paper, entitled "Architecture in Relation to the Crafts":—

It used to be the fashion for any one writing or speaking on architecture to cite Vitruvius as the authority for what he said. The writings of Vitruvius are no longer regarded by everybody as the gospel of architecture, and, indeed, are now perhaps rarely read by architectural students. And, yet, on the present occasion I cannot do better than take as a text the opening passages of his treatise which seem to apply very aptly to the subject for discussion to-night.

Vitruvius distinguishes at the outset between practice and theory in architecture, and goes on to point out that architects who are mere handicraftsmen without literary training are unable to give any reason for what they do, while those who trust only to theory and book learning without practical training seem to grasp at a shadow, and not reality.

An architect, he says, must be properly trained in both fields. He must be both ingenious and teachable, for neither will vit

without training, nor training without wit make him perfect artist. He must be a skillful draughtsman, a learned geometer, a not ignorant of optics, instructed in arithmetic, a good historian, and a diligent student of philosophy. He must understand music; he must know something of medicine; he must be familiar with the decisions of the lawyers; he must understand astrology and astronomy. This is a formidable programme, and if one night, without profanity, speak disrespectfully of writer who has hitherto been considered almost sacred, one would almost be tempted to say he was writing nonsense. The first part of his list is, no doubt, necessary enough, and as to the latter part, when we come to his explanations, we find that they do not make so much demand on the student as at first sight they seem to do. The usefulness of his historical lore is to enable the architect to explain the meaning of some of his ornaments, and to tell the inquirer that the figures of Caryatides which were used as columns, were derived from the matrons of Caryas, a Peloponnesian city, who were carried into slavery because their country had sided with the Persians against the Greeks. Philosophy is needful to him only in the same way that it is needful to everybody—to prevent him being arrogant, and make him just, honest, and temperate. As for music, he seems to require it principally for testing, by the note they give, the strain of the ropes of catapults and military engines. His knowledge of medicine should be sufficient to guide him to avoid wholesome sites and bad water. As for his knowledge of law, Vitruvius seems to think he ought always to be an expert in questions of party-walls, rights of drainage, and light and air. After this long enumeration of matters requisite for an architect, Vitruvius draws the line. Pythius, the architect of the temple of Minerva at Priene, had said that an architect should be able to excel in all the arts, and in each to surpass those who made that art their especial study. Vitruvius thinks Pythius does a great deal too far. An architect, he says, neither need be, nor can be, such a grammarian as Aristarchus, but he must not be unlettered; he need not be a musician like Aristoxenus, but he must not be without musical sense; nor need he be a painter like Apelles, but he must not be unskilled in drawing; nor need he be a sculptor like Myron or Polycletus, but he must not be ignorant of the plastic art; nor, finally, has he to be a doctor like Hippocrates, but he must not be without knowledge of the laws of health; nor in other studies need he excel as a specialist, but he must not be wholly unskilled in any of them. To say that architects should excel in all these things is to demand an impossibility because it is only now and then that a man can excel in one art even if he pursues no other. Pythius therefore is clearly wrong, and has one astray because he has not made a proper distinction between practice and theory. Therefore, says Vitruvius, he seems to have one quite enough in these several branches of study, who has a fair knowledge of those arts and theories of them which are necessary to architecture, so that if he should be called upon to pass judgment upon or to approve these matters and arts he should not be found wanting.

Vitruvius, therefore, waters down, as he goes on, the somewhat strong dose which at first he seems determined to administer to the student of architecture, as a tonic necessary to his constitutional well-being. A general theoretical knowledge of the various crafts, which it will be his business to direct, sufficient familiarity with them all to prevent his passing indifferent work on the part of those who work under him, seems to be the measure of the practical requirements necessary to an architect, according to the Roman authority.

On the other hand, we have the dictum of the Greek architect, Pythius, who says that the architect must not only have this general theoretical knowledge, but must be actually skilled in the practice of all the arts which he has to deal with; and not only that, but superior in each one of them to the specialist who follows only that single art.

Which of the two is to be our guide? Shall we be satisfied to be proficient in the theory of our art, learning it from books and lectures, and merely acquainting ourselves with practical work in a general way, enough to enable us to understand our specifications, and order the work properly, and detect flagrant instances of inferior workmanship and bad material; or

are we with Pythius, to put our hands to the work ourselves, and not only design but help to execute it; to train ourselves to be master craftsmen as well as superintendents and directors of other men's labour?

For many generations past the former of the two methods has been the order of the day. Most of us who have reached or passed middle age have been brought up under it, and if we have, to any extent, departed from it, it has been of our own initiation that we have done so.

That this plan was not that in vogue during the best periods of modern European art is well known. It was not in that way that the architects, or building-artists of the Renaissance, in its earlier and more independent days, or those of the middle ages worked. They would have been at a loss how to go on if you had parted them from their building and their workmen, and shut them up with a drawing-board and a T square, and asked them to make their designs and convey their instructions by means solely of drawings. Their method was that of Pythius rather than that of Vitruvius, whose gospel, fortunately had not in their day obtained currency, or been placed on the canon of inspired authorship.

I need not tell you that of late years there has been a revulsion against what I will call the Roman method of practising architecture in favour of the Greek. Many of us have been preaching against the strictly professional view of architecture, and urging that a man cannot be expected to produce good designs who seldom or never comes into contact with the materials out of which his designs have to be constructed. We have argued that it is from the handling of material that suggestions in design can most readily be gathered. That reading about processes in building, or any of the arts which go to make up a building, will never teach a man how to make the most of his opportunity, how to use his material to the best advantage, how to economise labour so as to avoid wasting it to no purpose, and how to design in accordance with the natural qualities of stone, iron, or wood with which he has to deal. We have tried to impress on the student that an hour spent in the workshop or on the scaffolding will often teach him more than a week spent in a library. We have gone still further, and tried to persuade students not only to go and see how things are done, but actually to put their own hands to the work, and to become handicraftsmen in one or more of the many arts with which as architects it is incumbent on them to be familiar, and of which it is necessary the technicalities should be understood by any one who undertakes to design for them.

These proposals, however revolutionary they appear to the advocates of the old-established professional system, according to which architecture has so long been practised among us, are still, it is clear, very far from bringing us again to the methods of the architects of four hundred or five hundred years ago, to say nothing of those of the Greek architect whose demands seem to Vitruvius so extravagant. The contracts which Bishops and Chapters and others who intended building on an important scale made with their architects bound them down rigidly to a much more constant and intimate association with their work than a modern architect would submit to. The architect bound himself to come with his family and live in the place where he was to build, to engage workmen, and see that they did all that was necessary to be done, to work with his own hands, both in building and in sculpturing, as befitted a good sculptor, and a master of the art of stone-cutting. He was also to go to the quarries as often as was necessary, and arrange for the quarrying of the stone. Furthermore, he was bound for the term of so many years, during which the building was to be constructed, not to undertake any other work without the special leave of his employers, or a majority of them, or if he were engaged on some other building in the same or a neighbouring place, the time he should devote to each was strictly specified. Finally, he bound himself to supervise as chief master builder and superintendent all the labourers, builders, master workmen, and handicraftsmen employed on the building, and to supply them with such dimensions, orders, and methods as would be required during the progress of the works. For all this he was to receive a fixed annual salary, to which was sometimes added a gown or two gowns in the year, and perhaps a house was provided for him to live in with his family.

The architect of those days, therefore, was a superior clerk of works, as we should call him, with this radical difference, that he had no master over him, sitting most of his time in an office perhaps 100 miles away, directing him by the penny post what to do, and sending him drawings to show him how to do it. Imagine a modern clerk of works to have had the training of an architect as well as that of a tradesman in one of the handicrafts, that is to say, to have the skill to design the work he directs; or, what is the same thing, imagine a modern architect to have learned one or more of the manual trades, and to choose to go and superintend one of his own buildings as his own clerk of works, and you have the nearest approach to the architect who designed and raised the mighty structures of the past, which it is our aim to rival, and our despair to surpass. He would necessarily be a mason to begin with, for masonry is the king of all the trades, the one which all the rest follow, and the one which, blending itself, as it does, imperceptibly with sculpture—which is but a refinement of masonry—passes without any visible or marked transition into the higher region of fine art. In olden time sculptors and architects were the same persons, or, at least, though there were sculptors who were not architects, there were probably no architects who were not sculptors, capable of designing the carved work of their buildings, and of executing the most important parts of it—notably the figure-work—with their own hands.

Let us for a few minutes try to realise in our own persons what it would be like to practise architecture after this fashion. Let us shut our eyes to the present and try to open them again in the days of, say, Henry VI. or Lorenzo dei Medici. The dingy office in a London street vanishes from our sight. Away go the high stools, the drawing-boards, the dusty piles and rolls of paper, for—oh! blessed release—there will be no more working drawings to make, and little drawing of any kind whatever. The office bell will no longer send a shock through our nerves, announcing the coming of a visitor to interrupt us at the most critical period of a design. The approach of post-time will no longer drive us into a frenzy to get off arrears of correspondence that cannot be postponed any longer, for we shall have little reason to write to any one. Our employers will be on the spot with ourselves, and an occasional conference on the building itself will make much letter-writing unnecessary. Away, too, goes all that tedious necessity of long railway journeys which dissipate our time, and exhaust, perhaps four hours in travelling for every hour we have to spend on the work at the end of it. Our work will now be all under our eyes, or near at hand, and the hours wasted in the railway carriage will be employed to good purpose on our growing building. Away, too, go the long specifications, the contracts with builders, the lynx-like supervision required to keep their performance up to their engagements, for we shall, either be our own contractors, or else have workmen under us employed and paid directly by our own employer.

Relieved of all these official and commercial occupations in which I venture to say most of us—do what we will—find half, and more than half, our time spent, we shall pass our working days clad in the workman's blouse, setting out our work on the ground, drawing such simple diagrams as will give the workman the proportions and dimensions of the several parts, marking out the mason's moulds, perhaps taking the mallet and chisel out of his hand to show him practically how we want certain parts finished, trying on the building itself as we can nowhere else see the scale and proper character of our sculptured ornament, without doubt doing so much of it ourselves as will give the clue to the subordinate carvers, and probably finishing some of the most important parts with our own hands. Conceive the sureness and confidence with which we should work. There would be none of that experimental and hesitating anxiety which makes us doubt after drawing out a design whether it will come out as we intend in actual execution. No! there is the building itself on which to try experiments. When the thing is going wrong we can stop it at once and correct our original device and substitute something better; and there will be no contractor to worry us for an "extra" on the inevitable plea that the new way is more expensive than that for which he contracted. And so our building will rise, and as it nears completion, and the scaffolding comes down, and

we stand with hands behind us, and head thrown back, to see our creation as it emerges in its maiden whiteness from the enveloping veil of poles and planks, we shall feel that it is indeed our creation, the work of our own brain, and in a measure of our own hands, in a way that no architect can quite feel now about any of his creations, however much pains he may have devoted to them.

This, gentlemen, I venture to think, will appear in eyes of many of you—certainly to the younger men among you in whose bosoms the stirrings of art have all their youthful freshness—an attractive picture. Can we realise it at the present day? Or, if that is impossible, how near can we get to it?

Can we get back to it? Well, of course, we cannot do it in a hurry. But can we expect ever to get back to the old system at all? I think not. It would be putting the hands of time back too far. Changes of system do not come about without some reason in the natures of things and of men, and to neglect the conditions of modern life in art while we admit their supreme influence in other fields would be not only unpractical but unphilosophical. Take, for instance, the matter of working drawings. The drawings used in olden time were of the slightest and most conventional kind. Even in Wren's time working drawings such as we make for every detail were not found necessary when competent workmen were employed. When sending his small scale plans and directions for the library at Trinity College, Cambridge, Wren adds, "I suppose you have good masons; however, I would willingly take a further pains to give all the mouldings in great; you are scrupulous in small matters, and you must pardon us, the architects are as great pedants as critics and heralds." In his day there were trained schools of masons and joiners who had traditions of their own, and could be trusted to apply them. The architect gave them the size of the door, the scale and amount of ornament he wished to use in the doorcase, and the workman had sufficient skill to fill up the details of the sketch and to realise the architect's intentions as he would have them. So with the masons: to give them the moulding "in great" would, Wren seems to imply, be unnecessary if the men were good craftsmen. But where are the workmen nowadays who could be trusted to do this? It is easy to imagine the result if we tried the experiment.

There are very many architects who do try the experiment of dispensing with working drawings, not from any desire to return to the older system of work as being better, but simply from the wish to save themselves trouble, or else in order to save their time for more lucrative occupations which have little or nothing to do with architecture. Some of them employ a ghost, and the ghost naturally takes little interest in a work which is neither his entirely, nor anybody's entirely, and the details come off badly. Others dispense with the ghost, and leave all the details to a contractor. One builder told me that when he applied to an architect for details of a certain work, the only answer he got was, "Take it and do it, and don't bother me about it." In another case the builder told me the only full-size details furnished him by the architect of a building which cost 6,000l. were those of a cellar door and a coal-shoot, and that he—the builder—himself made all the other working drawings, and did not even go through the form of showing them to the architect. Now, I need not tell you that, whatever may have been the case in the days of Sir Christopher Wren, there is no school of workmen nowadays capable of filling in the details on a general design given them by an architect. Nor need I tell you that it is on the details of a design that its success depends for its ultimate appreciation, no less than on the general conception; for no grandeur of idea, or originality of scheme, will make a good building if it is badly carried out in its details. An amateur may and often does have good conceptions in the mass, but it is only the artist who can carry them out into execution successfully, because he alone is capable of contriving the parts out of which the whole general idea is built up. It may be imagined, therefore, what kind of architecture results from the method I have described when the nominal architect gives only the rough idea of the building, and leaves the details to men who have had no artistic training whatever. Indeed, there is no need for imagination in the case, for the streets of London are lined with buildings erected on this system, expensive and costly buildings very

commonly, for the worst modern architecture is the most gorgeously decorated, and lavish expenditure on ornament is the last resource of an incompetent designer.

But if neither builder nor workman can be trusted to supply proper details for the carrying out of an architectural design what conclusion is left to us but that they must be done by the architect? How is he to supply them? Of course, he might, like the old men, go and live on the work, and give the details to the workmen by word of mouth, or by example, or by setting out the moulds and dimensions with his own hands. I do not know how many of you are prepared to follow your craft in this way. You would only be able to look after one, or at the most, two or three, buildings at a time, and though you would save the expense of an office, I fear 5 per cent. would not enable you to earn much more than a bare livelihood. Drawings, I fear, are, and must remain, a necessity if an architect is to have his designs carried out as he intends, and if he wishes to have full justice done to them.

Again, there are many buildings in modern times involving intricacies of plan which must be carefully plotted on paper and could be contrived in no other way. Old buildings were very simple, and in their plans there was very little variety. One manor house was arranged very like another manor house, and one cathedral or church on much the same general lines as another. Those buildings of our own day which retain this simplicity of plan could be built without drawings just as the old ones were. It would be easy enough to build a great church from foundations to cap-stone of spire without a single drawing but such rough diagrams as the designer would need to enable him to put the parts of his building together. But when we come to such elaborate buildings as the modern town halls, or technical schools, or boarding houses of our public schools, or theatres, or when we have to deal with confined and scantily lit sites, as in the streets of London, careful and elaborate plans are a necessity, and the drawing office indispensable. There is no prospect whatever of our being able to build in the future without drawings, and we may dismiss as impracticable all hope of superseding them by supervision and direction on the spot, and of being able to shut up our offices and take to the building sheds and the scaffolding.

But admitting all this—acknowledging, as I fear we must, that the necessities of modern system are too strong for us, and that we must, in the main, go on as we are now doing, is there nothing we can do to place ourselves more in touch with the handicrafts? If we cannot go the whole way, may we not go part of the way to meet those workmen on a common footing with whom, whether indirectly or directly, we cannot help co-operating in the carrying out of our designs? If we cannot, as Pythius would have us, excel in all the arts, so as to surpass in each one of them the skilled workman who has followed that one alone, and made himself master of it, surely we may, without being unreasonable, demand of our architects that they shall at least not design things without knowing how they are to be made. Nor is it unreasonable to ask us to be better masons, better joiners and carpenters, better smiths and better plasterers than the men who follow those callings and do nothing else, is it unreasonable to demand that every architect should so far familiarise himself, by actual observation and inquiry, with every one of these trades, that he may know how to make designs suitable to the material employed and the way of employing them? And yet we are all our lives designing things without knowing how they are made. How is it possible we should, not in our ignorance, give a world of unnecessary trouble to the workman, cause a deal of needless expense to our employer, and miss altogether that propriety in design which arises from proper use of material, because the proper use of it is unknown to us? Take, for instance, the case of wrought-iron work. Every architect is called upon constantly to design such simple things as railings, grills, balustrades, in that material. He draws, probably, something after good examples that he has seen; perhaps he tries to improve on them and design something new, and if he knows nothing of smith's work except from books and drawings and such sketches as he has made of his own, the alterations he makes very likely make what was very easy into something very difficult, if not impossible; and even if the workman gets over the difficulty

by some troublesome device of his own, the labour involved is thrown away, and might have been saved by a little knowledge on the part of the designer. Those who have seen designed ironwork on paper, and never seen made, would be astounded to find how very differently it was done from what might have been imagined, and how very much more simply their design might have been done. I altering it a little. I wonder how many in your room have any idea how so simple a thing as the ordinary forked baluster is made, with one foot to be let into the stone for each pair of balusters. I confess I did not know till the other day, when I wished to vary the form of the thing so as to give it a little more character, but began to doubt as I went on whether the smith could make it. So I went to the forge and had some experiments made, and found that the usual process was quite unlike what I had imagined. Another advantage of the visit was, that I was able to suggest to the smith other ways of doing it, and before we finished we had made a forked baluster in four different ways, and found out what was the easiest and cheapest. This seemed to me an instance of the way in which designer and workman can help one another; the designer, from having seen his way to fresh possibilities, while the workman, from habit, had not thought of doing anything but what he was used to.

Let it be a rule, therefore, with every architect never to design anything without knowing whether his design is practicable, and practicable according to the received traditions of the craft concerned.

But may we go no further than this? May we not require that he should be able to put his own hand to the work as a handicraftsman in one or more of the trades over which he has to exercise control in the ordinary discharge of his duties?

There are some trades of which it is obvious such knowledge as an architect can derive from observation is enough. Going through the trades in the specification according to the order, we begin with *Excavator*. It is, I think, obvious that a man would not improve himself in architecture by going to work in the trenches with pick, shovel, and wheelbarrow.

Next comes *Bricklayer and Waller*. I once built a brick wall, but I do not know that I learned much from it, except that bricklaying was not so easy as it looked, and that if it were hard to keep a true upright it was still harder to keep a true level. The bricklayer to whom I showed my wall when it was done could not say that he thought it strong but very ugly. I do not know that I should advise any of you to follow my example.

Carpentry and Joinery are more within the reach of every one, and a course of training on the bench may safely be recommended to a man who has to do with building as supreme usefulness.

I need not go through all the trades, but *Masonry* brings us near to the very centre of architecture. To be a practical mason would not in my opinion be so useful an accomplishment for an architect as skill in joiner's work. The ordinary problems of stone-cutting can, I think, be understood without actually handling the chisel and mallet. But masonry, as I have said, melts insensibly into sculpture, and is not always easy to say where masonry ends and sculpture begins. What will you do when you come to the carving of your building, and of course, come you must in a building of any importance? If you only care for quantity and not for quality you can, of course, leave it to many do, to the carver, and simply get an estimate and leave him to do his best, which in that case may be also his worst. But you will not, I am sure, if you are in earnest, be content with so perfunctory and vicarious way of bestowing on your work its principal adornment. You will have your own notion of the scale, the character, and the finish of your carved work; you will feel that the outline of your sculptured capitals is as important as the profile of your mouldings, that the play of light and shade in your foliage string-course or your enriched frieze was an important element in your design; you will desire for your sculpture an historic character, illustrating the purpose and circumstances of your building; and above all you will feel that the same feeling which you have impressed on the purely architectural part of your design must be carried into the sculpture, decoration, or the unity of the effect will be marred. You must impress yourself on the work as you have done on the rest.

How are you to do this? You may spend hours standing over the sculptor or watching him model what is afterwards to be carved, and tire both him and yourself by suggestions and counter-suggestions which perhaps end in mere mediocrity and dullness, because though both of you want something different you do not want the same thing and are unable to explain your meaning to one another. But if you were able to finger the clay yourself you could realise to yourself your own intention, and explain it to him perfectly, and in this way you would succeed in getting what you want as you can in no other.

Every architectural student, therefore, ought to learn to model. He will find it of the greatest service to him in his future career, not only in enabling him to explain his meaning to those artists who will collaborate with him, but also in fixing and correcting his own loose ideas of sculptured decoration, and helping him to secure for it that character which will correspond to his intention. If he goes on to carve so much the better; for my part I should like to see the callings of sculptor and architect rolled into one.

As to the other crafts time forbids me to speak more at length. Every man, be he artist or not, should, like the ancient Jews, be taught some handicraft; and to us architects such an accomplishment would naturally be doubly useful. We cannot expect that an architect should have actual manual experience of them all, still less can we require, with the Greek writer, that he should have mastered them all. But we have a right to demand that he shall by actual observation acquaint himself with the methods and difficulties of them all, not from books but from the workmen, not in the library but in the workshop. Let him never make a design without knowing how it will be carried out, and if in doubt let him go with it to the workshop, the building shed, or the forge; let him consult the men who are to make it, and then correct or alter his design to suit the difficulties of material and workmanship. In this way we may expect to infuse a new life into our architecture and to awake it from its torpor. The knowledge you will acquire in this way will not be of a kind to be tested by examination, or to enable you to win prizes and scholarships, but you may feel assured it will be the means of making you better artists individually, and of advancing the art of your country as a whole.

Mr. Owen Fleming, in proposing a vote of thanks to Mr. Jackson, said that he had listened with very great pleasure to a most thoughtful investigation of the problems that faced modern architects who were anxious to put into their work the same spirit that we found and admired in ancient work and that we missed and deplored, speaking of it as a whole, in modern work. We realised the very great difficulties that lay in the way of any return to the almost idyllic picture of medieval times which Mr. Jackson had sketched out. He (the speaker) knew of one old student of the Association, Mr. Detmar Blow, who had given up some excellent opportunities of becoming a good paper architect, and had articulated himself to a firm of masons and had worked on actual building. He believed that Mr. Blow was of opinion that his future work would certainly be better for the experience thus gained. There were a few other architects, though they could be counted on the fingers of one hand, who had been self-sacrificing enough to take a similar course. Having regard to modern conditions—to the intricacies of planning referred to by Mr. Jackson, and to a matter to which Mr. Jackson had not referred, but which had always been a great difficulty with him (the speaker), viz., the problem of getting an estimate before one began to build (which seemed to him to be impossible under any system of building without careful drawings)—with these difficulties before one he did not think we could hope to return to the ways of the past. But he thought there were things we could and should do, and it would be interesting to consider what the Association had done and could do. They would remember the old voluntary system that wanted organising and bringing into form. That was done after some years of hard work, with the aid of a man whom the Association would never forget, viz., Mr. Leonard Stokes. But having taken the course they did, they found that they had gone a little too far, and that they had not sufficiently pro-

vided for the practical side of an architect's work, and in consequence they found, much to their regret, that some well-known architects whom they wished to carry with them were rather opposed to them. Mr. Stokes and his colleagues therefore sought some method of bringing the views of those gentlemen into harmony with the system that had been drawn up, and then followed the memorable conference at which they arrived at a *modus vivendi* which would have enabled them to carry forward a general system acceptable to all architects. Their action, however, was ill-understood, and some very unpleasant years elapsed, during which some of those who had done women's service for the Association were given their *congé*, while the new scheme seemed to be falling somewhat into the hard-and-fast lines of the *Ecoles des Beaux-Arts*. This course, however, did not give satisfaction, and an endeavour was made to induce those governing the Association to see that a purely academic form of education was likely to injure rather than improve architecture and building, and he thought that much had since been done in the direction of that view. Among the Visitors to their Studio their older friends were now reinforced by men like Mr. Jackson, Mr. Prior, Mr. Lethaby, Mr. Ricardo, Mr. Voysey, and others—in fact, nearly all those who were earnestly desirous of carrying forward a practical scheme of education. Last year at the School of Design and Handicraft they began a new system, and, instead of trying in a scrappy way to sketch out building after building month after month, they resolved to take one building and work it out thoroughly, dealing with each material separately. The system was fairly successful, and this year it had been developed, and when the work of that school came to be exhibited, as it would be within the next two or three months, his hearers would feel encouraged at the result, and would begin to think that the right course was being pursued. This year they had deliberately put on one side the reproduction of past forms. What was aimed at was to study the material—to get at the real thing and the possibilities of the material with which they had to deal. When this was satisfactorily done, then their drawings would be simply diagrams illustrating as far as was necessary how certain materials ought to be treated. They had been working, owing to the kindness of Mr. Lethaby, at the new School of Arts and Crafts, which was going to do a very great deal towards the improvement of artistic handicraft. They had been working in stone and lead, and some of the recent results were thoroughly satisfactory. He thought that the Association had arrived at a critical period of its existence, and he feared that there would be a struggle between those who believed in the academic method of treating architecture and those who believed in the practical. He did not object to examination as examination. He had spent years in preparing for the Institute Examination himself, but though he did not know it then, he now thought that those years had not been used to the best advantage. But, for all that, he did not wish to evade the Examination; as they had to pass it, let them get through and be done with the matter, and then turn their attention to real architecture and building. Mr. Lethaby had recently told him that they had practically only to ask the Technical Board and good workshops would be placed at their disposal, and he (the speaker) hoped that some possible system would be adopted by means of which those workshops could be incorporated in the Association's new premises. It did seem to him to be essential that the workshops should be on the premises, so that when they entered their premises they would have oral demonstration that real handiwork was being carried on. Architectural students would then feel as engineering students do, viz., that they were part of a living, working profession. If the Association endeavoured to produce paper architects simply and solely, they would be taking a retrograde step which would do very great harm to English architecture. It was interesting to consider how the Association could move in the direction of the solution of what he supposed was the greatest question that architects had to consider.

Mr. H. W. Pratt, in seconding the vote of thanks, said he had been much interested in hearing Mr. Jackson state so clearly and so moderately what architects should undertake in the way of handicraft work. They had been

more and more led to believe that an architect's education was not sufficient unless he had a very considerable knowledge of almost every handicraft with which he would have anything to do; and although Mr. Jackson would like architects to know as much as possible of those trades, yet he supposed that Mr. Jackson meant that every architect should be specially taught some handicraft, and he, no doubt, would agree that a proper knowledge of one handicraft would be better than a smattering of many. There was, no doubt, a tendency, and technical schools seemed to have exhibited it, in the direction of the acquisition of a smattering of handicraft work, which led to the students going about their work in an amateurish sort of way. He would be very sorry indeed if technical education on these lines should be taken up by architects. He thought that if an architect in his student days took up masonry, or carpentry, and confined himself to one or the other, he would fulfil all the conditions that might be reasonably expected of him. There was no doubt that there were many interesting allied trades of which an architect should have some, if not a considerable, knowledge; but unless architects were able to get two years' work into one, it would be impossible for them to attempt to thoroughly learn all these subsidiary trades. To follow successfully and satisfactorily one trade would do an architect a great deal of good, while to attempt more would probably be harmful. The Association, although it had not yet accomplished much, was moving in the right direction. Mr. Jackson had referred to the need of modelling in an architect's work, and he (the speaker) would commend to the students their modelling class, which was one of the best classes they had, and which was under the direction of Mr. Pomeroy. That work, he was glad to say, was being actually carried on in their own premises, but it would be a very large undertaking to set up carpentry shops, forges, and so on. The idea was pleasing, but the practicability of carrying it out was quite beyond their reach, though the sympathy of the committee was entirely in that direction; and whether they established workshops themselves, or whether they secured facilities for their students elsewhere, there was no doubt whatever that students ought to be more intimately connected with the handicrafts. He thought the Association might do more in this direction even at the present time, viz., by visiting workshops. No doubt it was a little difficult to arrange, but at the same time, next to actual working, it was an advantage to visit workshops while work was being carried on. The illustration which Mr. Jackson had given them in his own life was very interesting. Members of the Association might, if they had facilities given them of visiting workshops more often, derive a vast amount of knowledge in this way, and what would be difficult to obtain in any other way. He was glad to hear from Mr. Jackson how an architect should get his work carried out, especially when he replied to those who said there was no necessity for an architect to put his designs on paper. Mr. Jackson looked at the matter in a common-sense way. There was no doubt that at the present time no one was able to carry out work satisfactorily without the supervision of a master mind, and as a means to an end an architect's ideas had to be put on paper. There was no doubt that if they studied and followed some particular trade, and if they used their observation in acquiring knowledge of other trades, they would be doing much to realise the objects they had in view, one of which was to know how to work and treat materials in which they were designing. Architects in past days usually had to confine themselves to one work at a time, and he did not suppose that many architects of the present day would object to a more equal distribution. He remembered that the large building at Virginia Water for Holloway was carried out under rather unusual circumstances, like those which prevailed, in fact, in past times, for Mr. Crossland, the architect, and his whole staff resided on the spot until the building was completed. This was an opportunity, however, which did not often occur. Mr. Jackson's paper would set them thinking as to how far they could go in that direction. Mr. Jackson's ideal was a very high one, but he had brought it down to attainable limits, and he (the speaker) felt sure that they would do their best to forward the movement by combining with the crafts for the development of architecture as a whole.

Mr. C. H. Brodie, in supporting the vote of thanks, said that young architects should all try to go as clerks of works for some time upon buildings being erected. If young architects were to do this, and were to see the erection of a building from the excavation to the finish, the result would be very satisfactory; no architect, in fact, was thoroughly competent unless he had had such opportunities. An architect clerk of works, especially one with artistic leanings, would make it his business to go into workshops to see the different parts of a structure made in different materials. In reference to engineers, they as a body knew much more about their work than architects, and that result was obtained because engineers were bound to spend a portion of their time as students on works in progress; and until architects did that he thought they would be as blind men leading the blind. In addition, of course, the young architect might take up some handicraft; but, at least, he should be upon one building during the whole time of its erection.

Mr. Banister F. Fletcher said that he thought Mr. Jackson had given them, in a rather more moderate way than many of them expected, certain of the views he had expressed in a recent book which he had published. The historical part of Mr. Jackson's address, in which he dealt with the old architects or masons, was interesting; but the difficulty seemed to be to know exactly what those men were, and how they carried out their work. We had no really direct evidence, as far as he was aware, as to who really made the designs for the mediæval cathedrals. He was inclined to think that the "workmen element" was rather to be remarked by its absence in the designs in question. He was inclined to think that there was an intellectual element which we were not able to get at, because few drawings prepared in those times had reached us. It seemed to him that there must have been some more responsible authority, and some person of greater knowledge, than could be expected from a mason, for instance. Of course, these remarks related to the historical part of the paper, and so far as the architects of to-day were concerned those remarks were of little use, because architects lived under different conditions, and they could not possibly practise the ways of the past. The other part of Mr. Jackson's paper, insisting on the knowledge of materials, they must all agree with, because it was evident that architects could not satisfactorily design in any material unless they knew what the qualities of the material were. The question about which there would be differences of opinion was as to how that knowledge should be obtained. He was inclined to think that no evidence had been shown that it was necessary for an architect to work at any trade. Of course, if an architect had anything to design he could go to a workshop and witness the process of carrying out designs in the material which he desired to use, and if the architect had not sufficient intellectual capacity to observe the particular qualities which the material possessed, he, the speaker, did not think that such knowledge could be gained at the bench. A parallel could be instituted with music. As far as he knew the great composers were not great executants. The great composer looked at the question from the composer's point of view rather than from the performer's. We ought to know what was the practice of great architects of the past 200 years. That period contained the names of very eminent men, and was it known that they ever worked in workshops? Did Wren ever work at the bench? Was it known that Pugin, Barry, Scott, or Street ever hammered away at a piece of stone or ever did any carving? Mr. Fleming was always interesting because he always looked at the matter from one point of view. He had referred to the reproductions of past forms, but he, the speaker, did not know how any one could design architecture without the reproduction of past form. It seemed to him very wrong to teach students to do so because there was nothing else for them to do. If Mr. Fleming, in prohibiting the use of past forms, would supply a code for new ones they would all be very thankful to him. It was like saying that no one should use words which were employed two hundred years ago. Architects did not take forms and use them as they were used in the past; the forms were used in a different way, just as the English language was spoken in a different way from the time of Shakespeare, for instance. As to Mr. Fleming's reference to the academic *versus* the prac-

tical architect, he (the speaker) was always dubious about the practical man. Was Mr. Norman Shaw a practical or an academic architect? He was rather inclined to think of Mr. Shaw as an academic architect, and yet, if they looked at Mr. Shaw's joinery, they would see that, although he never worked at the bench, his work had been put together in a masterly way. Could the Paris Opera House have been designed by any one but an academic architect? Suppose that a Paris Opera House had been designed by a "practical" architect, should we feel satisfied with the result? An architect was a man who had to use his head, and when he was able to do that, and could plan buildings properly, he might turn his attention, though it would be late in life, to bench work. Architects were expected to know everything, and the opinion of Vitruvius as to what an architect should know was a moderate one compared with that of modern educationists. Then there was the client's point of view; an architect should take care to remember that. Having got a client, if they were not careful to remember his point of view, they would probably never get another. They could not get rid of the fact that in the nineteenth century an architect was very largely, although Mr. Jackson would not agree with that, a business man. A client expected an architect to be able to protect him, and if architects did not do that they would be neglecting one of the principal duties for which they were employed.

Mr. E. W. Allfrey said that one very difficult question was as to how far an architect should go in endeavouring to acquire a knowledge of the crafts. Given a complicated modern building, with carving and decorative work to be done, and other requirements, either the architect must design and do that work himself, or else he must leave it to his workmen. If the architect were to design the work himself, of course he must have a very large knowledge of those crafts to which the work belonged; whereas, if he left the work to the workmen, had work very often resulted. It seemed to him that an architect should have a general knowledge and should stand as a critic to his workmen, rather than be a craftsman himself. The architect must be a highly-educated man, and he must be able to see where his workmen were at fault; and when they were, to be able to put them right. He did not think it was necessary for the architect to go very far into the actual craftsman's side of his work. Another point was as to how far an architect should carry his training, and at what age he should begin his work as an architect; and how far was it good for an architect to have a general or a University training? He had had the advantage of a University training, and he sometimes thought that he would have done better to have commenced his work as an architect at an earlier age. A University training put off the day when an architect could commence his professional career.

The Chairman, in putting the vote of thanks, said it had been a great advantage to them to have had Mr. Jackson's views expressed in his admirable paper. It was particularly interesting, because Mr. Jackson took a very leading part in advocating a particular line of training, and his views might differ somewhat from others who had equally at heart the progress of our national architecture. From whatever point of view this educational question was discussed, they could all claim that the one object they had in view was the progress of the art of architecture. He was sure that Mr. Jackson's paper would contribute to that end, because it was so moderate and practical in its suggestions. The contrast which Mr. Jackson drew between the Greek and Roman schools was very interesting, and he (the speaker) gathered from the paper that Mr. Jackson differed from both, and would take a medium course (which course might best be illustrated by the *quattro cento* Italian work). He really advocated that we should be more sculptors than we are, and perhaps rather follow the general training which the sculptor-architects of Italy enjoyed. He did not know that we should be satisfied with that training; but there was no doubt as to its effect upon detail in the times he was referring to. Whatever might be our feelings as to their general proportions and outlines, no doubt could exist as to the exquisite beauty of the detail which that period produced. Any training which leads us in the direction of producing anything like the same result was to be striven for. Mr. Jackson's illustration of how

fresh suggestions and results might be obtained by witnessing the methods of work was a particularly good one. He (the speaker) had found it of advantage to him to do the same. He did not know what Mr. Fleming meant by his reference to the coming struggle in the Association. He saw no sign of an struggle against the methods on which Mr. Fleming had suggested the training should proceed, for as far as he could see the training of the young architect had become more and more practical and had gone more in the direction desired by Mr. Jackson, to whom he owed a great deal for so heartily throwing himself into their work and becoming one of their visitors. He did not know that we could point to anything much better as a result of the training which Mr. Jackson advocated than some of that gentleman's own work. Mr. Jackson considered that they ought to devote more time to practical training in the way of learning a trade, but it was thought better by the Association to take a medium course. It was quite impracticable, he thought, they would admit, to give, say, a year—anything less than a year was of much good—in a joiner's shop, for instance. They could not afford the time. He was strongly in favour of taking modelling, and no doubt if a man were a good modeller a great deal would follow. The system of training which they aimed at in the Association was a combination of design and handicraft. Of course every young architect who had a chance would do well in his first work to reside on the spot so as to be present to conduct the work in person. If he could not do that he should endeavour to get work as a clerk of works. In reference to Mr. Allfrey's remarks about University career he (the Chairman) could not help thinking that the few extra years which a man usually spent at a University were invaluable in broadening the mind.

The vote of thanks was then put to the meeting and carried unanimously. Mr. Jackson, in reply, said he had always looked upon the Association as one of the most hopeful institutions for the advancement of architecture that we had. The Association had always taken a practical view of things, and they were now, with their Studio, and with the relations they had established with the School of Arts and Crafts, carrying out what he thought was the training of an architect in the very best possible way. As to the difficulty of getting access to workshops, he had an opportunity recently of visiting the Art School at Birmingham. There the principle had been adopted of establishing schools of such a kind that every designer could go and see his work carried out himself. That seemed to him to be an admirable arrangement, and he wished that other art schools in the country would do the same. These additions to the curriculum of an ordinary art school were invaluable, and he hoped that something of the kind would be arranged for the Association. Mr. Fleming had apparently advised his hearers to get through the Institute examination as quickly as possible, so that they might return to more profitable pursuits. Mr. Fleming should have given them his reasons for passing the examination at all. As the examination was a matter only to be got through and done with, surely it would be better to leave it alone altogether; and for students to turn their attention at once to workshops and practical work. As to Mr. Pratt's fear that the classes of technical schools would lead to no more than a smattering of knowledge of several trades, he felt that it would be of advantage thoroughly to master one craft, at all events, so as to understand some of the difficulties entailed in working on any given material; but he saw no objection to a student knowing something of many other trades. They could hardly fail to master one trade without getting suggestions as to difficulties in others, and the knowledge which they thus acquired would prevent them making mistakes. He always recommended his pupils to finish their training by working on a building, either as a clerk of works or by putting themselves under clerks of works, and those pupils who had done that had never failed to derive great benefit from that course. They saw all the crafts at work; and they gained knowledge in that way which they could never acquire when working in an office. Mr. Fletcher doubted whether the "workman element" was so strong in the ancient buildings as had been suggested. The matter was not altogether clear, for we did not know the whole circumstances under which buildings were carried

out, but we had certain names, and we knew that many of the workmen were superior men. There were workmen and workmen, and it was the skilled workman who came to the front and qualified himself, and it was to him, he thought, that we must attribute the designs which we all admired. It was difficult to know what part the great men, whose names we possessed, played on the building. As to Mr. Fletcher's illustration about the great composers, he might remind that gentleman of Mozart, Mendelssohn, Bach, Handel, who were the greatest performers of their day, so that this illustration rather supported his (the speaker's) side of the question.

Mr. Fletcher said that his point was that the architect of to-day was in the position of a conductor who controlled all the musicians.

Mr. Jackson: But he also controls the music. He might quote Viollet-le-Duc, who was a practical craftsman. As to Mr. Allfrey's remarks, so far from agreeing with him that a University training was a drawback, he always found that pupils who came to him from a University learned much more quickly than others.

The Chairman announced that the next meeting would be held on the 30th inst., when Mr. Hugh Stannus would read a paper entitled "The Classic Cornice."

The meeting then terminated.

The Members' Soiree.—The members' soiree will take place at the St. George's Hall, Langham-place, W., on Thursday, May 6, at 8 p.m., when a musical play, entitled "The Bounds of Art," written by Mr. H. B. Creswell, with music composed by Mr. Leonard Butler, will be presented.

MAGAZINES AND REVIEWS.*

THE *Art Journal* contains an interesting, we might say a learned article by Mr. Claude Phillips, on the important collection of pictures at Longford Castle, chiefly Dutch; at least all those dealt with in this section of the article are by Dutch painters. An article by Mr. L. B. Starr on the Mouchrabieh cabinet work of Cairo, gives a description of the structure of this class of work, with some illustrations. A very interesting and rather novel article is that by Mr. W. E. Osborn, on "The Possibilities of the Poplar," the artistic possibilities of course, which the author illustrates in some very effective sketches.

The *Easter Art Annual*, in connexion with the *Art Journal*, is devoted to the life and work of Sir E. J. Poynter. We are glad to welcome a collective account and illustration of the work of the new President of the Royal Academy, one of the finest figure designers of our time; and perhaps some of these works strike one even more from their excellence in drawing and design when shown in black and white. The beautiful little picture, "High Noon," is shown in a most effective reproduction. One of the principal illustrations is from "The Ides of March," a very poetical work which hardly received the attention it deserved on its first appearance. It is a pity the "Ionian Dance" was not reproduced photographically, the line engraving does not do justice to the exquisite grace of the dancing figure. In the literary portion of the issue we observe a reference to Sir E. Poynter's opinion as to the English system of keeping the student so long at casts before he is allowed to draw from the life, which he condemns on the ground that the student cannot properly understand the merits or meaning of the cast without the knowledge of the living figure. Sir E. Poynter therefore always preferred the French system, under which the student had to make only a few studies from casts to get his hand in, and was then set without more delay to the serious study of the life.

In the *Engineering Magazine* Mr. Geo. H. Paine chooses a very good subject in "The Value of Quiet and Beautiful Streets." He considers streets in connexion with the City architecture, and tags his illustrations with some pity and suggestive comments; under a view of Broadway for instance—"Streets are used by all and should interest all. Pavements are not for vehicles only. Many other interests are involved," from which the reader

* The object of these notes is to point out anything in the contents of the current magazines which is of special interest to our readers, with occasional brief criticisms on the views expressed in such articles. When a magazine which has been sent to us is not noticed, it is because that number contains nothing that it is within our province to comment upon.

will gather that Broadway is not one of the streets selected as happy examples. Under the view of a street in Cairo, without pavement—"Such streets are used for necessity, not for pleasure." Under a view of the Piazzetta, Venice—"The pavements of many Italian cities are laid as part of the city architecture, for beauty and utility." There are many good ideas in this article. The subject of "Materials and Methods for Fireproof Construction" is treated by Mr. Scanlan. It naturally bears more on American practice than English.

Scribner contains a highly appreciative article by Mr. Cosmo Monkhouse on the works and the genius of Mr. Orchardson. We are glad to see an article doing full justice to this remarkable and original painter, whose real powers are by no means fully appreciated by his countrymen in general. The third article on "London as seen by C. D. Gibson" is concerned with the Parks, but entirely with their occupants, not with the Parks themselves. Mr. Gibson's sketches are however very clever. An illustration by Mr. William Hole of the transformation scene in "Dr. Jekyll," which forms the frontispiece to the number, is clever, but it is a nearly impossible scene to treat pictorially. From a paragraph in "The Field of Art" we learn that the demand for pictorial decoration to buildings is rapidly on the increase in America, and we are glad to see that the writer of the article protests against the absurd jumbling of schools and styles in the Paris Hotel de Ville paintings, and insists on the necessity of unity in a scheme of decoration for a great building.

The *Century* contains an article on "A new American Sculptor," Mr. G. Grey Barnard. This class of articles in the American magazines is too much permeated by the predetermination to write up modern American Art, and to produce a whole string of new geniuses; but some of the works illustrated, more especially "Brothers," do seem to imply that Mr. Barnard has some original genius and a method of his own. By far the most interesting series of articles in the *Century* at present are the military ones entitled "Campaigning with Grant," which do not come within our sphere, but this week they are prefaced by an engraving of the great mausoleum which the country is raising in honour of Grant, a very grand affair indeed, but entirely deficient in originality, unless it is considered original to hoist a circular Ionic colonnaded building on to the roof of a Greek Doric Temple.

In the *Cornhill Magazine* is an article on "The Cost of Country Houses"; not a very satisfactory one to architects, as the tendency of it is to show that keeping a large country house costs a great deal more than people generally expect, and that therefore it is not wise, in one's own interest, to build a large house; a melancholy conclusion. It is admitted, however, that the man who builds and keeps up a large country house and park generally confers an immense benefit on the neighbourhood around him; so there is an encouragement at least to philanthropists to spend money on themselves, on the *sic vos non vobis* principle.

The *Atlantic Monthly* contains a most interesting communication by Professor Lowell on "Mercury in the Light of Recent Discoveries," some of which are very recent. The main result is that Mercury is in the same position in reference to the Sun that the Moon is in reference to the Earth; it has no revolution on its axis, and turns the same face always to the Sun; that, like the Moon, it is "dead," and this deadness Professor Lowell connects with the stoppage of revolution on the axis, the result of the "brake" effect of tidal friction, which has stopped the Moon and Mercury in their revolution, and is in slow progress of stopping that of the Earth. And after that, what?

In *Macmillan* the "Leaves from the Journals of Landscape Painter" does not in itself deal very much with art, but it will interest many readers, when they find that the "landscape painter" was no other than Edward Lear, better known to the world at large as the maker of nonsense verses for the delight of children. In a short notice prefixed to the article it is mentioned that Murchison observed of Lear's sketches that they always told him the geology of a country, though Lear knew nothing of geology; a high compliment at all events to the artist's fidelity of observation.

In *London Society* the lady known in literature under the name of "John Strange Winter" is writing a series of articles on "The Ideal House," chiefly concerned with questions

of taste in regard to furniture and decoration, and written very much from a woman's point of view. The following account of an assemblage of colours at a concert in a private house is amusing:—

"The double drawing-rooms were papered with flame-yellow, the curtains to the many windows were bright scarlet. The divisions between the two rooms were draped with velvet curtains, and were a red of a wholly different tone. The carpet was a deep soft crimson, the chairs, mostly gilded, were upholstered in broad crimson and white striped satin, or in rich red silk damask which went with nothing near it. There were a few pictures, small oil-paintings, hung well below the eye-line, and the only ornaments were blue and gold Sevres, such things as clocks and candelabra, under glass shades. All the sofa cushions were of a brilliant turquoise blue!

The two footmen who hovered in and out wore bright pink stockings and magenta plush breeches. The hostess—a very florid woman—wore a gown of deep crimson satin (wholly different in tone to all the other reds in the room) quite unrelieved by any softening lace or trimming. One daughter wore a lavender dress, the other two had pretty summer frocks of bright apple green."

The *Pall Mall Magazine* contains an illustrated article on Levens Hall (of which the celebrated garden is better known in illustrations than the interior of the house), and another on the town and the lace of Honiton.

In the *Gentleman's Magazine* Mr. Jas. Cassidy, under the heading "Ceramic Art at Derby," gives a description of a visit to some of the great pottery factories at Derby.

In *Knowledge* a serial article on "English Medals" is commenced by Mr. G. F. Hill, with illustrations from a good many early medals. An essay on the "Age of Mountains," with diagram sections, by Professor Lohley, comes to its second chapter in this number.

The *Land Magazine* is a new publication, dealing with matters affecting landed interests. There ought to be room for such a magazine, and the articles appear to be thoughtful and well written. Among the subjects treated are "Forestry in Switzerland," "The New Agricultural Holdings Act," and "The Cadastral Survey of France."

The *Quarry* devotes an article to the subject of "Serpentine 'Alabaster' and Porphyry."

NEW GOVERNMENT LABORATORY.

FOR many years past the analysis of samples of various kinds of drugs, tobacco, beer, worts, tinctures, &c., has been conducted in the upper part of the Inland Revenue portion of Somerset House, but the space occupied by the laboratory being required to meet the growth of the Inland Revenue Department, it was decided to erect a separate building on a piece of vacant land in close proximity to the new Bankruptcy Offices and King's College Hospital.

The new Laboratory, which is now almost completed, is approached from the Strand through Clement's Inn. The ground-floor contains a waiting-room, rooms for the Principal and Deputy Principal, reference library, and the following laboratories:—Crown Contracts, Reference Sample, and Research. Near the entrance is the main staircase leading to the first floor, which contains rooms for Superintending Analyst, for the examination of tobacco, polariscope room, and a laboratory, 40 ft. by 43 ft., for beer, worts, spirits, and tinctures. A museum and rooms for photographic and other purposes occupy the second floor. In the basement are storerooms for scientific apparatus, chemicals, &c., hydrometer, and standardisation of instruments room. Water analysis and bacteriological laboratory, space for steam boiler, pumps, &c., coal vaults, and refrigerating room.

The vitiated air in the various rooms and laboratories is drawn by down-cast pipe-flues to a main vitiated air-channel formed under the basement floor, and thence is extracted through the exhaust shaft with the aid of a powerful up-cast steam ventilating fan.

With a view to economy in the supply of water for experimental purposes to the large laboratory on first floor, a special collecting tank has been constructed in the basement, from which the water is pumped into high-level tanks for re-use. Special plant is also being laid down for the production, by means of compressed carbonic acid, of ice and super-cooled water for maintaining the proper temperature of the supply, and for the purposes of a cold store.

The building is warmed by radiators supplied by steam at low pressure, and arrange-

ments have been made for the supply of fresh air by means of flues constructed in the floors.

The floors and ceilings throughout are of fireproof construction, and provision is being made for electric lighting, pneumatic bells, and speaking tubes. Lavatory accommodation is provided on basement, ground, and first floors.

All the laboratories, staircases, corridors, water-closets, and areas are lined with white glazed bricks. The external elevations, which are plain and unpretentious, have red facing bricks from Bracknell, Bucks, and dressings of Portland stone.

The following are some of the firms employed—Mr. B. E. Nightingale, builder; Messrs. M. Fawcett & Co., for the fireproof floors and ceilings; Mr. J. F. Ebner, for mosaic and wood block flooring; Messrs. Wilkinson & Co., granolithic paving; Mr. J. Jeffreys, warming apparatus; Messrs. Gimson & Co., for cast-iron tanks; the Hydraulic Engineering Company, for lift; Messrs. Mowlem & Co., for working benches, presses, &c.; Messrs. Clements, Jencks & Co., for H₂S and other closets, and for various special fittings; Messrs. Hall & Co., for ice-making and cooling plant. The work is being carried out from the plans, &c., and under the directions of Mr. J. Taylor, C.B., of H.M. Office of Works, at a total estimated cost of 23,500*l.*

Illustrations.

THE CHURCH OF BROU-EN-BRESSE, BOURG.

THE name of this church, at all events in its shorter form "The Church of Brou," has become a familiar sound to English ears from Matthew Arnold's popular and in many respects very beautiful poem under that title. The poem has also had the result of giving to many persons an entirely false idea as to the building. Arnold seems to have laid hold of the story, which took his fancy for poetic treatment, without having seen the building or got any information about it. Consequently he conveys to his readers the idea of this being a humble though beautiful country church on an out-of-the-way site, whereas it is a building of the scale of a second class cathedral, standing at the gates of a city, and of immense elaboration of detail. Nor do the sculptured figures of the "princely pair" repose side by side on the same monument, as the poetic imagination represents them.

The church, however, is a remarkable one in some ways, and some illustrations of it, as a building much better known by name than it is in fact, may be of interest.

The illustrations, which are from photographs, comprise a general view of the west front; the detail of the west door; the choir-screen or *jube*; the tomb of Margaret of Austria, the foundress; another view of this, showing two other tombs through the vista of the arch; and the tomb of Margaret of Bourbon.

Some historical and critical remarks on the church will be found in a special article in the present issue.

THE "DÉPÔT CENTRALE DES POSTES ET TELEGRAPHES," PARIS.

THIS vast establishment, only a portion of which has yet been carried out, has been built after the plans and under the direction of M. Seclier de Gisors, on a site in the Boulevard Brune, near the Ceinture railway. According to the general scheme adopted in 1880 by the Post and Telegraph Department, the building was to include workshops for the manufacture of telegraph materials and of postage-stamps, also a department for testing, a chemical laboratory, a gallery for machines to be used as prime movers, and all the necessary buildings for offices, administration, and the lodging of the resident staff.

The entire buildings occupy an area of 7,827 square metres. All the buildings are or will be erected on specially prepared foundations, in the forming of which 226 pits have been sunk and filled with concrete, to the depth of 7½ metres. The foundations and sub-soil structure generally is in *maçonné*—we give the French designation, as there is considerable uncertainty, in this as in many other cases of technical terms, in regard to the precise English equivalent in meaning. The plinth is of Lérouville stone, and the bulk of the walling above that is in Bourgogne and Belleville bricks, with dressings in Villiers-Adam stone. The constructional portion of the

floors is of iron, and the roofs of the workshops; the other roofs are of iron and timber combined; all covered with Choisy tiles. The interior woodwork is in oak and pine.

The whole building is warmed on the low-pressure hot-water system, each portion of the building having an independent system. There are fire hydrants at forty different stations, supplied by a Worthington pump.

The total cost of the building will be 2,184,136 francs, about 34*l.* francs per square metre of construction.

The buildings were commenced in June 1892, and completed in March 1895.

The illustration only shows a portion of the exterior, sufficient to indicate the plain and severely practical character of the architecture employed. That there is no scale to the plan and section is due to the unfortunate habit, which is almost universal among French architects, of putting no drawn-out scale on their drawings, but only stating in writing what the scale is. Consequently, when copies of the drawings reach one in the form of reduced photographs, the statement of scale is of course useless.

The complete geometrical elevations, plans, and sections, drawn with the greatest care and to a large scale, formed a prominent exhibit in the architectural room of the Salon last year, and gained the architect the award of the gold medal of the year for architecture.

ARCHITECTURAL SOCIETIES.

EDINBURGH ARCHITECTURAL ASSOCIATION.—The Edinburgh Architectural Association visited on the 27th ult., Hatton House, Midlothian, by permission of the proprietor, the Earl of Morton, and the tenant, Mr. James McKelvie, under the leadership of Mr. Thomas Ross, F.S.A. The house, it was explained, has a massive central keep, with later additions round it. In the time of Robert II. John de Hatton was proprietor, and in a few years it passed to the Lauder family, the Lauders of the Bass, in whose hands it remained for several centuries. Early in the seventeenth century Charles Maitland, brother of the Earl of Lauderdale, became proprietor, and began the extensive additions of which much remains. He appeared to a certain extent to have copied his brother's manner of laying out the gardens at Ham, and the work which was carried on by his successor had made the house with its gardens, terraces, sundials, and statuary, one of the most interesting and pleasant in its own part of the country. Mr. Ross expressed his indebtedness for many of his descriptive and historical notes to Mr. J. R. Findlay, at one time tenant of Hatton, and who, he said, prepared an interesting monograph. On the motion of Dr. Rowand Anderson, a vote of thanks was awarded to the proprietor and to the tenant for permitting the visit, and to Mr. Ross for conducting the party.

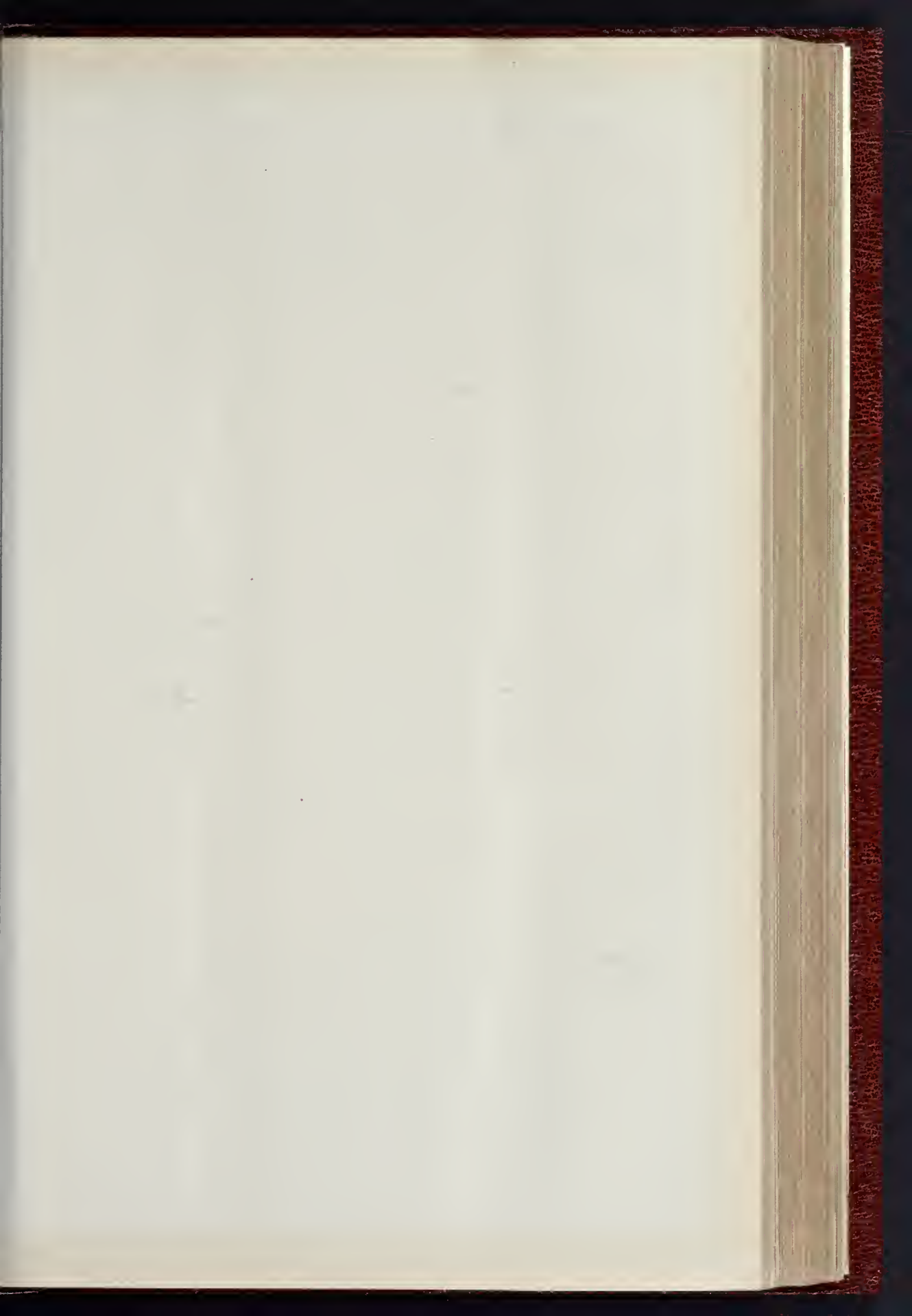
GLASGOW SCHOOL OF ART.—The fifth lecture of the supplementary course on "Hellenic Architecture," by Mr. W. L. Anderson, architect, was delivered last week in the School. Continuing the subject of the "Culmination in Attica," the lecturer looked away from the historical and social influences which, though none the less real, were beyond the purview of the artist of the time, and endeavoured to take the standpoint of the master confronted with a particular problem. Applying this treatment to the Propylæa, the object of the building was considered; the nature of its site; the alignment which Mnesicles, its architect, decided upon in its relation to the Parthenon and to the Acropolis wall, the angle of which its axis bisected. This central position appears also to have been designed to give within the gates a *stoa* of equal length on each side, and without, two halls occupying each the same space, but of a varying arrangement controlled by the position of the bastion carrying the Nike temple. The various obstacles preventing the accomplishment of the scheme, and resulting in the present irregular arrangement, were considered, in so far as they can be read in the building itself; while the fitness of the architecture, and the beauty of its details and painted decorations were shown by many illustrations. The Erechtem was treated similarly, and from its arrangement and other circumstances, regarded as a *megaron* in honour of Erechtes, a monument and museum of many cults rather than a temple of one or two; and in addition to photographs of its present state, restorations of its exterior and interior, and of its relation to the complete Acropolis, were supplied. Additional examples of the culmination in Attica

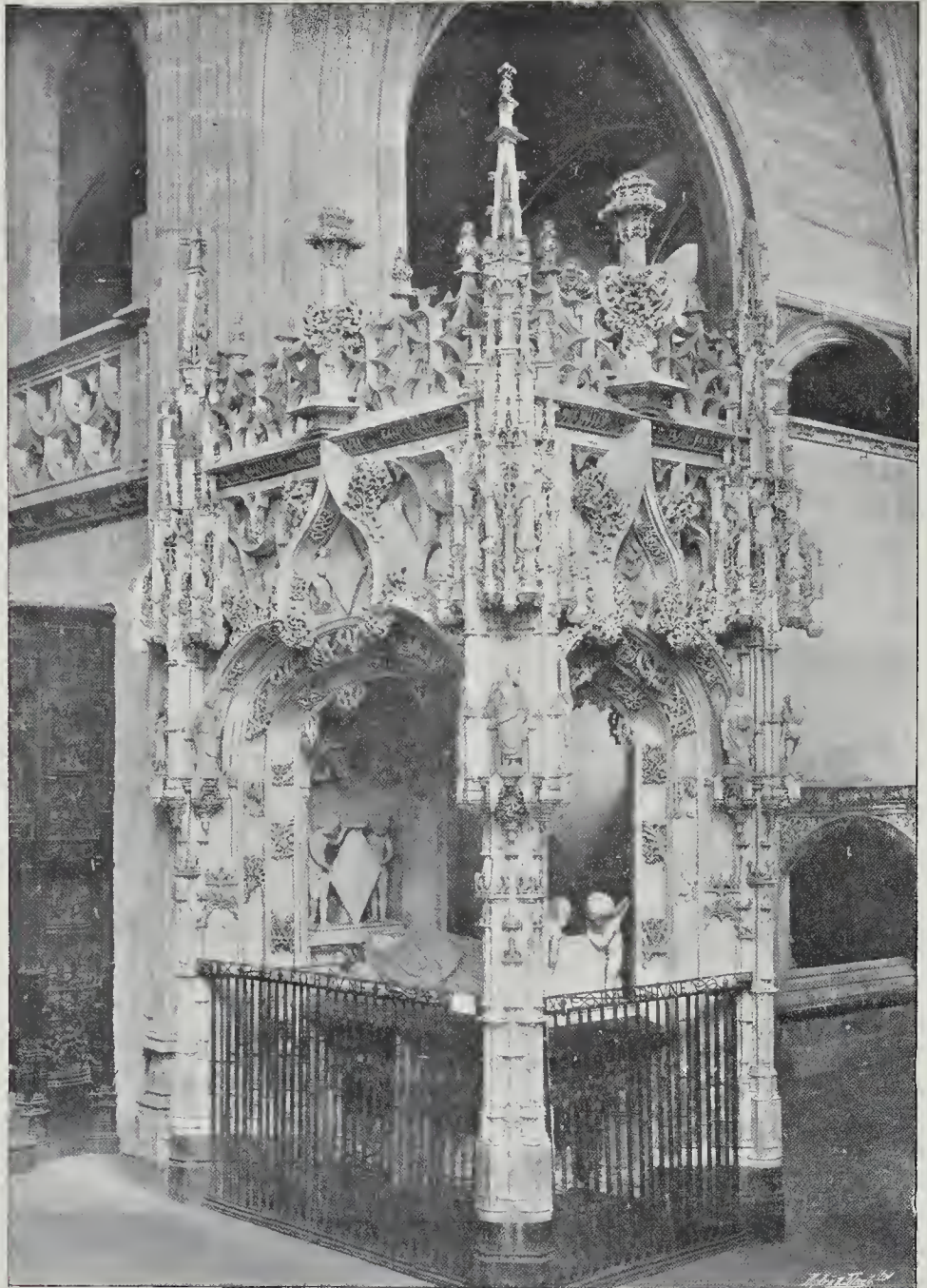
were illustrated in the Hall of Initiation into the Eleusinian mysteries, and the Temple of Apollo at Phigalia, the latter being included on the ground that it was the work of a great Athenian architect. The second part of the lecture was devoted to the Greek theatre and games; the buildings of the theatre, the stadium and the palestra; and in this connexion were shown and explained plans and restorations of the huge assemblage of buildings at Olympia, the apotheosis of athletics.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—The members of this Society paid a visit on Saturday afternoon last to the new buildings of the Prudential Assurance Company, in Pinstone-street, Sheffield, by the arrangement of the architects, Messrs. Alfred Waterhouse & Sons. Mr. Haigh (the clerk of works), as the representative of the architect, conducted the party over the building, and explained the various arrangements, and the materials employed, and answered a number of questions asked by some of the younger members during their examination of the building.

ENGINEERING SOCIETIES.

INSTITUTION OF CIVIL ENGINEERS.—At the ordinary meeting of this Institution, on the 6th inst., Mr. John Wolfe Barry, C.B., F.R.S., the President, in the chair, the paper read was "The Blackwall Tunnel," by Mr. David Hall and Mr. Maurice Fitzmaurice. Communication between the north and south banks of the Thames below London Bridge was very poor, the paper stated, and many attempts had been made during the last hundred years to give greater facilities for crossing. Tunnels had been begun between Tilbury and Gravesend in 1798, and between Limehouse and Rotherhithe in 1805, while Brunel's great tunnel between Wapping and Rotherhithe was begun in 1825 and finished in 1841. Various other schemes for tunnels had been brought forward, but that at Blackwall was the only one which had been commenced. The contract for the work was let in 1891 for £71,000*l.*, and operations were started early in 1892. The entrance to the tunnel on the north side of the river was in the East India Dock road, close to the East India Dock gate, while at the south side the entrance was in East Greenwich. The total length of the tunnel was 6,200 ft., of which about one-half was "cast-iron lined," the remainder being "cut and cover" and "open approach." A considerable amount of work was necessary for the diversion and reconstruction of main and branch sewers which were interfered with by the tunnel. The open approach at each extremity of the tunnel was constructed with concrete and brick retaining walls with a facing of white glazed bricks and a concrete invert. A layer of asphalt was carried round it to ensure watertightness. The cut-and-cover work consisted of four or five rings of brickwork in cement and was circular in section; it was backed with a minimum of 2 ft. of concrete, and a layer of asphalt was interposed between the brickwork and concrete. There were four shafts on the line of the tunnel, and these were placed at the horizontal or vertical changes of direction. They were constructed of steel and iron double-skinned caissons, of 58 ft. external and 48 ft. internal diameter. They had also an internal lining of white glazed brickwork. Two openings for the tunnel were provided in each caisson, which were closed when sinking by easily removable iron plugs. Air-tight floors were placed above the tunnel openings, so that compressed air could be used either while sinking or while the tunnel was being driven through. Two of the shafts had been sunk by keeping the water pumped down and excavating inside in the ordinary way; one by excavating the material (gravel) by a grab worked from a crane on the top, and the fourth partly by grab and partly by manual excavation. In both the latter cases, however, the concrete and iron floors at the bottom of the shafts had to be inserted under compressed air. The "iron-lined" portion of the tunnel was constructed by means of a shield, and compressed air had been used for nearly the whole length of the pressure varying between a few pounds and about twenty-seven pounds above the atmospheric pressure. The external diameter of the cast-iron lining was 27 ft., and the internal diameter 25 ft. and 25 ft. 4 in., each ring of lining forming a length of 2 ft. 6 in. of tunnel. There were fourteen segments and one key-piece in each ring; all the sides of the

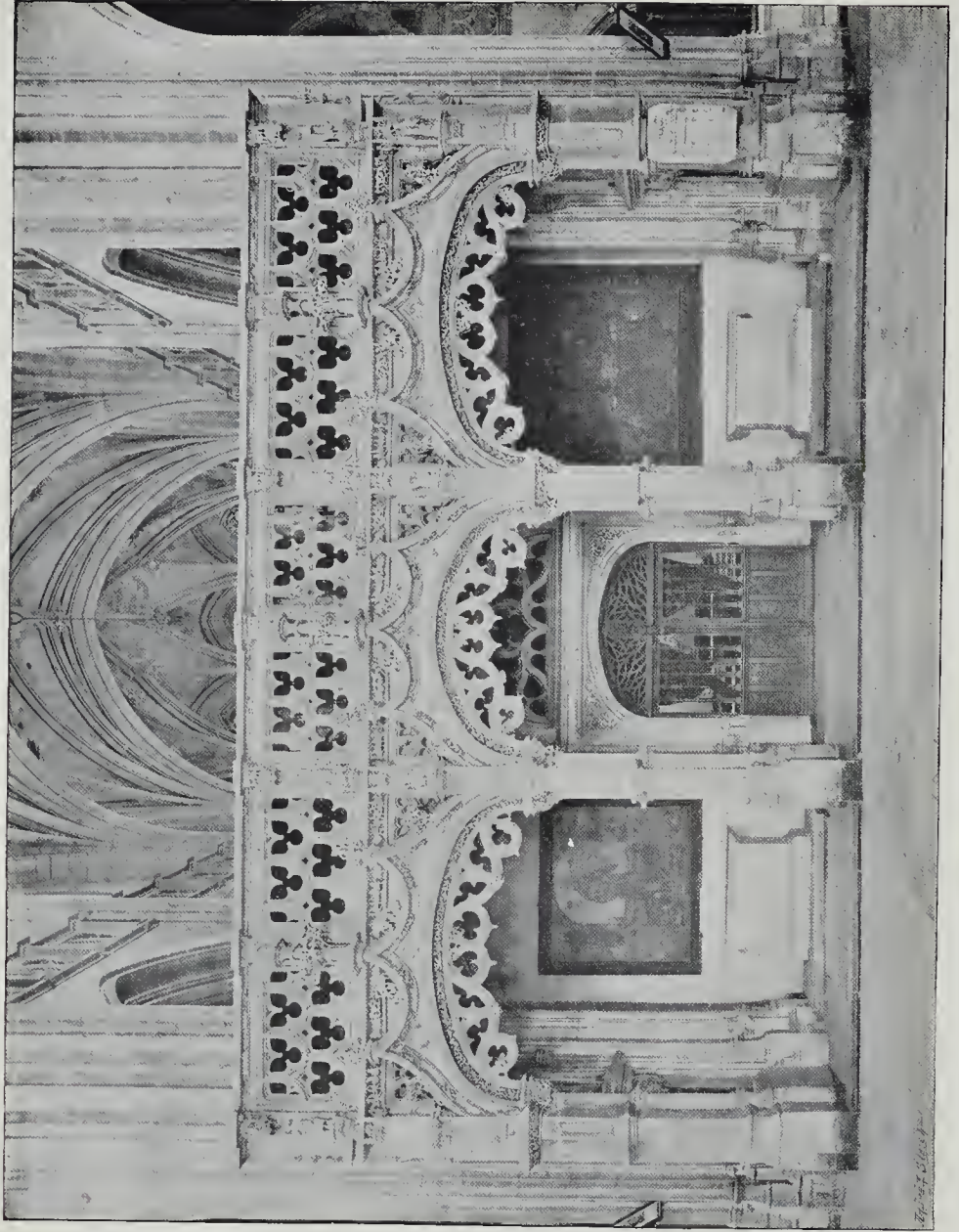




V.—CHURCH OF BROU EN BRESSE, BOURG.
TOMB OF MARGARET OF AUSTRIA, THE FOUNDRESS.



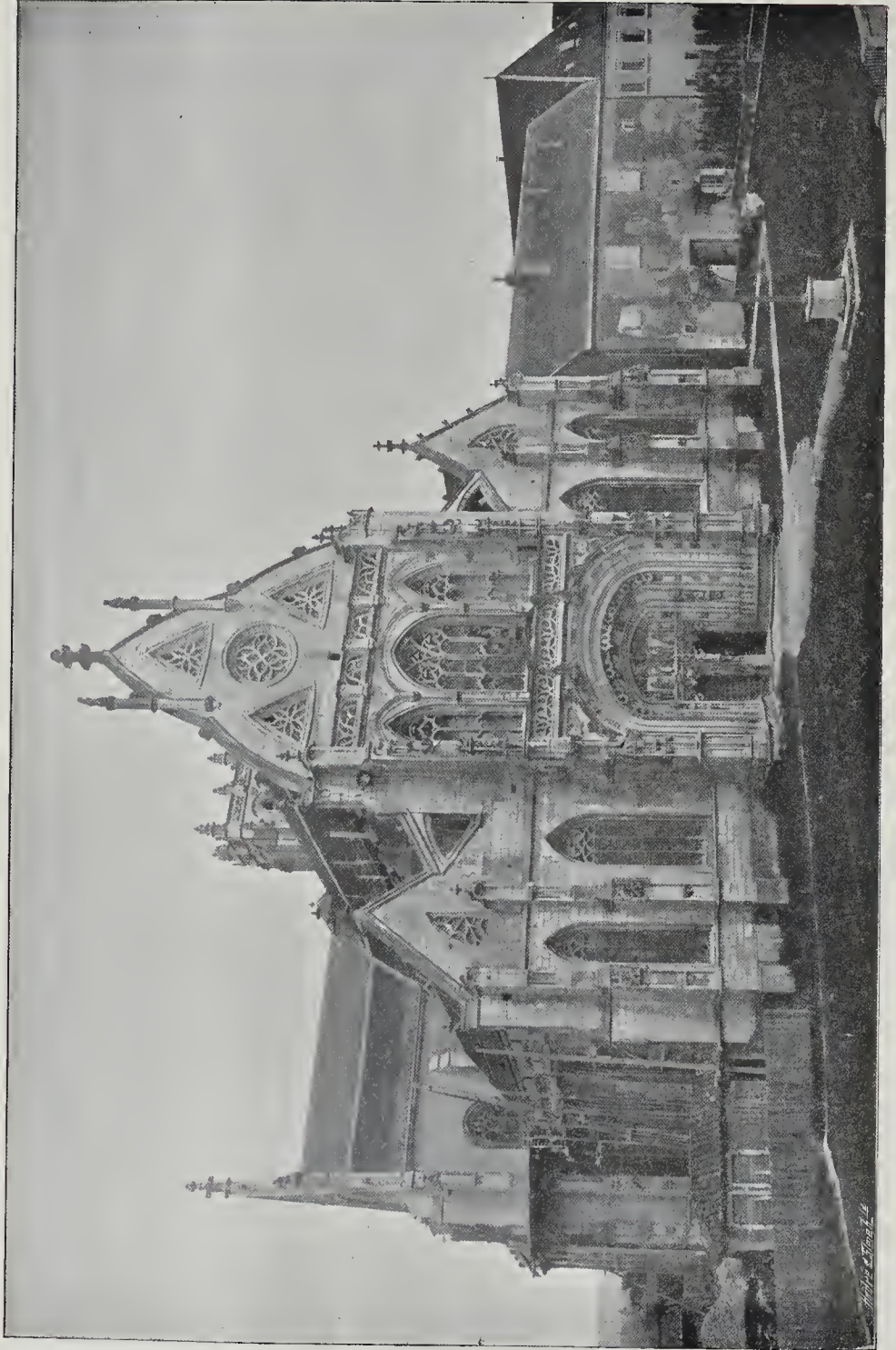
THE BUILDER, APRIL 10, 1897.



III.—CHURCH OF BROU EN BRESSE, BOURG.



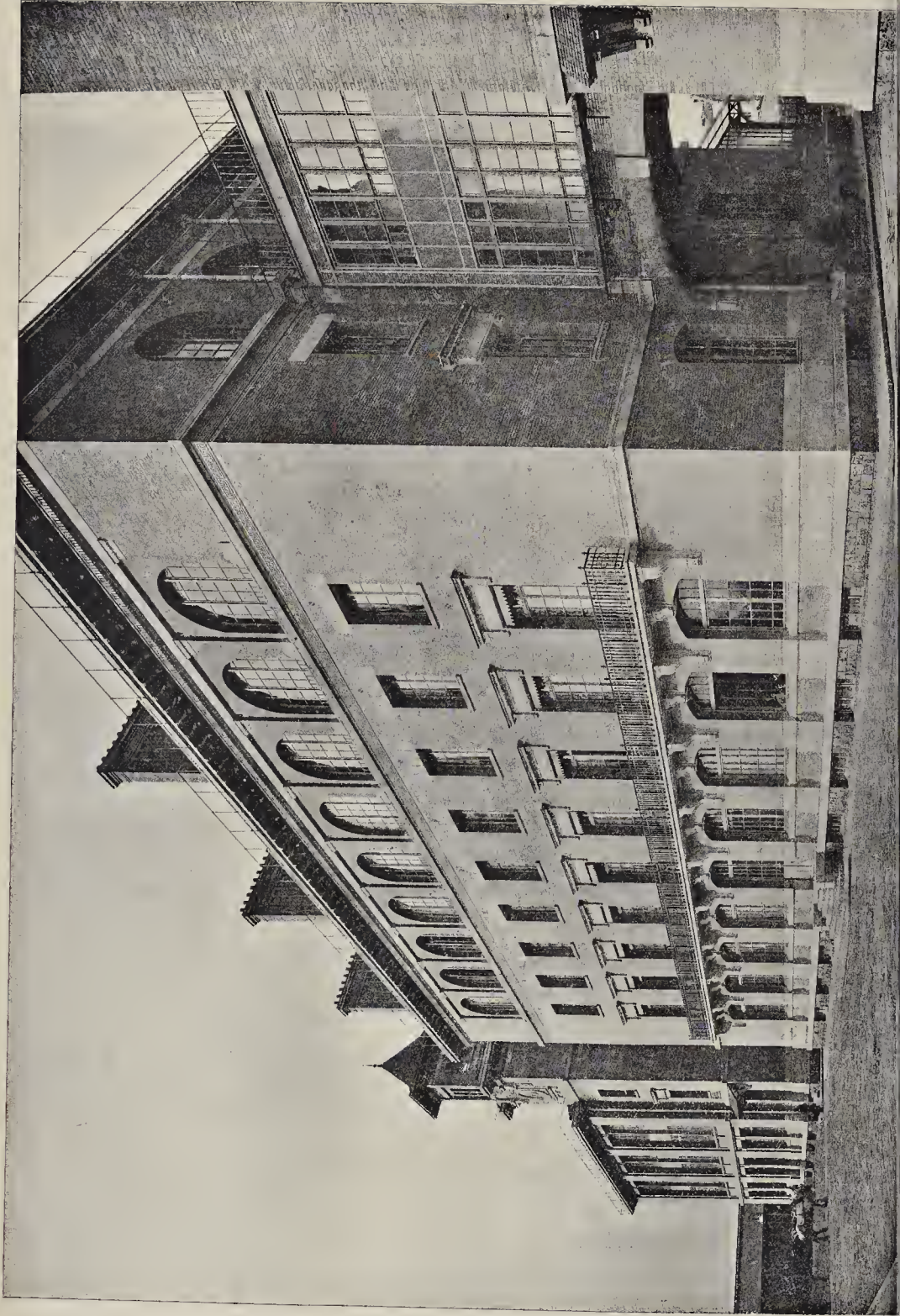
THE BUILDER, APRIL 10, 1897.



1.—CHURCH OF BROU EN BRESSE, BOURG.

THE UNIVERSITY OF CHICAGO LIBRARY

THE BUILDER, APRIL 10, 1897.





SECTION THROUGH LINE A B (REVERSED)

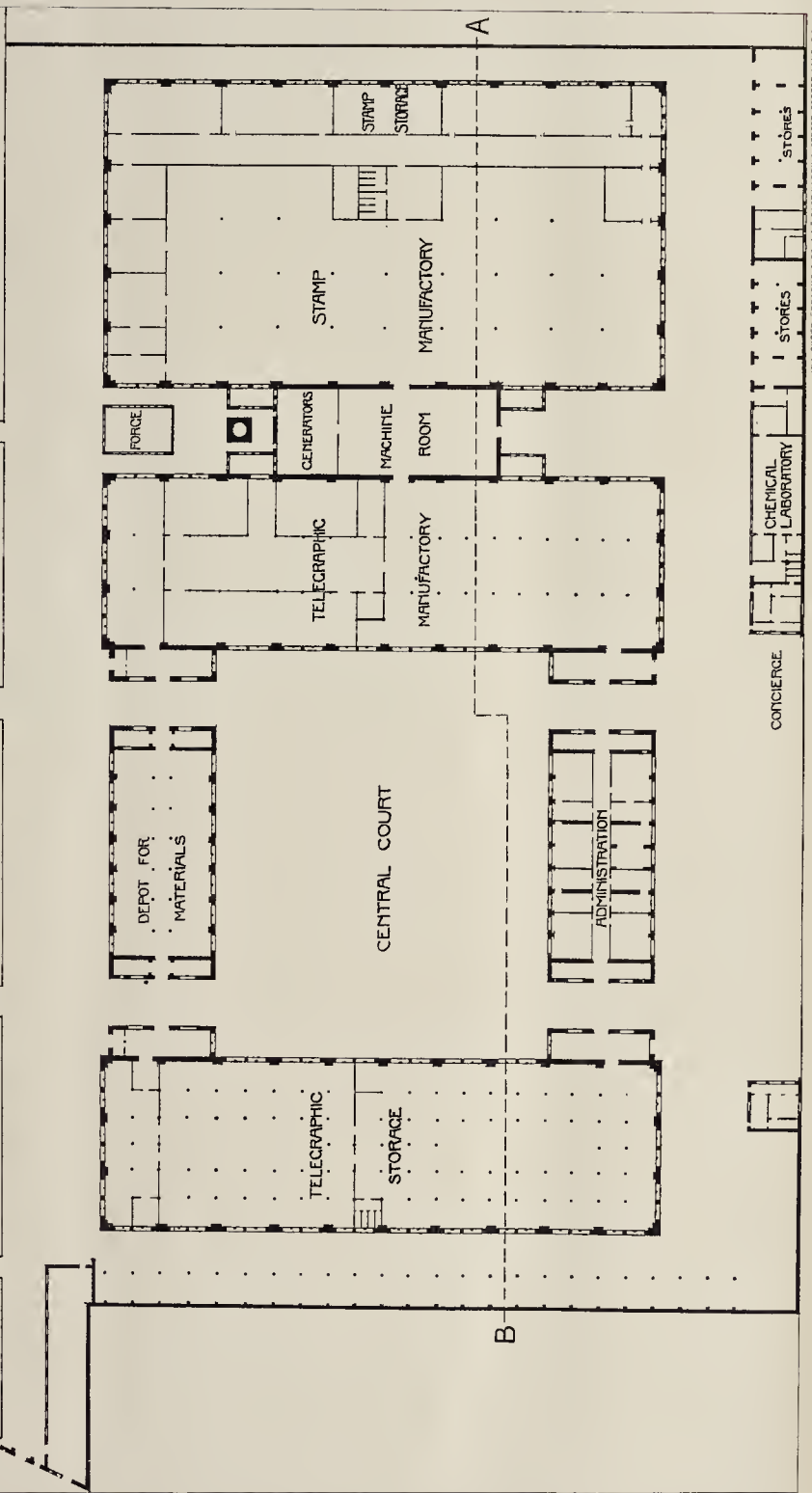
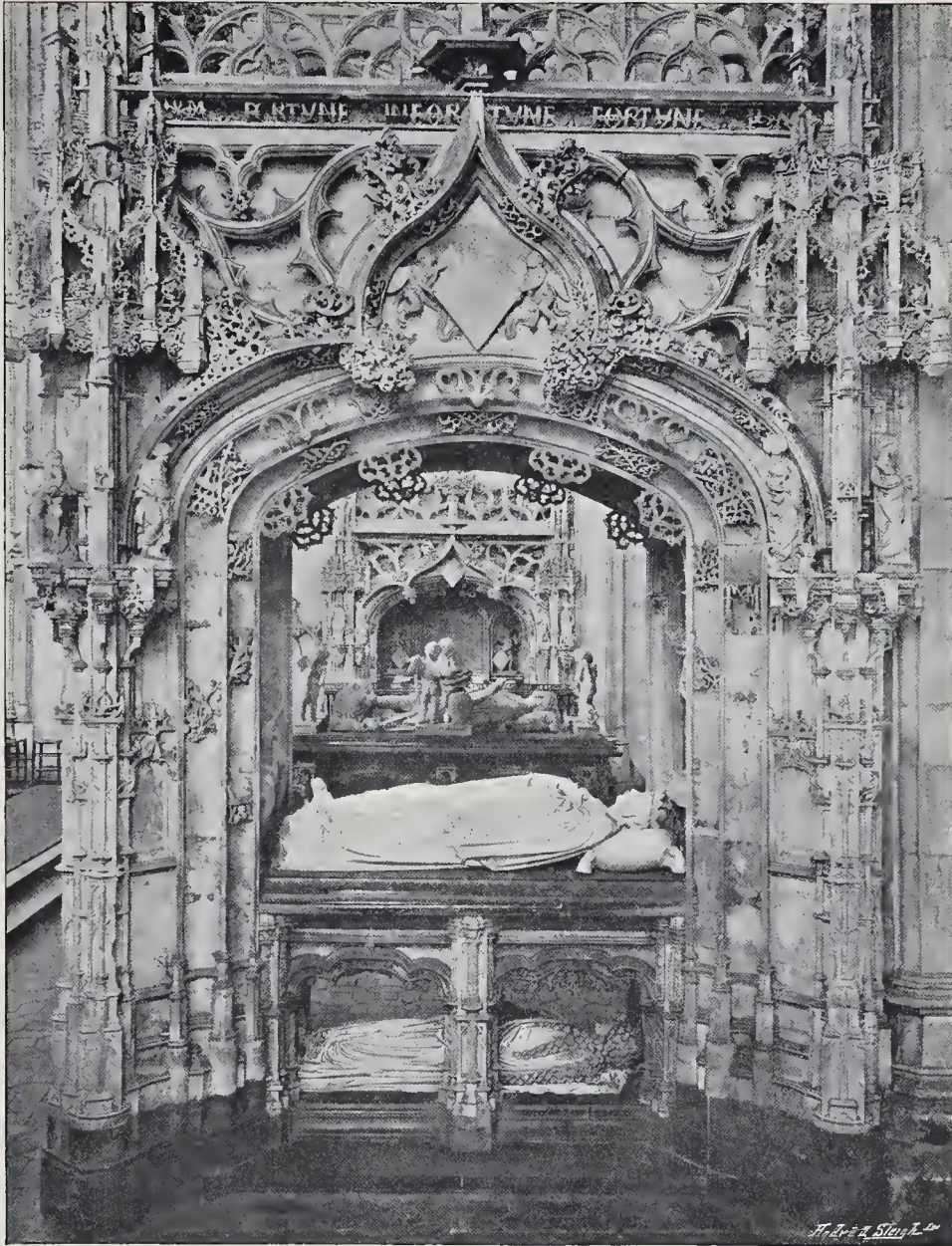


PHOTO SPAGOL & CO. 44 EAST HANDBY STREET NEW YORK N.Y.

PLAN DE LA MAISON DES MATIÈRES ET TÉLÉGRAPHES DÉPOSÉ EN FRANCE EN 1904



II.—CHURCH OF BROU EN BRESSE, BOURG.
DETAIL OF WEST DOORWAY.



IV.—CHURCH OF BROU EN BRESSE, BOURG.
TOMBS OF MARGARET OF AUSTRIA, PHILIP LE BEAU, AND MARGARET OF BOURBON.



VI.—CHURCH OF BROU EN BRESSE, BOURG.
TOMB OF MARGARET OF BOURBON.

gments were planed, and all the joints caulked. The internal lining consisted of 4 to 1 concrete with glazed-lime facing. The tunnel was driven rough materials of a very mixed nature, trying between hard water-tight clay and loose ballast in direct communication with the river. Near the centre of the river the mel passed within 5 ft. of the river bed, but in some distance on each side of this point a layer of clay 10 ft. thick had been shot from opper-barges to facilitate operations. On two occasions the tunnel was flooded by sudden blow-outs and the consequent inrush of water. The shield used was 27 ft. 8 in. in external diameter, and 19 ft. 6 in. long. It was shoved forward by hydraulic jacks which exerted at times a total pressure of over 5,000 tons. It carried two hydraulic erectors for placing the cast-iron segments. Every precaution was taken in the construction of the shield to minimise the result of accident from a sudden inrush of water, and provision was made for working with either a closed or open face. A very large air-compressing plant was required to maintain the supply of air, and at times as much as 10,000 cubic feet per minute was pumped into the tunnel. The roadway, which was 16 ft. wide, was carried on a brick arch, which formed the roof of a subway for pipes, electric-light wires, &c., and a footpath 3 ft. wide was provided on either side. An electric light installation had been erected for the permanent illumination of the tunnel and the supply of current for working the drainage-pumps, &c.—It was announced at the same meeting that thirteen associate members had been transferred to the class of members. It was reported that twenty-six candidates had been admitted as students. The last ballot of the session resulted in the election of ten members and of sixty-nine associate members.

THE SANITARY INSPECTORS' ASSOCIATION.

At the April general meeting of this Association, held on the 3rd inst. at Carpenters' Hall, Mr. Charles Seale-Hayne, M.P., was elected an honorary member, and twenty-two new ordinary members were added to the roll.

A paper on "Nuisances from Certain Offensive Trades" was read by Mr. T. W. Crocker (West Ham Board), in which a number of suggestions were made for the improvement of the methods used in certain industries carried on in the district in which the lecturer was engaged. There were many trades of an exceedingly offensive character which did not come within the official meaning of the term "Offensive Trades," such as that of brick-burning, which, in a test case, had been excluded from the category, although evidence of "noxious fumes" was tendered, because the Court held that this business was not named in the section and was not analogous to any of those named. It seemed to follow from the result of this test case, that only trades in which animal matters were dealt with came under the category of "Offensive Trades," as defined by the Public Health Acts of 1875 and 1891. With regard to certain of these trades, the processes used in which were described, the lecturer expressed the opinion that the nuisances arising from them might in most cases be minimised, and in some altogether prevented, by the adoption of suitable appliances, and by improved forms of buildings or apparatus. With proper fire arrangements noxious fumes might be burnt up before discharge, and even where they could not thus be completely cremated, they might be rendered harmless by building tall chimney shafts instead of dwarf ones.

A conference on "Tenure of Office" was afterwards initiated by Mr. G. T. Dee (Westminster).

THE LONDON COUNTY COUNCIL.

The usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, Dr. Collins, Chairman, presiding.

The Works Department.—The Finance Committee recommended, and it was agreed, (a) That the amount to be charged (in lieu of rent) to the Works Department for interest on and repayment of original capital outlay on the central wharf and buildings for the year ending March 31, 1897, be 4,135l. 10s. 3d. (b) That the amount of interest to be charged to the Works Department on working capital during the present financial year be 1,915l.

The report of the Special Committee appointed to inquire into the management and financial position of the department since its inception, and as to its future prospects, was printed in the agenda paper. A statement, in the nature of a "minority" report, has been prepared by four members of the Committee, but this was not printed with the report of the other members of the Committee. We are unable to print the whole of the report in our columns, owing to its length; but we give the recommendations of the Committee, and on another page some comments on the subject will be found.

The following are the Committee's recommendations:—

(a) That in the opinion of the Council some definite organisation for the direct employment of labour and the direct execution of public works by the Council under the superintendence of its own officers is desirable and beneficial.

(b) That a Works Board be substituted for the Works Committee, such board to be elected forthwith, one member to be nominated by and from each of the following Committees:—Finance, Asylums, Bridges, Fire Brigade, Highways, Improvements, Main Drainage, Parks, and Housing of the Working Classes; and that in future years the election of members of the board do take place at the meeting of these Committees next to March 31.

(c) That any Committee desiring to propose to the Council the carrying out of any works without the intervention of a contractor, shall, in the first instance, obtain an estimate from the proper officer and then refer such estimate to the Works Board for their consideration before reporting to the Council.

(d) That the Works Manager shall, unless in any case otherwise ordered, carry into execution all works which the Council resolves to execute without the intervention of a contractor.

(e) That when the Council wishes to execute any works without the intervention of a contractor, the plans, specification, and estimate shall, unless otherwise ordered by the Council, be thereupon referred to the Works Manager.

(f) That the Works Manager shall be responsible to the Works Board, and the board shall report from time to time to the Council.

(g) That this report be referred to the General Purposes Committee, and that it be an instruction to that Committee to amend the standing orders in accordance with the foregoing recommendations.

(h) That it be referred to the General Purposes Committee to make further amendment of the standing orders by the insertion of words coupling the unions of employers, where such exist, with the trades unions, in reference to the rates of wages and hours of labour.

(i) That it be referred to the General Purposes Committee to make further amendment of the standing orders by omitting provisions giving powers to the clerk of the Council to direct examination of the books of any one contracting with the Council for the execution of works, other than the time-sheets or books or wages-sheets or books.

(j) That the statement of Mr. Edwin Waterhouse be referred to the comptroller for report upon each and all of his suggestions with reference to the accounts, and that the comptroller's report be referred to the General Purposes Committee with a view to the adoption of Mr. Waterhouse's recommendations.

Mr. Beachcroft moved that the consideration of the report of the Special Committee be adjourned over the Easter recess.

Mr. Boulnois, M.P., inquired how it was that the report of the Committee had alone been sent to the Press, while that of the minority had been withheld.

Mr. Beachcroft said it was a pure accident that the report of the minority was not sent.

Mr. E. White asked whether any statement would be made as to why the late manager of the Works Department was not called to give evidence before the Committee.

Alderman Beachcroft thought the question scarcely in order.

The motion was agreed to.

Tramway Purchase.—The discussion on the report of the Highways Committee on this matter was resumed, the recommendations, which we printed last week, page 320, being eventually agreed to.

Queen's Jubilee Procession: Temporary Structures.—Mr. Cornwall, referring to the report of the Building Acts Committee regarding the erection of temporary structures for the accommodation of sightseers desirous of viewing the Royal procession on June 22,* said he hoped that private stands in private houses would not be unduly interfered with, except to take precautions to prevent loss of life.

Major Probyn thought too much care could not be taken for the prevention of accidents,

even such as might only involve a broken limb.

Mr. Payne (Chairman of the Committee) said the Council would only take steps with regard to dangerous structures, and would not oppressively exercise their authority. As they were advised, their control extended not only to outdoor structures, but also to in-door stands and platforms, and it would be necessary that that control and supervision should not be neglected. The District Surveyors had been instructed to inquire and report upon the stands proposed to be erected, and upon these reports a system of inspection would be arranged.

Salaries of Inspectors in the Public Health Department.—On the recommendation of the Public Health Committee, it was agreed that the scale of salaries of the above-mentioned inspectors appointed by the Council under the Public Health (London) Act, 1891, be altered so that they may rise continuously by annual increments of 10l. to the maximum of 250l. per annum.

Sanitary Condition of Clerkenwell.—The same Committee reported as follows:—

"After some correspondence with the Vestry of Clerkenwell on the question of the adequacy of their sanitary staff, we thought it well that an inquiry should be made by one of the Council's Assistant Medical Officers of Health into the sanitary condition and administration of the parish. An inquiry was accordingly made by Dr. Young, and the Medical Officer has submitted to us Dr. Young's report, which shows that the staff, as it existed at the time of his inquiry, appeared to be inadequate for the proper performance of the duties devolving upon the Sanitary Authority. Dr. Young is, however, not prepared to assert that the appointment of a clerk to the Sanitary Department, which was contemplated, would not be found sufficient for immediate purposes, and it is right, therefore, that further experience should be gained before the appointment of an additional Sanitary Inspector is recommended by the Council. The following is a brief summary of the matters to which Dr. Young considers the attention of the Vestry should be given:—1. The existence in houses of defective conditions. For the most part these are of such a character as to be readily capable of remedy under the powers given by the provisions of the Public Health (London) Act. 2. The existence of courts and alleys which are narrow and badly arranged, and of houses which are old and worn out. Concerning these the Vestry should see the necessity of applying for closing orders or taking other proceedings under the Housing of the Working Classes Act. 3. The existence of a considerable number of houses in the district occupied by members of more than one family. Many of these are not of such a character as to need frequent periodic inspections. Others again are not so well circumstanced as regards the conditions in which they are kept, and these need registration and regulation under the provisions of section 94 of the Public Health (London) Act. 4. The absence of a register containing a complete list of the workshops in the district, and setting out the condition of these premises. The preparation of such a register should be proceeded with forthwith. 5. The failure of the present system of house refuse collection to ensure its removal every week from all premises. A reorganisation of the system should at once be undertaken so as to ensure this object. 6. The desirability of requiring in the by-laws as to houses let in lodgings a minimum cubic space per head of 400 ft. in rooms occupied by day and by night, instead of 350 ft., which is stated to be the amount specified in the draft by-laws. We have had the report printed and have sent copies to the Vestry with a request for their observations thereon. We propose to report again to the Council after a reply has been received. In the meantime we have given instructions for copies of the report to be sent to members of the Council, and to be placed on sale."

Opening of Blackwall Tunnel.—The Bridges Committee recommended, and it was agreed, that 2,500l. be expended on the arrangements for opening Blackwall Tunnel, by the Prince of Wales on May 22.

Vauxhall Bridge.—On the report of the Corporate Property Committee, it was agreed:— "That Watney's Wharf and the Bridge House, Vauxhall, be utilised for the purpose of the reconstruction of Vauxhall Bridge, and that the sum of 2,500l. be fixed as the value of the land for that purpose."

The Finance Committee incidentally reported that the total cost of rebuilding Vauxhall Bridge is estimated at 484,000l., and the votes already passed on account amount to a total of 116,622l. 4s.

Ground Plan of Loudon.—The same Committee recommended, and it was agreed, that a further sum of 600l. be expended in connexion with the preparation of the ground plan of Loudon. At present 1,670 estates have been defined upon the sheets, and 134 estates are still to be dealt with.

* See our last issue, page 320.

Paving-work, Clerkenwell Fire Station.—On the recommendation of the Fire Brigade Committee, it was agreed that the tender of Messrs. G. S. Munday & Sons to execute for 205/ the paving-work required at the Clerkenwell station be accepted.

Supply of Gravel, Parliament Hill and Waterloo Park.—On the recommendation of the Parks and Open Spaces Committee, it was agreed that the Council do rescind its resolution to enter into a contract with Messrs. Ballard, Limited, to supply gravel at the rate of 7s. 6d. and 6s. 10d. per cubic yard for Parliament Hill and Waterloo Park respectively, and do authorise the Committee to obtain the material from Mr. H. Barnaby, at the rate of 7s. 6d. and 7s. per cubic yard for these places respectively; and that the solicitor do take the necessary steps in the matter.

Inspection of Railway Stations.—The Parliamentary Committee reported:—

"The Council on January 29, 1895, referred it to us to take the necessary measures for the introduction of a public Bill in the session of 1896 for the following purposes:—(a) To give the Council, for the purpose of enabling it to make representations under the Railway and Canal Traffic Act, 1888, power to inspect from time to time the stations of every railway company in the county of London; (b) to require each railway company, before constructing a new station or reconstructing or altering an existing station in the county of London, to submit plans of the proposed works to the Council for its approval; and (c) to prohibit the erection or alteration of any station otherwise than in accordance with the plans approved by the Council. We have had a Bill drafted to carry out the resolution, but we fear that there is no prospect of its passing in the present session of Parliament. We accordingly recommend that the Bill be not introduced this session."

Colonel Ford said it was very important to give the Council such powers.

The report having been adopted, the Council adjourned.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION: ANNUAL DINNER.

THE nineteenth annual dinner of this Institution was held on Tuesday in the King's Hall, Holborn Restaurant, the chair being occupied by the President, Mr. Thomas Hall (Hall, Beddall, & Co.), who was supported by Messrs. T. E. Colcutt, W. Woodward, B. E. Nightingale (retiring President), Thomas F. Rider, W. R. F. Freeman, J. Howard Colls, Robert Downs, C. Bussell, Joseph Clayton, F. H. Reed, Stanley Clarke, T. Stirling, H. T. Stirling, A. Ritchie, J. P., Henry Lovegrove, Quincey de Quincey, W. T. Farthing, and the Secretary, Mr. H. J. Wheatley.

The loyal and patriotic toasts having been honoured (Mr. R. Downs proposing, and Major Roe replying for, the "Navy, Army, and Reserve Forces").

The Chairman proposed the toast of the evening, "The Builders' Clerks' Benevolent Institution." The Institution, he said, was founded in 1866 with the object of granting pensions and temporary relief to necessitous clerks and their widows, and for the maintenance and education of their children, the pensions of clerks being 25/ and their widows 20/ a year. Already forty-three pensioners had been elected, twenty of whom were still upon the books. Further, a great deal of good had been done in granting temporary relief in necessitous cases. The total amount paid in this respect amounted to 6,800/. In no case, however, had the committee granted more than 10/ to any one man in one year. The total expenditure last year on account of the relief fund was 467/, and the income arising from annual subscriptions and dividends was only 248/., the balance having been met by the donations received at their last dinner. Their reserve fund was 3,400/., and the committee were most anxious not to reduce that, as they did not consider it any too large. Those present would see, therefore, how largely the institution depended upon the donations received at the annual dinner. Knowing that, he hoped those present would contribute as generously as they were able. Speaking to builders' clerks in particular, he engaged the Institution as a means of providing against bad times, and making provision for their widows and orphan children. As to the orphan fund, eight children had been presented by the Institution. The benefits of the Institution were extended to non-subscribers, but builders' clerks who had been subscribers, and who required assistance, were entitled to ten votes for each guinea given.

Mr. W. R. Freeman then proposed "The Architects and Surveyors," and in doing so referred to the close connexion between architects and surveyors and builders. In regard to architects, they were improving the architecture of the country, which was much more pleasing to look upon now than it was at the beginning of the century. The work of quantity surveyors was of considerable importance to builders.

Mr. Woodward, in replying for the architects, said that it was quite true that during the last quarter of a century great improvements had been made in planning, decoration, construction, and in sanitation, and the architecture of London, in particular, had greatly improved. Speaking of the 1894 London Building Act, he said that some of the clauses were so difficult to interpret that he hoped the time was not far distant when the Act would be amended and some of the clauses reconciled.

Mr. H. Lovegrove replied for the surveyors, and said that he thought they were beginning to understand the Building Act, and, on the whole, he thought it was an Act which tended to improve building in London. The Act controlled the jerry builder, as a Building Act should. The Act caused hardships, but, on the whole, it worked well, and architects and others should try to understand it.

Mr. A. Ritchie proposed the toast of "The Builders," and in doing so referred to three classes of builders, viz., the jerry builder, the gentleman builder, and the practical builder, the practical builders being the men whom they esteemed. In regard to the London County Council, it was satisfactory to find from the report of the Special Committee appointed to inquire into the Works Department of that body, that it was recommended to amend the standing orders by the insertion of words coupling the unions of employers, where such existed, with the trades unions, in reference to the rates of wages and hours of labour.

Mr. Howard Colls, in response, said that builders did not always receive the recognition they should. In particular he thought that builders should receive suitable recognition whenever they carried out satisfactorily large and important works.

Other toasts were: "The Merchants," proposed by Mr. Ellis Marsland and responded to by Mr. J. Fraser; "The President," proposed by Mr. T. F. Rider, the Chairman, responding; "The Past Presidents," proposed by Mr. E. Brooks, treasurer, and responded to by Mr. B. E. Nightingale; and "The Visitors," proposed by Mr. F. S. Oldham, and coupled with the name of our representative, who responded.

During the evening the Secretary read a list of subscriptions and donations promised, the total amounting to over £380.

Correspondence.

To the Editor of THE BUILDER.

ARCHITECTURE ON THE BEDFORD ESTATE.

SIR,—You will, I trust, allow me to express my perfect sympathy and agreement with your article in the last issue of the *Builder*, evoked by the extraordinary design—illustrated in that number—for the rejuvenation of Bedford-square. It is, unfortunately, but a fraction of that ever spreading process of the "vulgification," or, as it might well be called, "vulgarisation," of London, whose first unpleasant essays we are now witnessing, and which seems to drink in its ideals from the plate-glass and terracotta fripperies of the gin-palace. It is difficult to estimate the exact proportions of ignorance and stupidity—one must also add vanity—which direct these efforts. There is hardly a quiet or dignified corner of London in which the works of the last-century architect or builder, as the case may be, are not in process of being either wholly destroyed or else hopelessly degraded by the intrusion of incongruous neighbours. From the manner in which he thrusts his uneasy compilations into the company of the sober and well-calculated compositions of a bygone age, one might imagine that the modern architect believes himself to be possessed of a style of his own, whereas it is, I fear, the truth that he is for the most part too ignorant to appreciate the merits of what he destroys, and too conceited to intelligently copy even the examples that stand side by side with his own laboured inventions. Whether in Gray's Inn, in Lincoln's Inn-fields, or in the other parts of Westminster and Bloomsbury, these unpleasant contrasts between old and new—so little to the credit of the new—are being perpetually presented to us. It does not follow, as you so well

point out, that in order to make a house more satisfactory or more commodious, it is necessary at the same time to make it hideous. But it is to be feared that the vanity of the individual architect which impels him to intrude his own personality, the cost of artistic unity, and makes him study rather how to display his own cleverness than how to produce work which shall harmonise with what already exists, only too often precludes the possibility of altering (or adding) without at the same time deforming.

I only wish I could persuade myself that protest, however vigorous, could have any effect in diminishing the abuses of which you so justly complain. It has always seemed to me that the rationale of modern domestic architecture should be, and can be, placed on some sounder foundation than the boasting phrase, "I don't know what is beautiful, but I know what I like." That that combined expression of dignity, repose, and domesticity which a dwelling house should by rights possess, perfectly capable of being settled on a sounder basis than this humiliating axiom, I most sincerely believe, though, in view of the great distance which moderate taste has travelled from its former better regulated position, it would be impossible to demonstrate this in the space of a single letter, even of a very long one.

But, in the meanwhile, it is certainly the duty of all who are in the least degree careful of the beauty of our Metropolis, to protest against such transmutations as are projected on the Bedford Estate and to protest with vigour.

AMBROSE M. POYNTER.

* * * We do not know that Mr. Poynter's reference to the modern architect are entirely correct in this case; our complaint rather is that the houses and other buildings are being remodelled according to the ideas of the Bedford Estate Surveyors. Two of the new blocks of flats between Gower-street and Tottenham-court-road are in a good though simple and unpretentious style of architecture. Bedford Court Mansions, for which the exterior design was made by Mr. Vigers, and another block (of which we forget the name) by Mr. Brydon. These are quite unobjectionable architecturally; the objection to them is that they are part of the system of over-building; crowding the ground and shutting out light and air. If the Bedford Estate official architecture the visitor may form a good idea by looking at the treatment of the high wall bounding the new road north of Bedford Court Mansions which has been made ornamental (?) to increase the attractiveness of the neighbourhood.—ED.

VENNER V. McDONELL.

"STRUCTURE" IN THE LONDON BUILDING ACT.

SIR,—Referring to your article on the appeal verdict in connection with the above, in last week's issue of the *Builder*, may I be allowed to say a few words, as I am persuaded that not one in twenty of those who read the result of the appeal realised the circumstances of the case. The "structures" in question were not exactly as described—"movable seats" merely, but certain stagings or galleries of the ordinary type, averaging perhaps 13 ft. in height, and accommodating some thousands of people. The only difference, practically, between these erections and others of a similar kind—say those to be erected for the Queen's celebration (both having to be sanctioned by the London County Council, directly or by their officers) was that (a) they had been previously used; and (b) that, in the case of the one of which a model was shown, certain preparations had been made in the building itself, in the shape of eyes or sockets, for fixing such possible future constructions. For the upper staging, at the gallery level, of which as I pointed out, no model was shown, but which nevertheless contained nearly half of these seats, no such provision had been made—a point which, however, did not come into the evidence.

The Military Tournament, for which they were required, being an exhibition of which I could not plead ignorance, and in connexion with which, in the event of an accident, I might be called to account, I was desirous to have the question of my responsibility or otherwise settled.

The Act (Section 78) (Section 78) says:—"Every public building, including . . . every structure and work constructed or done in connexion with, or for the purposes of the same, shall be constructed in such manner as may be approved by the District Surveyor," which I took as applying to workmanship and materials, as well as to design, careless execution or improper or damaged materials being likely to mar the best scheme. In this view the magistrate at the first hearing appeared to coincide. It was distinctly brought out, and to this I call particular attention, that the whole point of the case lay in the fact that the structures in question were (as was admitted) in a public building, and consequently subject to special legislation; yet what is the astonishing conclusion arrived at in the verdict? This is that if the first finding was correct—viz., that stagings for thousands of people so erected in a public building required the supervision of the District Surveyor, then (*mirabile dictu*) it followed that "no person could put up a fixed cupboard or a fitted bookcase in his house without giving notice to the District Surveyor, and without being subject to his supervision!"

Really, comment seems almost superfluous. This will say, however, that whilst to put the staging erected for the Military Tournament (always crowded in every part) on the par with the fixing of bookcase is sufficiently startling; to make the latter irrelevant comparison of such a structure, appearing to be in almost the largest public building in the kingdom, with the fixing of a bookcase or cupboard in a private house, with which, of course, has absolutely nothing to do, is perfectly absurd.

GEORGE McDONELL.

. We think Mr. McDonnell misunderstands the point of the comparison made by the Court. We like it that it was only intended to show that the two cases would come legally under the same category. Practically, no doubt, there is much in Mr. McDonnell's argument; but in a legal sense we do not see how a detached framed seating, removable when required without taking it to pieces, can properly come under the head of a "structure" in the sense in which the word is used in the Building Act.—Ed.

ST. NICHOLAS, KEYINGHAM.

SIR,—May I beg space to call the attention of archaeologists and lovers of old churches to the deplorable condition of St. Nicholas, Keyingham, Holderness?

The building consists of nave and aisles, tower, hancel, and chantry chapel. The condition of the north aisle is very serious indeed; the west wall without shows several wide cracks, one of which separates the coping-stones of the battlement by six inches. The east wall is merged, and the secondary apertures, rising from the springs of the first arches, are all out of line, while the whole window seems to be falling outwards. The cracks thus formed show inside as well; the north wall bulges in one place and leans considerably, and the rain drips in through the roof, which is broken in several places with the drain.

Can nothing be done to save this beautiful old church from ruin? Holderness has many such historic remains, but England cannot afford to lose one of them. The neighbouring churches of Winestead, Patrington (Decorative and Perpendicular, with an eastern "sepulchre") and Hedon (Norman, Early English, and onwards), have been put into good and careful hands; cannot something now be done for St. Nicholas? The Vicar, Mr. Tomlinson, or Mr. B. Mundell, Mount Pleasant, Keyingham, E. Yorks, will be glad to facilitate in every possible way the researches of any one interested enough to visit and investigate the place, and I sincerely hope this appeal may stimulate some archaeologists to such action.

HARRY LOWRIERSON.

A PARTY-WALL QUESTION.

SIR,—A, in erecting a building, agrees with B, owner of adjoining land, to build a party-wall half on B's ground and half on A's, with the understanding that when B builds he shall pay A half cost of party-wall. B later on builds, and decides to carry his building higher than that of A, and claims the right to build on the whole thickness of the party-wall as A has done; but A says he cannot use more than one half without paying compensation. Which is right?

"NEWPORT."

The Student's Column.

SPECIFICATIONS.—XV.

ELECTRIC WIRING.

EARLY all large installations are put in the hands of a consulting engineer. He, to prevent disagreement or confusion, draws up a set of rules and conditions called the "Specification." No departure from it by the contractor is allowed without the consulting engineer's permission, and the contractor is not compelled to do any work not specified in it. As a rule, therefore, it goes as much into detail as possible. For the benefit of the readers of this column, we append the general form and wording of a specification for the installation of the electric light in a private residence in the West End. For the sake of brevity, we have omitted the upper floors.

The contract will be preceded by certain general clauses which do not differ in intention and effect from those usually attached to any other contract for building work; but there are other clauses which it is advisable to attach specially to a contract for electric wiring, in view of the special nature of the work, and the serious risks which must arise from any incompetent performance of the work. Such are the following:—

All the work mentioned in this specification shall be executed and completed by workmen of undoubted competency, efficiency, and good conduct, and no part of the work shall be done by task work. The Contractor shall not make

any sub-contract for the execution of the whole or any part of the work to any person whatsoever, without the express permission in writing of the engineer.

Then will follow clauses of much the same character as in a general specification, empowering the engineer to condemn and require the removal of any improper material or such as is not in accordance with the specification, providing for the recovery at law of losses caused by bad work, or the proportionate deduction from the sum to be paid to the contractor, for carrying out the work without delay and without interference with the work of other contractors, and for the compulsory discharge of incompetent foremen or workmen.

Upon the signing of the contract, the contractor shall supply any sample of material or workmanship hereinafter described that the engineer may demand.

The contractor shall at all times keep on the work a copy of the plans and specifications, drawings and measuring instruments, and such apparatus as shall be necessary for making any test of the work that the engineer may demand.

The contractor shall guarantee to maintain and uphold the work in perfect condition, both electrical and mechanical, for the time of twelve calendar months from the date of the completion of the contract.

Then follow the usual provisions as to payment, and as to the action to be taken in case of the death or insolvency of the contractor, which need not be specially gone into.

Description of Work, Quality of Materials, &c.

Cable Mains and Branch Leads.—All mains, sub-mains, and branch leads shall be of copper, having a guaranteed conductivity of at least 98 per cent pure copper, according to Mathiessen's standard, and they shall be insulated with pure and vulcanised india-rubber and taped; the whole vulcanised waterproof so that the insulation of the said mains, sub-mains, and branch leads shall be 2,000 megohms per statute mile, and shall be equal to Henley's Class A cables.

No main, sub-main, or branch lead shall consist of a single wire, but shall be composed of small wires stranded together, and the size of each main, sub-main, or branch lead shall be so proportioned that when the maximum current is passing, no more than 600 amperes per square inch section is flowing through any conductor. The smallest sized wires to be used shall be $\frac{3}{16}$. The sizes of other branch leads, other than $\frac{3}{16}$, are shown in schedule A.

The sizes of mains and sub-mains are shown in schedule B.

Joints.—Joints under floors, or in any inaccessible position, are to be absolutely avoided. The ends of the mains, sub-mains, and branch leads, before being connected to switches, fittings, and fuse boards, &c., shall be carefully stripped of all braiding and felt, care being taken not to injure the rubber insulation, to a distance of at least 3 in., and the exposed rubber shall be carefully cleaned with naphtha, and in no case shall bare wire come in contact with other than the provided metal connexion of fitting, but shall be protected by its vulcanised rubber covering.

Piping.—All wires or cables shall be run in seamless tempered steel pipes preferably well insulated on the inside, of approved design, in continuous lengths, with all necessary angles and bends soldered thereto. After these pipes are fixed, they shall be painted with a good coat of oil paint. Samples of these pipes shall be sent to the building, and tested and approved by the engineer for resistance to nails, &c. The pipes on top floor are to be run in the roof, and the switch wires are to be run in lacerated brass tubes, for this floor only.

Wall Boxes.—Where the pipes project beyond the point where the branch leads, sub-mains, or mains are drawn from them, a teak block shall be fixed to the wall over the end of the pipe. Where the tubes or casings enter these blocks, they shall be connected with rubber or a suitable compound. These blocks shall serve as fixings for brackets and switches and plugs.

Where mains, sub-mains, or branch leads are run through brick walls or concrete floors, they shall be enclosed in extra strong large steel pipes.

Distributing Boards.—Every branch lead shall be run on both poles, from a point on a double pole distributing fuse-board, so constructed that the boards are built up of separate pieces of metallic conductor, and bars of same mounted

on separate pieces of porcelain—one pair for each point—the porcelain being so shaped that one end forms a fireproof division separating the poles. The whole to be enclosed in a hard wood box with glass front, and fitted with lock and key of approved make. The size of these boards are shown in Schedule C, and they are to be obtained from Messrs. Z. & Co.

All points on these boards must be labelled with approved ivory tablets.

Samples of these boards are to be submitted for the engineer's approval.

In fixing these boards a fillet of hard wood shall be attached to the wall, and the boards secured to same, having a sheet of india-rubber, $\frac{1}{8}$ in. thick, placed between them.

Provide and fix all necessary clip fuses with porcelain backs.

Double Pole Switch.—Provide and fix a double pole switch, quick make and break, mounted on porcelain, to be enclosed in a hard wood or iron box, with glass front and lock and key. This switch shall be capable of carrying 50 amps. of current at 200 volts pressure.

Main Switch Distributing Board.—Provide and fix a main switch distributing board, consisting of two pieces of slate of best quality, channelled on both sides and through all holes, and separated by a hard wood fire bar, on which shall be fixed, connected to suitable copper omnibus bars of correct section, three 20 ampere D.P. switches (properly labelled with ivory tablets).

The whole to be enclosed in a hard wood case, with glass front, and provided with a lock and key of approved make.

A sketch of this board must be sent in with tender, for the engineer's approval.

Single Pole Switches.—Every light shown in schedule A shall be provided with a quick make and break switch of the "Tumler" type, mounted on a porcelain base, and provided with an extra heavy metallic cover to be selected.

These switches must be constructed that there is no possibility of contact between the outside cover and the live contacts.

A sample of these switches shall be submitted to the engineer for his approval.

Switches in places to be assigned by the engineer may be mounted on hard wood blocks, with moulded edges of approved design.

Wall Plugs.—Provide all necessary wall plugs of approved make.

Distribution.—At a point in the basement, to be fixed by the Electric Supply Co., and at which they will fix their cut-out, the main 10/18, having loops left for meter connection, shall be carried to the double pole switch, and from thence to the three switch distribution board. From each of these switches a 7/18 sub-main is to rise to the three boards coloured blue, red, and green on the diagram, from which boards all points of similar colours are to be run on both poles.

Note.—All wires are to be drawn into pipes after plastering is complete, and so that they can be drawn out again if necessary.

Tests.—At such times as the engineer may demand, tests of the work shall be made by the contractor, both for continuity and insulation between the poles and to the earth, and the final test being made at a pressure of 200 volts, shall be such that it meets with the entire satisfaction of the engineer, of the Electric Supply Company, and of the Fire Office.

Provisions.—Provide the sum of 10l. p.c.v. for extra wiring, &c., to be deducted in full, or in part if not required.

Provide the sum of — p.c.v. to be paid to the engineer for copies of plans and specifications.

Notes.—The contractor shall do all the necessary cutting away and shall make good in the best Parian cement, to the engineer's and architect's entire satisfaction, but so as to avoid disturbing the existing arrangements, and shall work to the engineer's express instructions.

All local switches shall be fixed on lock side of door, or where the engineer may direct.

When convenient, more than one pair of conductors may be run in one pipe, and for the purpose of identification, the contractor shall in every case run all the positive leads with red, and all the negative with black wires and cables.

The contractor at the finish of the work shall clean up and remove all debris and superfluous material, &c., that has been caused

during the progress of the work, and shall leave all to the satisfaction of the engineer.

SCHEDULE A.

Position of Point.	No. of Points.	Size of Lead other than 3/32.	Description.	Switches.
First Floor.				
Drawing-room...	2	7/32	6 pendants	6
Ground Floor.				
Dining-room...	1	7/32	1 4-lt. electro-roller...	2
Morning-room...	1	—	—	—
Billiard-room...	1	7/32	6-lt. fitting...	2
Water-closet...	1	—	Pendant...	1
Passage...	2	—	2 pendants	2
Entrance...	1	—	1 pendant...	1
Basement.				
Kitchen...	1	—	2 pendants	2
Scullery...	1	—	1 pendant...	1
Pantry...	1	—	1 " "	1
Housekeeper's room...	1	—	1 " "	1
Store-room...	1	—	1 " "	1
Passage...	1	—	1 " "	1
Water-closet...	1	—	1 " "	1

SCHEDULE B.

Kitchen...	2 pendants...	each	p.c.v.	£0 0 0
Scullery...	1 pendant...	"	"	0 0 0
Pantry...	1 " "	"	"	0 0 0
Housekeeper's room...	1 " "	"	"	0 0 0
Store-room...	1 " "	"	"	0 0 0
Passage...	1 " "	"	"	0 0 0
Water-closet...	1 " "	"	"	0 0 0
Dining-room...	1 4-lt. electro-roller...	"	"	0 0 0
Billiard-room...	6 pendants...	"	"	0 0 0
Morning-room...	1 pendant...	"	"	0 0 0
Water-closet...	1 " "	"	"	0 0 0
Passage...	1 " "	"	"	0 0 0
Entrance...	1 " "	"	"	0 0 0
Drawing-room...	6 pendants...	"	"	0 0 0

These prime cost values include complete fittings, including lamp-holders and fixing; sketches are to be submitted on demand, and the whole or any part of the values may be omitted at the option of the employer.

SCHEDULE C.

Mains, 19/18.	Submain to basement,	7/18.
	ground-floor, 7/18.	
	first-floor, 7/18.	

SCHEDULE D.

DISTRIBUTION BOARDS.			
Main, 3 way.	25 amp.	Switches and fuses.	250 volts
Basement,	10 way board.		
Ground-floor, 12 "			
First-floor, 14 "		This board to have four ways arranged for master switch	

SCHEDULE E.

BELLS.
One push, p.c.v., 15s., to be fixed at entrance. Vulcanised wires to be run in compo tubes to two 6-in. gongs; one in basement passage and one second-floor. A suitable battery to be provided.

OBITUARY.

MR. R. S. PARKER.—The death has just occurred of Mr. R. S. Parker, the principal in the firm of Patman & Fotheringham, builders and contractors, Islington. The business will be carried on in future by Mr. James F. Parker, and Mr. Alfred E. Parker.

MR. HOPE M'LACHLAN.—We greatly regret to have to record the death of this talented and original landscape painter, who had made a mark of his own in contemporary landscape painting, and for the last few years one learned to look out for his contributions to the Academy and other exhibitions as things which were sure to have some original interest. Mr. M'Lachlan delighted in studies of special effect of composition and light in landscape, especially effects of storm or of twilight and even night. He treated such scenes in an exceedingly broad and massive manner, and with rather an ignoring of local colour; and sometimes no doubt, "breadth" was carried a little too near to roughness of execution; but there was always a stamp of power on his work.

GENERAL BUILDING NEWS.

WESLEYAN CHAPEL, BARNSELY.—The new chapel of the Wesleyan Reform body, at Doncaster-road, Barnsley, was opened on the 1st inst. The new chapel will accommodate some 400 worshippers. It has been built from the designs of Messrs. Senior & Clegg, architects, at a total cost of something over 1,000l.

ST. MARY'S MONASTERY, KINCOLL, PERTH.—This building was begun in the year 1867, when the house, consisting of dormitories, refectory, library, kitchen, &c., was erected. In the following year the church, monastery, chapel, and crypt were built, and now the novitiates' wing, consisting of dormitories, common-room, library, and oratory, has been completed. The church has sitting accommodation for 200; the house has apartments for the Fathers, and large dormitories for lay and other brethren, while the new wing provides thirteen rooms for novitiates, and dormitories and other accommoda-

tion for the brethren. The new wing also contains an oratory and library, and a lecture-room for the novitiates. The whole of the buildings have been heated on the low pressure hot-water system, with large pipes round the outside walls and radiators where required, a new drainage system has been carried out, and alterations in the grounds and terraces have been made. The construction of the original building, church, and novitiates' wing cost about 20,000l., exclusive of the site, altar decoration, furnishings, and fittings. The original building and church were designed by the late Mr. Andrew Heiton, and the novitiates' wing by Mr. A. G. Heiton, Perth. The following local tradesmen were employed in the execution of the recent works:—Mason, Messrs. W. & C. Duncan; joiner, Mr. P. Johnston; slater, Mr. J. Carmichael; plumber, Mr. J. McLeish; plasterer, Mr. A. McRitchie; painter, Mr. G. Muirhead; glazier, Mr. C. Alexander; grates, Mr. A. McGregor; roadways, &c., Messrs. W. & R. Taylor.

PUBLIC BATHS, KINGSTON.—The foundation stone has just been laid, in Wood-street, Kingston, of new public baths. The inside measurement of the bath-house is 107 ft. in length and 46 ft. in width. The swimming pond is 90 ft. by 30 ft. The dressing boxes on either side will number fifty-one, with foot-space in front; and above these is a gallery, 8 ft. 6 in. high, extending all round the bath, to be used for witnessing swimming entertainments, &c. The pond will be supplied by a well at the rear of the building, and water will also be laid on from the company's main. The deep end of the bath is to be 6 ft. 6 in., and the shallow end 3 ft. 6 in. The floor is to be paved with glazed bricks and the sides with white glazed tiles. Lighting will be from lanterns in the roof, and electric light. Sixteen slipper baths will be provided, first and second class, each supplied with hot and cold water. The building is being erected by the Council of Kingston, from plans by Messrs. Francis S. S. and M. B. Adams, with the aid of Mr. Hessel Tilman, as professional adviser and expert. The frontage of the baths in Wood-street will have three entrances to the main building and one to the gallery only, and there is to be an extra exit opening out to Thames-street. Mr. C. J. Parker is clerk of the works representing the Corporation.

THREE LIBRARY, WICK.—The foundation stone of the Carnegie Free Public Library, Wick, was laid recently. The building will occupy a site on the elevated open space in front of Sinclair-terrace. Plans for the new building were prepared by Messrs. Leadbetter & Fairley, Edinburgh, which provide libraries, reading and recreation rooms, and a museum. The cost will be nearly 4,000l., and the contracts for the various parts of the work have been entered into. The total number of volumes provided for is 8,400.

A NEW WELSH CHURCH FOR LONDON.—A new church and mission buildings, dedicated to St. David, and erected near Paddington-green, has just been opened. The new building, which is capable of seating about 400 people, has been designed by Mr. C. Evans Vaughan in the Gothic style. Under the church proper is a hall, which is used as a Sunday school, and during the week for meetings and concerts. At the back of this hall are the caretaker's rooms.

CHURCH, BEAMINSTER, DORESHIRE.—On the 29th ult. the new church of St. Mary, West Fordington, was dedicated by the Bishop of the Diocese. Plans were prepared by Mr. C. E. Ponting, F.S.A., of Marlborough, and the work has been carried out by Mr. H. Hoskings, of Hungerford, Wilts. The new church has a total length to the apex of 135 ft., the length of the nave is 95 ft., and its breadth 42 ft. The church is constructed of corrugated iron, on a framework of wood, and the interior is plastered. The roof is surmounted by a bell turret.

NEW THEATRE, COVENTRY.—A movement is on foot at Coventry to build a second theatre, to be called the New Grand Theatre of Varieties, on the site of the old Theatre Royal, Smithford-street, the frontage being brought up to the level of the street. The plans for the new building have been prepared by Mr. W. G. Sprague, architect, London.

NEW WESLEYAN SCHOOL CHAPEL, BROAD-HEATH, ALTRICHAM.—The memorial stones of the new school chapel at Broadheath were laid recently. The school, it is estimated, will accommodate between five and six hundred scholars. The large room will seat about 350 persons. There will be three class rooms and an infants' room. Behind the platform vestries will be placed. A gallery and three class rooms are arranged for the front of the building, and these will be flanked on each side by the staircase and principal entrance. Rooms for storage, the heating chamber, &c., will be provided in the basement of the building. Externally the front and side elevations will be faced with red stock bricks with terra cotta mouldings, &c. It is proposed to cover the roofs with red Runbon tiles, and the vaulting turret with oak shingling. The floors inside will be of pitchpine, and will also be of screens, gallery front, and roof timbers. The architect is Mr. A. W. Smith, of Manchester, and the principal contractor, Mr. J. E. Dean, of Sale.

NEW POST OFFICE, ABERFELDY, PERTH.—The new post office in Dunkeld-street, Aberfeldy, was opened for public business on the 29th ult. The public office is 18 by 15 ft., the sorting-room 27 ft. 6 in. by 10 ft., and the telegraph-room 16 by 18. The

contractors were:—Mason, Mr. John McNaughton; joiner, Mr. Donald Reid; plasterer, Mr. John Scott; slater, Mr. Alexander Robertson; plumber, A. Menzies; architect, Mr. William Bell, C.E.

CATHOLIC CHURCH, HEATON NORRIS, LANGLISHIRE.—The foundation stone has just been laid. Heaton Norris of the new St. Mary's Roman Catholic Chapel. The architects are Messrs. Pugh & Pugin, of London, and the builder is Mr. Joseph Heaton Norris. The building will be in the Gothic style, and will accommodate 200 people. It will be 92 ft. 8 in. long from wall to wall, and 40 ft. wide. The cost is estimated at about 4,000l.

THE PROPOSED MUNICIPAL BUILDINGS, LLANDUDNO.—A meeting of the Llandudno Urban District Council was held recently to discuss the question of the erection of the proposed municipal buildings. The majority of the members were strongly opposed to spending 14,000l., the original estimate being 10,000l. Mr. T. T. Marks moved, and Mr. Beveseconded, that a committee of seven be appointed to meet Mr. Silcock, the architect, at an early date with a view to altering the elevation, using a different kind of stone, and generally reducing the cost, so that it should not exceed 12,000l. Mr. E. J. Sarson moved an amendment, and it was seconded, that it is not expedient to spend more than 10,000l. on municipal buildings. Mr. Marks's resolution was carried.

ADDITIONS TO CATERHAM ASYLUM.—An ordinary meeting of the managers of the Metropolitan Asylum District was held at the County Hall, Spring Gardens, London, on the 27th ult. Sir E. H. Galsworthy, the Chairman of the Board, presiding. The Board elected the tender of Mr. Solder, Hipwell, & Wisbeck, to erect for the sum of 3,000l. a home for the female attendants at the Caterham Asylum, in accordance with the plans and specifications prepared by Mr. E. T. Hall, architect. The architect's final estimate of the work was 5,000l. Plans were approved for the erection of a new pavilion, to contain twenty-eight beds, at the South-Western Hospital, and in the main engineering work required in connexion with the extension works, in course of progress at the Western Hospital. The architect's estimate of the cost of the erection of the pavilion was 5,745l., and of the engineering work 4,000l.

ENLARGEMENT OF ST. MATTHEW'S MISSION CHURCH, MONMOUTH GREEN, WOLVERHAMPTON.—Alterations and additions are now being carried out at the Mission Church, Monmouth Green. A change is being added to the front of the building, and new schoolroom provided at the back. The partition-wall that separated the old schoolroom from the mission has been taken away and the two rooms thrown into one. The transformation of the building into a church is being carried out under the supervision of Mr. Lovender, architect, and the contractors are Messrs. Halfpenny Bros., builders.

INFECTIOUS DISEASES HOSPITAL, HAM GREEN, BRISTOL.—The new infectious diseases hospital, Ham Green is approaching completion. The building is being erected from the designs of Mr. Yabbieom, City Engineer. The plan provides for four wards and an isolation ward, and each ward a separate building with a space of 40 ft. between each. There will be seventeen beds in each of the four wards, while the isolation ward is divided into four apartments with two beds in each. The Ham Green mansion is being fitted up to serve as the head-quarters, with accommodation for the resident doctor and the staff of nurses, attendants, &c. The total cost will be about 27,000l. The buildings have been planned with a view to possible extensions. The buildings are of red brick, with freestone dressings.

THE NEW CAMBRIDGE THEATRE OF VARIETIES.—The new Cambridge Theatre of Varieties, at the Guildhall School of Music, laid the foundation stone on the 31st ult., of the new building which is to take the place of the old Cambridge Music Hall in Commercial-street, E., destroyed by fire in January last year. The new hall is to be in the Moorish style, of red brick, with Bath stone dressings, and designed by Mr. Henry Percival, architect, London, and will accommodate an audience of about 2,500. Every part of the building will be provided with gas, distinct exits and fire-proof staircases. The pit and stall floor will be about 10 ft. below the level of Commercial-street; the first circle will be about the street level, with a gallery above. The building, which will cost 25,000l., will be supplied with hot water coils for heating purposes, and will be lighted by electricity.

POLICE-STATION, COVENTRY.—Colonel John O'Hanlon, R.E., Local Government Inspector, recently held an inquiry into the application by the Corporation to borrow 4,571l. for new police buildings. Mr. H. Quick, the architect, gave evidence as to the details of the scheme.

LIBRARY, ST. GEORGE, BRISTOL.—Mr. Francis Wills has prepared designs for the new public library for St. George. The structure is to be built of Cattybrook bricks, with Ham Hill stone dressings. The library buildings will have a frontage about 78 ft., and a depth 75 ft. or less. The building will be heated by hot-water apparatus by Messrs. J. Crispin & Sons, of Bristol. The cost is estimated, will be not far short of 6,000l. Mr. Frank Cowlin is the contractor.

NAVAL ENGINEERING COLLEGE KEYHAM.—New south wing has just been added to this college.

FOREIGN.

FRANCE.—By order of the Minister of Public Instruction and Fine Arts, the designing and modelling courts of the Ecole des Beaux Arts, the library, and the galleries of this establishment will henceforth be opened to girls and young women between the ages of fifteen and thirty, who will be able to produce (with a certificate of identity), a certificate given by an artist showing that they are qualified to compete for entrance. From Monday last the Louvre and Luxembourg Museums are to be opened from nine in the morning till five in the evening, the Cluny and Versailles from eleven till five, and the Sevres and Gobelins manufactories from twelve till five.—The medallion of Alfred Darcel, late Director of the Cluny Museum, has just been placed in one of the halls: it has been modelled by Madame Albazzi.—The "Societe Historique d'Antiquite de Passy" have opened a subscription to erect on the lawn at Ranelagh, near the Gare de Passy, a monument commemorating the arrival of the Emperor and Empress of Russia. The monument is to be executed by Gustave Michel, sculptor.—The Municipal Council in Paris has just opened a limited competition between the artists Carriere, Lenolle, Victor Prost, and Maurice Eltort, for the decoration of the ceiling of the library of the Municipal Council at the Hotel de Ville. The judgment will be given at the end of June.—The destruction of the old bridge of Limay is announced. It is well known amongst the landscape painters and archaeologists.—The Municipal Council of Paris are endeavouring to preserve part of the church of Saint Pierre de Montmartre, the destruction of which had been decided upon.—An important exhibition of china will be opened on May 15 at the Palais des Beaux Arts in the Champ de Mars.—A national exhibition of industry and fine arts will be held at Rennes on May 2, and kept open three months.—There is a talk of erecting a new Hippodrome, larger and better designed than the old building in the Avenue d'Alma, in the neighbourhood of the Place Clichy, on the site now occupied by the Convent of the Sacre Coeur.

GERMANY.—The Government are considering the advisability of selling the old Botanical Gardens at Berlin for building purposes. The value of the ground is estimated at 800,000l.—The Prussian Government is now considering the advisability of extending the Central State Hospital at Berlin, and a Bill has been presented to this effect.—Negotiations are now being carried on energetically as to the entire revision of the Berlin Building Act, and one of the principal points now under discussion is that of the minimum superficial area to be left as courtyards in city property.—At the Schinkel Celebration, which was held under the auspices of the Architectural Society of Berlin, the Minister of Public Works presented the medals, whilst Herr Zekeli delivered the oration.—A large hospital is to be erected at Lichtenfelde, near Berlin.—Professor Reinhold Beggs arranged a very unique celebration at his studio on the completion of the national monument, which included the representation of a satirical play, dealing with the art questions of the day, written by the manager of the Court play-house.—The post of City Engineer at Berlin has now been filled by Herr Krause, of Stettin. There were a number of candidates, but his appointment was by 111 votes against 71 for the next candidate. Herr Krause held the post of City Architect at Stettin since 1860.—Westphalia is to have a county hall, and a competition has been held with the view of obtaining a suitable design. The Town Hall at Munich is to be considerably enlarged at a cost of nearly 200,000l. Professor Hanbrisser will be the architect of this addition, and he was also of the original building. The new works will be spread over five years.—We regret to record the death of Professor Wagner, of Darmstadt, who was closely associated with the work of the Technical College of that city for over twenty-eight years.

AUSTRIA.—The Vienna Municipality is at last closing some of the many insanitary basement dwellings which have long been a disgrace to the city.—We notice that the Government scheme of covering in a part of the old River Wien, with the view of running a new Danubian Railway on the line of this water-way, has had the approval of the Municipality.—There is to be a monument erected to the Emperor Joseph at Baden, a summer resort close to Vienna.—The Council Chamber of the Houses of Parliament at Vienna is to have a new system of lighting.—The respective Governments of Austria and Germany have now decided on a direct line of telephone between Budapest and Berlin.—The annual Art Exhibition at the Central Society of Artists of Vienna has been opened. This year it is a very small exhibition, only 430 pictures having been hung. There is a small section for sculpture and architecture. The Emperor visited the Exhibition on its opening.—It has practically been decided by the representatives of the Amalgamated Society of Artists of Austria to erect a special art exhibition building, and the site selected is that of the old Franz Josef Barracks. A temporary building is first to be erected, and the Municipality has put the ground at the disposal of the promoters free of charge for the next ten years, after which, however, a ground rent will have to be paid in the event of the larger structure being carried out.

ZURICH.—Four miles distance from Zurich, in a place called Schlieren, extraordinary activity is being displayed in the construction of the works of the North-Eastern Railway and the gasworks. A new city is rising, in which some thousands of operatives will very shortly take up residence. It is expected that this little town will contribute to prevent the augmentation of the population of Zurich for at least a few years.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. F. Britton, Builder, has removed from Leconfield-road to 459, Caledonian-road, London, N.

GOOD FRIDAY WEEK.—Next week, in consequence of the Easter holidays, we go to press a day earlier than usual. All communications for the Editor must reach him by first post on Wednesday morning, except lists of tenders, which will be moved up to 10 a.m. of the same day.

DECORATIVE PANELS, BIRMINGHAM TOWN HALL.

—The Estate Committee report the gift, from Mr. Alderman Kenrick, M.P., of four panels, designed and executed by students of the School of Art, for the further decoration of the Town Hall. The titles of the panels and the names of the artists are as follows: "Instrumental Music," by Mr. Sidney H. Meteyard; "Vocal Music," by Mr. Henry A. Payne; "Lench's Trust Almshouses," by Miss Kate E. Binne; "Dr. Sacheverel," by Mr. Bernard Sleigh.—*Birmingham Post.*

A DISCLAIMER.—Messrs. Grover & Grover, Ltd., of Paxton-road, Tottenham, ask us to state that Henry Grover, builder, of Enfield Highway, is not and has not been at any time connected with their firm.

THE WIDENING OF FLEET-STREET.—On the 30th ult. the Commissioners of Sewers held their usual fortnightly meeting at the Guildhall, Mr. H. G. Swallman in the chair.—Alderman Treloar, with reference to the widening of Fleet-street, moved:—"That it be an instruction to the Finance and Improvement Committee to take the necessary steps to acquire, as speedily as possible, all interests in the properties needed for widening Fleet-street between Bride-lane and Salisbury-court." He said that the cost of this improvement was estimated to be somewhere near 100,000l., of which sum the London County Council had agreed to pay half. When Ludgate Hill was widened by 10 ft. it took thirty years to complete the improvement by the process adopted. The same method was being suggested in the Fleet-street widening, but he thought that a more expeditious mode should be carried out. At present notices were served on freeholders with a view of acquiring their interests, while the leases were allowed to expire by lapse of time. That way of going to work necessarily took a long time, much to the detriment of public interest. His proposal was that the leaseholders as well as freeholders should be bought out at once, so as to complete the improvement in a reasonable time.—After a short discussion the motion was agreed to almost unanimously.

DISCOVERY OF AN ANCIENT DOORWAY IN COLEHILL, TAMWORTH.—In the course of the excavations which are being made at the corner of Church-street and Colehill, for the purpose of erecting new premises for the Tamworth Co-operative Society, the men employed by Mr. E. Williams, the contractor, came across the stone step and jambs of an old doorway, the hotel having disappeared. The doorway faced Colehill, and the step was about 4 ft. or 8 ft. below the present level of the street. The jambs were rudely ornamented.

ANNUAL DINNER, INSTITUTION OF CIVIL ENGINEERS.—The annual dinner of the Institution of Civil Engineers took place on the 31st ult. in the Hall of the Merchant Taylors' Company, Threadneedle-street, Mr. J. Wolfe Barry presiding over a large gathering of members and guests. The usual loyal and patriotic toasts were duly honoured, and the Duke of Teck briefly acknowledged that of "The Prince and Princess of Wales and the other members of the Royal Family." The President next proposed "Her Majesty's Ministers," and Lord G. Hamilton replied. The toast of "The House of Commons" was then given by the President, the Lord Chancellor responding for the Lords, and the Speaker replying for the House of Commons. The President having proposed "Health and Prosperity to the Merchant Taylors' Company," and Major-General Sim having acknowledged the toast, Sir L. Simmons gave the toast of "The Institution." The President, in the course of his reply, remarked that the Institution had on the previous day by a unanimous vote adopted a new departure, and from that time forward admission to the organisation would be gained either by scientific examination or by the submission of some valuable paper or thesis. He thought this new departure would be of very great value to the world at large, as it would be a guarantee that the members and associate members of the Institution had a grounding in that scientific knowledge on which all civil engineering must always be based. It would also be of great value to the Institution as a body by raising it to its proper position, and enabling it to keep pace with those developments of scientific research which were being constantly brought to light. The company then separated.

RESTORATION OF THE PENDEDE TOWER, DUNFERMLINE.—When Mr. Andrew Carnegie visited his native city in the summer of last year, he suggested that the Pendede Tower, which at one time formed the connecting building between the Royal Palace and the Abbey, should be repaired and converted into a tower for Dunfermline curios. The suggestion was placed before H.M. Office of Works by a local committee, and the office sanctioned the scheme, and appointed one of its officers, Mr. Hawks, to superintend the work. What remains of the tower is 47 ft. in height, 35 ft. in length from north to south, 15 ft. in breadth at the northern end, 18 ft. 6 in. at the southern arch. The lower flat consists of three rooms, and the upper room, or museum proper, is 26 ft. 6 in. from north to south and 13 ft. 6 in. from east to west. The windows in the lower flat have been filled in with cathedral glass, and in the museum the Dunfermline arms and the Scottish Lion are emblazoned on the north and south windows respectively. The floors have been all laid with pavement, and an oak stair leading from the basement to the upper flat has been introduced.—*Glasgow Herald.*

THE SANITARY INSTITUTE.—We have received the annual report of this Institute, in presenting which the Council observe that what is now needed is not so much an awakening of the public as to the necessity for combating preventible diseases, as the imparting of instruction in the best methods to be employed in accomplishing this important task. They have endeavoured to meet this need by developing the educational value of the meetings, lectures, and demonstrations at the Institute, and by improvements in the permanent museum and exhibitions, while throughout the country the congresses held by the Institute, and the exhibitions connected with them, are rapidly increasing in importance, and in the influence that they have on matters connected with the wide field of sanitary science. A sketch map, showing the centres to which the work of the Institute has been extended, is given at the end of the report.

APPOINTMENT OF SANITARY INSPECTORS.—The Local Government Board has sanctioned the appointment of Messrs. H. F. Bridal and J. Peers as Sanitary Inspectors in the parishes of Bethnal Green and Islington respectively.

HAMPSTEAD HEATH PROTECTION SOCIETY.—On Wednesday, Mr. E. Brodie Hoare, M.P., presided at a public meeting at the Drill Hall, Hampstead, called for the purpose of forming a society for the protection of Hampstead Heath and the preservation of its natural beauties. Amongst those who have already promised to join the society are the Duke of Westminster, who has consented to become the patron, Sir Walter Besant, Miss Octavia Hill, Messrs. W. B. Richmond, R.A., Norman Shaw, R.A., David Murray, A.R.A., Mr. Samuel Hoare, M.P., seven other members of Parliament, the Bishop of Exeter, &c. The Chairman advocated the desirability of interfering as little as possible with the natural beauty, the natural growth of plants and shrubs, and the natural bird life, on the heath, and also impressed upon those present the necessity of working in harmony with the London County Council.—Mr. E. E. Lake, churchwarden of the parish, moved "That it is desirable to forthwith form a Society for the protection of Hampstead Heath and the protection of its natural beauties." Mr. J. Hardestad seconded. The Chairman read a letter from the Hampstead Art Society, expressing their sympathy with the object of the meeting. Mr. J. B. Wilkin said that the resolution was "too arduous" for him. He considered that great credit was due to the London County Council for the work they had done in making the heath and Parliament Hill fields accessible to the public. He contended that the people of Hampstead, or many of them, were selfish, and did not like to see good footpaths, which enabled the people of London to get about the heath freely. The resolution was carried unanimously, and it was afterwards decided to call the Society the Hampstead Heath Protection Society.

ARCHITECTURAL ASSOCIATION SPRING VISITS.—We are obliged to hold over the account of the visit last Saturday, which reached us too late to find space for it.

CAPITAL AND LABOUR.

THE DISPUTE BETWEEN MASTER BUILDERS AND OPERATIVE BRICKLAYERS, WOLVERHAMPTON.—At a meeting held at the Star and Garter Hotel, on March 17, the representatives of the Master Builders' Association met the representatives of the Operative Bricklayers' Society in order to try and come to some amicable arrangement of the points in dispute, and so avert a strike on the part of the bricklayers. We understand that it was decided by the members representing the workmen to accept the terms offered upon their behalf. The settlement gives the men an advance of one halfpenny per hour in wages, an hour for dinner during part of the short time in winter (in place of half an hour), half a mile less walking distance, improved conditions as to overtime and lodgings, and also provisions as to giving notice of alteration of rules. The settlement arrived at was laid before the members of the branch on the 24th ult., when they expressed themselves as perfectly satisfied with the settlement arrived at by their representatives. The new rules come into force on the first day of May.—*Midland Counties Express.*

LEGAL.

APPEAL AGAINST A DISTRICT SURVEYOR.

THE 30th ult., the case of Bodley v. Marsland, a case of considerable interest to builders, before Mr. Hopkins at the Lambeth Police Court. It was an appeal under Section 150 of the Building Act, 1894, by Mr. Bodley, as builder proposing building at No. 7, Allyn-road, Park Lane, Camberwell, against an objection made by Ellis Marsland, the District Surveyor of Camberwell. Mr. Blackwell, barrister, who appeared for the appellant (instructed by Mr. Francis Howse) appeared, in opening the case, that on January 28, 1897, Mr. Bodley served upon Mr. Marsland notice required by Section 145 of the London Building Act, 1894, of intention to make an addition to the premises, 7, Allyn-road. The effect of the addition, if carried out, would have been to increase the area of the building beyond ten squares to bring the building within Section 74 (2) of the Building Act. Mr. Marsland refused his consent to alteration unless the portion of the premises as a shop was separated from the part used as dwelling house by fire-proof floors. As the effect this would have been to involve very considerable expense, it was determined to modify the plan, instead of building an annex to the existing premises, to build a separate structure, the new building, however, separated from the existing only by about a space of 9 in. Mr. Marsland agreed to have regarded this as an attempt to bring Section 74 and stated that the written notice objection he had given would apply also to the modified plan. Accordingly a summons was taken out by the Section and the parties appeared before the learned magistrate. Mr. Marsland cross-examined the witnesses to show as there was a door in the existing building, and as proposed to put a door in the new building, two buildings would be united by the openings, he called attention to Section 77 of the Act, which meant that section supported his view. Blackwell, in reply, submitted that two buildings could not be united merely by making openings two walls, unless the two walls were in physical contact with one another. Two houses on opposite sides of a street were not united by the fact that there were doorways precisely opposite to one another. The idea that it could be so could not, he thought, have entered the mind of any man who was a District Surveyor. The learned Magistrate adopted this view, and made an order disallowing the District Surveyor's objection to the plans submitted.

* The foregoing account is furnished to us by Messrs. Howse & Co., the appellants. Accepting it as correct statement of the facts, we have no doubt that the judgment of the magistrate is technically correct, and that as the law stands he could have decided otherwise; but we do not think it clear is very creditable to the appellant. It appears to us to be an evasion, through a technicality, of the essential intent of the Building Act, D.

A BUILDER AND HIS PLANS: CASE IN THE COURT OF APPEAL.

THE case of Smith v. The Chorley Rural District Council came before the Court of Appeal, composed of Lord Justice Lindley, Lord Justice Lopes, and Mr. Justice Chitty, on the 5th inst., it being an appeal by the plaintiff from a judgment of Mr. Justice Kennedy in action brought by the plaintiff, a builder at Chorley, for a mandamus to compel the Council to approve the plans of a house in Back-lane, Chorley, Cheshire, he, however, it declined to do on the ground that the house was built in the street 24 ft. in width of 36 ft. 6 in., which was the minimum width allowed by the by-laws. The plaintiff's contention was that Back-lane was not a new street. The case was tried before his Lordship and a special jury who found that Back-lane was not a new street. Lordship, however, on further consideration, held that an action for a mandamus would not lie, proper remedy, if any, being, by an application for a prerogative writ of mandamus. He therefore refused judgment for the defendants. On the conclusion of the arguments of counsel, the Lordship, in giving judgment, said that the defendants, a local tribunal, which admittedly had jurisdiction to consider whether they would approve the plans of a house laid before them, had not determined that question. The plans were laid before them, not that they might ministerially signify their approval, but that they might say whether in honest exercise of their jurisdiction they would approve or disapprove of them. It was admitted that the defendants honestly considered the question, and that they were not negligent in doing so. The question, however, was whether they had determined that question. The plaintiff brought the present action for a mandamus to compel them to alter their decision and to

approve of the plans. Mr. Justice Kennedy had thought it better not to withdraw from the jury the question of whether or not it was a new street, and the jury had found that it was not a new street; but upon further consideration the learned judge came to the conclusion that there was no question for the jury, and entered judgment for the defendants. In his (the Master of the Rolls) opinion no appeal lay from the decision of the local tribunal acting honestly within their jurisdiction; and therefore there was no question for the jury, and the action could not be maintained. The Lords Justices concurred, and the appeal was accordingly dismissed with costs. Mr. E. Sutton appeared as counsel for the appellant, and Mr. C. A. Russell, Q.C., and Mr. F. H. Mellor for the respondents.

PIRACY OF AN ARCHITECT'S DRAWINGS.

THIS case, which was brought by Mr. James Neale, F.R.I.B.A., and a Fellow of the Society of Antiquaries, against Messrs. Harmer & Harley and Architecture for publishing some of Mr. Neale's drawings from his work on St. Alban's Abbey, and which was reported in the Builder of February 20 last, when Mr. Neale obtained an *interim* injunction against Architecture, was again before Mr. Justice Kekewich on the 3rd inst. The defendants decided not to further contest the case, and agreed that Mr. Neale should have a perpetual injunction restraining the defendants, Messrs. Harmer & Harley and Architecture, the publishers and proprietors of a paper entitled Architecture, from printing, publishing, selling, delivering, or otherwise disposing of any copies of that magazine containing any drawings or plans copied from "The Abbey Church of St. Alban," a work published by the plaintiff and duly registered as copyright; and that the defendants would pay damages and all costs. Mr. Justice Kekewich made an order accordingly. We understand the costs and damages considerably exceed £200.

MEETINGS.

FRIDAY, APRIL 9.

Institution of Civil Engineers. (Students' Meeting).—Mr. Harold Berridge on "Poole Harbour," 8 p.m.

SATURDAY, APRIL 10.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at the Sewage and District Works, Kaling, 2.30 p.m.

Edinburgh Architectural Association.—(1) Visit to Niddrie Tower. (2) Visit to Duntarvie Castle.

MONDAY, APRIL 12.

Royal Institute of British Architects.—Mr. H. H. Stratham on "The New Government Offices Scheme," 8 p.m.

Clerks of Works' Association (Carpenters' Hall).—Fifteenth Annual Meeting, 7.30.

Sanitary Institute (Lectures for Sanitary Officers).—Dr. G. Reid on "Sanitary Appliances," 8 p.m.

TUESDAY, APRIL 13.

Institution of Civil Engineers.—Paper to be discussed: "The Blackwall Tunnel," by Messrs. David Hay and Maurice Fitzmaurice, 8 p.m.

WEDNESDAY, APRIL 14.

Liverpool Engineering Society.—(1) Nomination of Council and Officers. (2) Mr. G. Farrer on "Sinking of Small Harbours and the Effect of a Stream of Water," 8 p.m.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection of Artisans' Dwellings, Boundary-street area, Bethnal Green, 3 p.m.

THURSDAY, APRIL 15.

Devon and Exeter Architectural Society (Plymouth, Excess Branch).—Address by Chairman, Mr. C. King, 7.30 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

4,604.—APPLIANCE FOR BURST WATER PIPES: P. Blackwell and Another.—Invention consists in a device for the prevention of damage consequent upon the bursting of water pipes, being the combination of a flap provided with an electrical contact-piece, introduced into the supply-pipe, by means of the main cock, and means for electrically releasing the cock, which is so weighted as then to close automatically, such releasing mechanism being caused to act by an electric current the circuit of which is completed on the bursting or fracture of a pipe. The releasing mechanism consists of a bent lever, with weight, arranged on the main cock. 4,780.—FLUE OR CHIMNEY: W. R. Berridge.—In a flue or chimney, preferably of metal, inventor constructs the shafts in two parts, the upper part of the uptake being fixed, and the lower part of the uptake being free to slide telescopically either within the upper part of the uptake or around the outside of the same. The lower portion of the chimney may be suspended and counterpoised by means of balance-weights, pulleys, and cords. 5,270.—GLUE POTS, &c.: W. H. Wilson.—Inventor forms the glue-pot (or analogous vessel) of an oval or elliptical shape, and provided with the usual water-jacket and handles, the bottom of the glue-pot being sunk or dished at one end to collect the sediment, this sinkage being provided with a grid. Wires or bars are fitted across the pot to wipe brush on, and an upright rod is fixed at side to suspend brush from, while a shelf in pot prevents brush dipping too deeply when in use. 9,149.—GRINDSTONES: P. A. Ziegner.—Inventor proposes to make grindstones (superior to the natural stones) of the following composition: Washed sand from pits, 60 parts; chloride of magnesium, at 35 deg. Beaumé, 20 parts; magnesite (calcined magnesite), 10 parts; gypsum, 2 parts.

This pasty mess is cast in moulds of size and shape desired, and, when dry, taken out. 23,465.—CELLAR FLAPS: W. Eckstein and Another.—In order to open and close the large and heavy iron and close cellar flaps now in use, inventor hinges to each flap a quadrantal rack, passing through a guide-box attached to frame to which flaps are hinged. In this box is a worm which can be operated by a rod, and, by its rotation, the rack and flap connected can be raised or lowered safely. 724.—AUTOMATIC SYPHON FLUSHING TANKS: W. C. Cramer and Another.—Object of invention is to ensure the starting of the siphons of automatic flushing tanks exactly there is a sufficient head of water therein. For this purpose, in an automatic syphon flushing tank they provide the top of the syphon with a float-operated air valve. 3,204.—WINDOW SASH FASTENER: J. W. McDougall.—To secure sash windows, prevent rattling, &c., inventor adopts a fastener consisting of a bolt sliding in a bracket fixed to one sash, and having a pin to engage with a catch upon a bracket on the other sash, and holding the sashes together by a spring.

NEW APPLICATIONS FOR LETTERS PATENT.

MARCH 22.—7,365, W. Wilson, Sliding Sockets for Shop Window Fittings. MARCH 23.—7,445, W. Farleigh, Fire Grates.—7,493, H. Crane, Floor Brains.—7,495, A. Fleischmann, Door Locks.—7,505, J. Rollers, Window Fasteners.—7,509, H. J. Janghans, Wood Stain.—7,561, A. Ansell, Casements.—7,575, F. Starace, Windows. F. Lane, Slewing Crosscut Sawing Machine. MARCH 24.—7,594, F. Lane, Slewing Crosscut Sawing Machine. MARCH 25.—7,667, J. Sheppard and F. Dashiwood, Construction of Walls, Partitions, and other Structures, and the form of Bricks or Tiles for the same, and in the manner of setting such and other Bricks or Tiles immediately after Moulding in Hacks for Drying.—7,662 and 7,623, W. Whitehead, Recording and Checking Workmen's Time.—7,694, R. Cuffield, Window Sash Fasteners.—7,709, W. Gates and J. Green, Connecting Junctions and Bends to Main Drain Pipe. MARCH 26.—7,808, W. Borrowes, Grip Plates for Attaching Hangers, Brackets, or other Attachments to Girders, Rolled Joists, or Beams.—7,830, W. Taylor, Chimney Cowl. MARCH 27.—7,931, C. Greenhalgh, Waste Water Closets.—7,937, H. Parker, Pedestal Bracket Seats for Water Closets.—7,976, T. Sloan, Machines for the Manufacture of Wood Screens.

PROVISIONAL SPECIFICATIONS ACCEPTED.

11,944, L. Gorisse, Door Checks.—2,245, W. Pretty, Sash Fastener.—2,292, W. Greenwood, Sliding Bolt Fastening for Doors, Windows, &c.—5,482, E. Collier, Securing Door Knobs to their Spindles.—5,692, A. Walker, Sanitary and other Pipes.—5,804, W. Hoatwright, Chimney Cowl.—5,816, T. Lilley, Fire Hearths.—5,922, T. Moody, Saws.—6,050, A. Rider and E. Russell, Sliding Sash Windows.—6,066, The Wilkinson Sword Company, Limited, Door Locks.—6,113, F. Lynde, Flushing Cisterns.—6,171, L. Haaks, Gully Traps.—6,224, E. Taylor, Sash Fasteners.—6,213, D. and J. Burgess, Concrete Paving, &c.—6,607, H. Lake, Moulding Box for forming Plaster for Building purposes.—6,577, S. Buck, Ridge and other Tiles.—6,649, D. Campbell, Handles and Spindles of Door Locks.—6,701, J. Peckover, Stone Saws.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months. 6,282, W. Johnson, Sliding Pivoted Window Sashes.—7,666, A. Hoeking, Waste or Slop-water Closets.—8,487, F. Pickford, Flat Whitewash and like Brushes.—8,887, J. Rigby, Tiles, Slabs, Wallings, &c.—10,586, J. Simpson, Fitted Hearths or Flooring for domestic Fire-places and other uses.—80, E. Edwards, Surfaces of Walls and Ceilings to receive Plaster without Laths, &c.—1,725, J. Watson, Sash Fastener.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

March 23.—By WILKINSON, SON, & WELCH (at Brighton). Brighton.—30, Old Steyne, £ £1,820 March 24.—By DOUGLAS YOUNG & CO. Newport.—33 to 43 (odd), Palace-rd., £, £, 176l. 2,110 Hford.—Bullst-rd., "Philips," £, £, 36l. 520 Granville-rd., "Lindhurst," £, £, 36l. 745 3 and 5, Thorold-rd., £, £, 48l. 500 Wandsworth.—51, Gorst-rd., ut. 84 yrs., gr. 64 20s., ct. 38l. 310 Batham.—"Tulley-rd.," "Elbury," £, £, 19l. 345 By W. MOORE & SONS (at Bridport). Bradpole, Dorset.—"Gore House," £, £, 20l. 500 March 25.—By J. PARKER & SON. Hampton.—14, Birchington-rd., ut. 60 yrs., gr. 10l. 10s., ct. 85l. 780 By HORTON LEDGER. Pentonville.—16, Holford-rd., ut. 35 yrs., gr. 5l., r. 58l. 660 Barnsbury.—30, Matilda-st., ut. 47½ yrs., gr. 5l., r. 34l. 415 By W. WYKENS. Brixton.—28, 30, and 32, Hargrave-st., ut. 67½ yrs., gr. 15l. 10s., r. 117l. 885 Kingsland.—1, Shellgrave-rd., ut. 74½ yrs., gr. 5l. 10s., r. 30l. 290 By STIMSON & SONS. City of London.—6, 8, and 10, Moorgate-st., ut. 22 yrs., gr. 51l. 18s. 9d., r. 5,397l. 8s. 6,500 Southwark.—9, Southwark-rd., 10, 64, 57s. 470 Finslow.—176, Cambridge-st., ut. 25 yrs., gr. 8l., r. 60l. 470 Battersea.—105 to 112 (even), Lavender-rd., ut. 39 yrs., gr. 27l., r. 149l. 10s. 360 81 and 83, Blondel-st., ut. 78½ yrs., gr. 8l. 940 82, Bridge-rd., ut. 87½ yrs., gr. 5l. 10s., r. 40l. 490 Camberwell.—Lalford-rd., &c., 1851, 44l., ut. 14 yrs., gr. 27l. 18s. 120 By FAREBROTHER, ELLIS, & CO. Plaistow, Keni.—"The Golden Hope" b.h. and 9 a. 2 r. 13 p. £, £, 29l. 1,440 By C. C. & T. MOORE. Mile End.—28, Dunk-st., £, £, 41l. 12s. 530 Poplar.—8 to 14, Stewards-rd., ut. 51½ yrs., gr. 20s. 260 By G. H. RAY. Poplar.—106 and 108, Christ-st., ut. 55 yrs., gr. 1l., r. 77l. 1,075

COMPETITION, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITION.

Table with columns: Nature of Work, By whom Advertised, Premiums, Design to be delivered.

CONTRACTS—Continued.

Table with columns: Nature of Work or Materials, By whom Required, Forms of Tender, &c. Supplied by, Tender to be delivered.

CONTRACTS.

Table with columns: Nature of Work or Materials, By whom Required, Forms of Tender, &c. Supplied by, Tender to be delivered.

PUBLIC APPOINTMENTS.

Table with columns: Nature of Appointment, By whom Advertised, Salary, Applications to be in.

Those marked with an asterisk (*) are advertised in this Number. Competitions, p. iv. Contracts, pp. iv, vi, viii, & xxi. Public Appointments, pp. xviii, & xxi.

Main real estate listings table with columns: Location, Price, and other details.

PRICES CURRENT OF MATERIALS.

Table listing prices for various materials including timber, iron, and other building supplies. Columns include item names and prices per unit.

COVENTRY.—For house, shops, &c., Stoney Stanton-road.

COVENTRY.—For house, shops, &c., Stoney Stanton-road. Coventry, for Mr. Jesse Holliday, Messrs. Harrison & Hatfield, architects. Quantities by Mr. J. M. Binley, Coventry—

LONDON.—For extension to the Eton Laundry, Shepherd's Bush, London.

LONDON.—For extension to the Eton Laundry, Shepherd's Bush, London. Messrs. Johnson Bros., architects and surveyors, Carlisle—

TENDERS.

Next week communications for insertion under this heading must reach us not later than 10 a.m. on Wednesday, as, owing to the advent of Good Friday, we go to press a day earlier than usual.

ROLESHELL.—For 230 yards of new streets, Edgwick, Roleshell, Coventry.

ROLESHELL.—For 230 yards of new streets, Edgwick, Roleshell, Coventry, for Messrs. Peach Bros. Messrs. Harrison & Hatfield, architects. Quantities by Mr. J. M. Binley, Coventry—

LONDON.—For alterations to the "Golden Cross" public-house.

LONDON.—For alterations to the "Golden Cross" public-house, Lancaster-road, Notting Hill, for Messrs. Hellwell & Gander, Mr. John H. May, architect, 254, High Holborn, W.C. Quantities by the architect—

THOMAS STREET.—Supplying and fixing the fittings, for the London School Board.—

Table with columns: Articles, H. Bouneau, T. Cruwys, G.M. Hammer & Co., Hingworth, Ingham & Co., J.H.W. Martin, T.J. Sney & Co. Rows include Working Tables, Working Bench, Set of Lockers with shelves, etc.

LONDON SCHOOL BOARD TENDERS.

At the meeting of the London School Board on Thursday, the Works Committee brought up the following lists of tenders:—

BRENTWOOD INDUSTRIAL SCHOOL.—Exterior painting and interior cleaning:— S. H. Cornish £298 0 J. T. Robey £290 0 Hammond & Son 299 5

DIVISIONAL OFFICES (Richard street).—Interior painting:— T. Nicholson £135 0 R. E. Clarke £105 0 F. Newton 124 5 7 Stevens Bros. 114 0 0 C. S. S. Williams & Son 114 0 0 Staines & Son 89 0 0 W. Irwin 113 10 0 H. Eady (accepted) 79 0 0

COLLINGWOOD STREET.—Sanitary work, &c.:— W. Downs £1,310 W. & H. Castle £1,200 Dove Bros. 1,295 Johnson & Co. 1,162 Stevens Bros. 1,229 Staines & Son 1,197 E. Lawrence & Sons 1,211 E. Triggs 1,210

RHYL STREET.—Heating apparatus:— Maguire & Gatchell, Ltd. £746 10 I. C. & J. S. Ellis, Ltd. £595 0 Ross & Russell, Ltd. 665 0 W. G. Cannon & Sons 524 0 Couyn, Ching, & Co. 628 10 J. F. Clarke & Sons 464 0 H. C. Price Lea & Co. 655 0 G. Davis 448 0 J. Metcalf 655 0

ST. ANDREW'S STREET.—Erecting manual training centre and laundry centre over:—

Table with columns: Name, Amount. Includes W. Downs £1,519, J. & C. Bowyer 1,377, J. Smith & Sons 1,278, W. Akers & Co. 1,294, Holloway Bros. 1,255, Lathey Bros. 1,272, J. F. Ford 1,193, J. Garrett & Sons 1,270, E. Triggs 1,160.

SUPPLY OF SLOW COMBUSTION STEAMS.— Carron Co. £0 14 8 Hope Foundry Co. £0 14 10 O'Brien, Thomas & Co. 7 5 McDowall, Stevens, & Co. 0 18 0 C. Wright & Co. 7 6 Ashton & Green 1 7 Falkirk Iron Company 0 18 9 G. Portway & Son 1 4 0 Hope Foundry Co. 7 5 British Foundry Co. 0 12 3 Do. do. 0 17 1 Conybeak & Co. 1 14 0

WALNUT TREE WALK.—Rebuilding brick casing to flank walls, &c.:— J. Marshall £118 0 G. Brittain £80 0 Et. J. Williams 94 10 W. V. Good 53 0

WEST-SQUARE.—Erecting upper standard rooms, &c.:—

Table with columns: Name, Amount. Includes Johnson & Co. £2,666 19, C. Cox 2,637 0, W. Downs 2,453 0, J. & M. Patrick 2,498 0, R. P. Bullied & Co. 2,392 0, Holloway & Greenwood 2,385 0, G. E. Wallis & Sons 2,377 19, J. Longley & Co. 2,278 0, J. & C. Bowyer 2,247 0, Lathey Bros. 2,228 0, J. Smith & Sons 2,263 0.

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WESTVILLE ROAD.—Erecting manual training centre, laundry centre, &c.:—

Table with columns: Name, Amount. Includes J. & M. Patrick £9,228 0, D. Charteris 1,246 0, R. A. Yerbury & Sons 1,079 0, G. S. S. Williams & Son 1,072 0, R. A. Yerbury & Sons 1,071 0, E. Triggs 1,070 10, E. T. Folley 1,070 0, F. G. Minter 1,070 0, J. Garrett & Sons 1,068 0.

TO CORRESPONDENTS.

J. L., O. B. P. (amounts should have been stated). NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors. We cannot undertake to return proofed communications. Letters of communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED. We are compelled to decline pointing out books and giving addresses. Any communication to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance. All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and not to the Editor.

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The Builder.

VOL. LXXII. No. 2828.

APRIL 17, 1897.

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New Broadway Theatre, Deptford.—Mr. W. G. R. Sprague, Architect.....	Double-Page Photo-Litho.
A Town House: The Front.—Mr. W. R. Jaggard, A.R.I.B.A., Architect.....	Single-Page Ink-Photo.
Proposed New Nave and Chancel, Viewsey Church, Uxbridge.—Mr. C. A. Nicholson, Architect.....	Single-Page Ink-Photo.

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In Committee of Supply.

THE occasions when the House of Commons goes into Committee on the question of Supply are usually, from our point of view, instructive, and sometimes amusing. It is then that we learn something of what various members really think on questions of art and architecture, and we gather something of what is in contemplation in regard to such subjects from the replies extracted from Government officials, who in answering the questions with which they are plied are compelled to set out something of what is going on behind the scenes, and occasionally let out more than they intend.

In the present instance the deductions to be made from the debate of Friday last week are in some respects more satisfactory than usual. The report at least shows that there are some members in the House who have some sympathy with art, and who are impatient at the grudging spirit and the indefinite delay shown in regard to the carrying out of important public buildings. Among others we may welcome an ally in the person of Sir J. Leng, the member for Dundee, who, on the motion to complete the sum of 25,000*l.* for the Admiralty buildings, inquired "whether it was intended to continue the same style as the present offices, a mixture of brick and stone. Generally speaking," he said, "our buildings were puny and lacking in everything of an impressive and imposing character, and in this respect were in complete contrast with the public buildings in the capitals of Europe. He trusted that the buildings erected in the future for the use of the nation would be such as we should be proud of." We are much indebted to Sir J. Leng for his intervention, and hope that his voice will be heard again in defence of the cause of public architecture. Of course he could hardly expect that the new wing of the Admiralty would differ in style from the one already built, and possibly he was quite aware of that; but the opportunity was a perfectly legitimate one for a demonstration on the subject. The First Commissioner made the best of it; he was obliged to admit that he

did not altogether differ from the member for Dundee, all he could say was that it was unfair for members to judge of the building by one wing; but we fear the finished aspect of it will not make the case much better.

In regard to the South Kensington Museum we are glad to see that a somewhat general feeling of indignation seems to have been at length aroused, since three members, Mr. Lough, Mr. Bartley, and Sir F. Powell, successively attacked the subject in tolerably spirited language. Mr. Lough asked for an assurance that steps would be taken without delay to complete the South Kensington buildings; Mr. Bartley said that "it was a scandal that the buildings which had been inaugurated by the Prince Consort should be left in such a disgraceful condition in the Jubilee Year of her Majesty's reign." Sir F. Powell used language as plain and as much to the point. The excuse which is now made for the delay is to a certain extent a plausible one, viz.: that a Committee is at present inquiring into the whole administration of South Kensington. But we do not see what that has to do with the completion of the galleries. We presume that there is no intention of suppressing South Kensington; the inquiry is into the manner in which the work connected with it is carried on; the galleries require completion, whatever may be the changes made in the duties and responsibilities of the staff; and we confess that this plea seems to us rather like a subterfuge, a pleasant excuse for delay. There were points of some importance, however, evoked in the discussion. Mr. John Burns observed that South Kensington was paying 4,400*l.* a year rent for certain galleries in Exhibition-road formerly connected with the Imperial Institute, and he urged that the Imperial Institute, which was a total failure, should be handed over to South Kensington. We may point out that this would not abrogate the duty of completing the South Kensington building, but we confess to a considerable sympathy with the feeling that the Imperial Institute would be much better utilised as an art museum or some kind than it is at present: as an institution, it is certainly a manifest failure. The other point, which occurred in the First Commissioner's reply, was that there was a recommendation that part of the staff at South Kensington should be put under the roof of the Education Department at Whitehall; and that "as the Office of Works were

now having plans prepared for new Government offices at Whitehall, provision would be made for sufficiently large Education offices to have any additional staff that might have to be placed there." These are rather ominous words, and we should like to know what they mean. Are we to understand that the new buildings are being secretly designed in the recesses of the Office of Works, without any public opinion upon them being invited? It sounds rather too like it; at all events some explanation would be welcome.

It is gratifying to see that there is serious talk of completing the decoration of the central hall of the Houses of Parliament with mosaic, and that no opposition was offered to the suggestion; but how slowly do things of this kind move in England! For how many years has that one mosaic of Sir E. Poynter's faced the three empty spaces opposite in the roof of that hall? Mr. Burns referred with appreciation to the mosaics at St. Paul's and to their texture and effect, and suggested that the new work in the House should be carried out in the same manner and by the same hands, and appealed also to the First Commissioner to make an effort to keep together the small school of English mosaic craftsmen who had been employed at St. Paul's Cathedral; a suggestion with which the First Commissioner expressed himself entirely in sympathy. So are we; but it must be remembered that the one mosaic is already there, executed in the flat style, and that the other three, executed in the style employed at St. Paul's, would certainly not harmonise with it; it will look so different from them that it will make a patch in the decorative scheme; and as it would be barbarous to remove Mr. Poynter's design now, which is a very fine piece of work, it appears to us that the other three spaces must be treated in the same manner, to produce any satisfactory decorative effect.

As to some other matters that were discussed, it is satisfactory to learn that there is no probability at present of the Parks being disfigured by the formation of special cycling tracks, though we agree with Mr. McLaren that one portion of the Mall might be set apart for cyclists; that is, one longitudinal belt, and we also entirely agree with him in thinking that the opportunities furnished by the Mall for making an attractive promenade are entirely thrown away; in fact it is, as he says, a desert.

Perhaps the best thing in the whole debate was the contribution to it of the Member for King's Lynn, who innocently observed that St. James's Palace was a very ugly collection of buildings on one of the best sites in London, and asked "whether there was any intention of demolishing it and erecting in its place a building with greater pretension to architectural beauty?" The desire of some people to wipe out the history of the country, or at least of the capital, is a curious phenomenon. It is satisfactory to record that Mr. Bowles received no encouragement.

THE REPORT ON THE ELECTRIC FATALITY AT HAMPSTEAD.

MAJOR CARDEW'S report on the death of a labourer employed on the electric lighting works of the Hampstead Vestry raises several questions deserving of serious consideration. About the accident itself there is now no mystery. We suggested at the time that the case of the transformer must have been earthed in a totally inefficient manner. It now appears that the "earth" consisted of connecting the case by a wire to an iron bolt let into the wall of the transformer chamber. For any one pretending to be an electrician to consider this an "earth" displays an alarming ignorance, which we are afraid is by no means uncommon in central stations. Another point brought out by Major Cardew is that no effective precautions were taken to insulate the high tension wire from the case.

In the description of the system approved by the Board of Trade under the Hampstead Electric Lighting Order efficient means of guarding against all accidents from shock are specified, and every one will share Major Cardew's regret that these precautions were not carried out. It appears that there is a real necessity for Government Inspectors to supervise and control the carrying out of the precautions specified by electric light undertakers. Under the Factory Acts inspectors are appointed to guard employes from other recognised dangers, and this Hampstead accident proves that a little Government supervision would have saved this man's life. There is not much use in the Board of Trade drawing up rules and regulations, if their staff is so insufficient that they cannot possibly see whether they are carried out or not. Their rules are broken every day, and even when they find this out they rarely interfere, unless the supply is in obviously incompetent hands. There are many things, however, at small central stations that the Board of Trade ought to have altered. Some of the switchboards, for example, as at present erected, could easily become death traps. If all the cases in which electric light employes got severe burns and shocks were reported, the necessity of inspectors would be at once recognised. Several cases have come to our knowledge in which the employe was only saved by the presence of mind of an electrician near him, his muscles having become rigid so that he could not make any effort to save himself, death being only the question of a few seconds. In some cases the fall breaks his contact, and so a fatal issue is averted. It is obvious that this dangerous state of affairs

should not be allowed to continue, and the sooner the Government increases its staff of Electric Light Inspectors the better it will be for the welfare of the electrical industry.

Major Cardew's recommendations to the Hampstead Vestry, although good, are by no means final. We are sorry that an automatic switch, worked by the cover of the substation, is not made compulsory. When accumulators and armatures are in danger, there is no limit to the number of ingenious interlocking keys that electricians devise. A little government pressure could easily turn some of this ingenuity in the direction of safety devices. Another omission in the report is that there is no specification of what is meant by an earth connexion. Electricians will go on sticking a wire into the ground until they are informed officially that this is not an "earth" connexion.

"Earthing," as is well known, is by no means an absolute protection, and we are sorry to see that the Board of Trade is beginning to regard it more favourably. Major Cardew recommends that the iron ladder be connected to the transformer cases. If this is done the first shower of rain after a long spell of dry weather would make it dangerous for any one to step with one foot on the cover of the substation whilst the other was on the damp ground, provided, of course, that one of the cases made contact with the high tension wire.

There have recently been invented several kinds of heat-indicating paints, which change colour at different temperatures. It is a pity that no one has yet invented an electric indicating paint, which would change colour when it got dangerously charged with electricity. Until such a paint is invented we are afraid that it is almost impossible to completely safeguard a workman ignorant of the laws of electricity, when working in a confined space surrounded by conductors which may accidentally become charged to a high pressure. Such gross carelessness, however, as has been shown to have occurred at Hampstead in carrying out reasonable precautions, minutely specified, ought to be severely reprimanded and be made impossible in the future by effective government supervision.

NOTES.

New London Railways. THE Committee of the House of Commons, which has for some time had under consideration the two rival schemes, the Brompton and Piccadilly-circus Railway and the City and West End Railway, has rejected the latter scheme and approved the former. The line sanctioned by the Committee, subject to possible modifications of details, may be regarded as a branch of the present District Railway from South Kensington to Piccadilly-circus. According to the scheme at present, the connection between the old line and the new lines at South Kensington is a matter for future arrangement. But it is obvious that there will ultimately be such a junction. The line which has been rejected was to run from Hammersmith to Cannon-street: it was thus a distinct rival to the present Metropolitan District line, whereas the railway which has been sanctioned will be a feeder to the older line. It is clear that before another decade is past, London will have underneath it a network of subterranean lines, and we cannot but think that the great

railway companies which run from London to the north and south have been shortsighted in not bringing forward a joint scheme by which these railways might have been united by underground lines, and by which traffic could be carried from north to south without any break at the Metropolis.

THE Department of Fine Arts, Opera Comique, has arranged for the interior decoration of this important

theatre. M. Benjamin-Constant is to decorate the ceiling of the auditorium with a representation of three principal creations of modern opera—Manon, Carmen, and Mignon, as well as a group of figures symbolising Fame and Posterity distributing crowns. The panels of the two large staircases giving access to the foyer vestibule are entrusted to M. Olivier Merson, who will paint there representations of Poetry, Music, and Song, and to M. François Flameng, who is to paint "The Dance" and "Dramatic Poetry." The former subject will be represented by a modern ballet with personages of Italian comedy; and Dramatic Poetry by a scene representing Sophocles attending a rehearsal of his "Œdipus" in the Theatre of Bacchus. The decoration of the foyer vestibule itself has been entrusted to M. Joseph Blanc, who is to represent "Pantomime." M. Aimé Morot takes the ceiling of the foyer, where he will paint a representation of the arrival of the Russian Sovereigns in Paris. MM. Raphael Collin and Edouard Toudouze will decorate the two small salons at the two extremities of the foyer; the first with a subject symbolising Poetic Inspiration, Truth, Drama, the Dance, and the Ode; the second artist will take the subject of satiric drama, in which will be represented a sumptuous ballet in costumes of the thirteenth century.

THE *Berliner Philologische* reports a fortunate "find" in the Gulf of Corinth. A fisherman in the little bay of Livadostowo (a village in the innermost north-east corner of the gulf, close to where the ancient Creusa is supposed to have stood) has brought to light the fragments of a bronze figure a little over half life size. From an inscription on the basis, it appears that the statue represented Poseidon. The bearded head is the portion best preserved, and it is reported to be closely analogous to the bearded bronze head found in the Acropolis; if this be correct it belongs to the sixth century B.C. Unfortunately, the rest of the statue, *i.e.*, the nude standing body of the god, is so fragmentary and so much corroded that it is doubtful if even the most careful cleaning and piecing can make much of it. It is not reported whether the fisherman was actually fishing, or found the statue washed up on the shore.

THE respondent in this important case of Venner *vs.* McDonell. McDonell favoured us with a letter on the subject of the Note which appeared in this journal on the case on April 3. We are always glad to receive communications on such matters as these, since they indicate the points on which persons interested are not clear. Mr. McDonell in his letter left out of sight

the main ground on which the decision as to the meaning of the word "structure" in Sec. 145 of the London Building Act proceeded, and dwelt on Sec. 78. In our previous Note we referred only to the main point; it may be desirable, therefore, to say a word about Sec. 78, which is to the effect that every public building, including the walls, floors, galleries, &c., "shall be constructed in such manner as may be approved by the District Surveyor." Upon this point the decision is as follows:—"The Act of 1894 is not retrospective, the approval of the Surveyor there made a condition precedent to the use of the building as a public building refers to an approval to be given at the outset once and for all, and afterwards the only part of the section which could apply is the last clause, which says that no work likely to affect the building shall be done to or on the building without approval." We do not think that this is 'work done to or on the building,' and if it were, it is not suggested that it is, "likely to affect it." This, of course, is a question of fact; the main interest in this decision is that which we previously noted, namely, the light thrown on the meaning of the word "structure." We may perhaps add that the whole judgment is well worth perusal in full, since it is that of two of the ablest lawyers on the Bench, both of whom had large experience in matters affecting local government; Mr. Justice Wright, whilst at the Bar, being responsible for most of the cases on behalf of the Government.

Drainage of Surface Water on Roads.

THE case of *Durrant v. the Branksome Urban District Council*, in which Mr. Justice North has just delivered a judgment after taking time to consider it, is of much importance to Local Authorities. We confess that, in our opinion, the point, however important, presents little difficulty. According to Section 15 of the Public Health Act, 1875, "every Local Authority shall . . . cause to be made such sewers as may be necessary for effectually draining their district." The question then arose in the present case whether a Local Authority had the right to construct sewers, or rather drains, to carry off the surface-water from roads and let them empty themselves into a stream so that it became at times full and turbid. Where a stream like the Bourne at Bournemouth has become in its lower parts to some extent artificial in character an extra quantity of storm-water may be troublesome. It is obvious, however, that under natural circumstances a stream is a species of main drain for pure rain water. It is equally clear that the Public Health Act, 1875, recognises this, since Section 17 only prohibits a Local Authority from conveying into "any natural stream or water-course . . . sewage or filthy water." The decision of Mr. Justice North that the Local Authority had the right to drain the surface water from roads under their control into the adjoining streams was therefore obviously right.

The Royal Mint.

THE Treasury have prepared an additional estimate of £1,100,000 for an enlargement of the melting-house at the Royal Mint, which is required to meet increased demands for coinage. The existing buildings were opened in 1811, in place of the old works at the

Tower*: the design, begun by Johnson, was completed by Sir Robert Smirke. They occupy the site of the Victualling Office, established under the Navy Board in 1683, where had been King Edward III.'s Abbey of St. Mary de Grace, or East Minster, granted to Sir Arthur Darcie, who pulled it down *circa* 1540: see J. Gwynne's plan, 1766, and our "Note" of June 6, 1891, upon the Hodgkin Collection of views, plans, &c., lent to the Naval Exhibition of that year. The Abbey, whose value Dugdale assesses at 5,406*l.* per annum, was erected within a new churchyard of the Holy Trinity, which one John Colly had made during a pestilence in Edward III.'s reign.

The New Bridge over the Seine.

THE foundations for the Alexandre III. bridge have been commenced by the preparation for the sinking and foundations for the caissons which are to form, on each side of the river, the bearings for the bridge. The caissons are expected to be placed in a few months; and the engineers, MM. Résal and Alby, think that the whole work of the foundations can be completed during the present year. The placing of the steel portion of the bridge will be accomplished in 1898, and in the following year the architectural and decorative portion of the work, which has been entrusted to two architects, MM. Cassieu-Bernard and Cousin, will be completed. The architects have already made their preliminary studies for the work.

In the last of his Royal Institution lectures on "Electricity and Electrical Vibrations," Lord Rayleigh considered the electro-magnetic theory of light. Maxwell showed that, in studying optics and electricity, we were finding out the properties of the ether from two different points of view. This theory, however, was not generally accepted until Hertz had succeeded in getting electric vibrations of such short wave lengths that they could be refracted and polarised experimentally. The shortest electric vibrations yet produced had a frequency of about fifty thousand million per second, but still there was an enormous difference between these vibrations and the largest light vibrations, which had a frequency of 400 million million per second. To bridge over this gap would probably be the work of the next generation of physical investigators. His description of Lodge's coherer and of Rutherford's polarised relay were listened to attentively, as it was interesting to hear Lord Rayleigh's opinion on these methods of telegraphy without wires. He said that the Rutherford relay had been successfully tried up to a distance of a mile, and he thought that it had a great future before it. He explained the action of the coherer by pointing out the analogy with what happened when two jets of water hit one another. They ordinarily rebounded, but when an electrified rod was brought near them they coalesced into a single jet. In the same way the iron filings in the coherer made better electrical contact with one another when electrical waves impinged on them. Using a coherer Lodge has shown how easily electrical waves pass hundreds of feet through the walls and floors of houses.

* See the *Builder*, December 5, 1894, for an account of W. Aitchison's "Survey," February 26, 1895, and an earlier "profile."

Electricity Supply at 200 Volts.

MANY electricians are surprised that electricity supply at 200 volts is making such rapid progress in this country. To find out the reason of this we must go back to the initial success at Bradford, where the change over was made very skilfully by a bribe of new lamps. After a little time, according to Mr. Gibbings, the Engineer in the Bradford Corporation, an impression gained ground that for some reason or other certain consumers were being more highly favoured than others. "This, of course, made matters very smooth, and in no single instance was opposition offered." Hence the change over was effected by trading on the ignorance of the consumers. As new lamps burn brightly at first, and the supply may have been steadier, those consumers who had taken the higher voltage, finding that they had committed an irrevocable act, were naturally like the fox in the fable, loud in their praises of the new condition, in order to get others to follow suit. It could not have been better done if it had been the result of a deep laid plan, and other corporations are now pushing their electric sales by similar discreditable tactics. We can see that with direct current it is of great advantage to the companies to supply at 200 volts, but with alternating current the advantage is altogether problematical. Yet Blackpool, Bolton, Cardiff, Kingston-on-Thames, and Southport are supplying, or are about to supply, consumers at 200 volts alternating. We think it is a mistake on the part of these corporations, for, amongst other reasons we might mention, the present systems of distribution from alternating current sub-stations are capable of great improvement.

Guildhall School of Music.

It is stated that the Court of Common Council have agreed to enlarge, at an estimated cost of 20,500*l.*, the Guildhall School of Music, near Tudor-street, Blackfriars. The present buildings, of which we published a view, with plans, on September 5, 1885, were opened in December, 1886, having been erected after the designs of Sir Horace Jones, at a cost of about 22,000*l.* They replaced the School of Music established by the Corporation in Aldermanbury in 1880, which had its beginning in the Guildhall Orchestral Society, founded in January of the previous year. They contain forty-two class-rooms, and on the second floor a spacious practice-room, 70 ft. by 28 ft., somewhat like the old concert hall, Surrey Gardens, of which Sir Horace Jones was the architect.

Theatre Architecture of the Victorian Era.

UNDER this heading there is to be a special exhibition at Earl's Court, in connexion with what is called the "Victorian Era Exhibition," with the object of illustrating the development of theatre-building during the last sixty years, including such technical improvements as refer to iron construction, lighting, ventilation, and stage appliances. A number of architects have consented to lend drawings and photographs, and the arrangement of the whole has been undertaken by Mr. Edwin O. Sachs, who has made a special study of theatre architecture, and who will be glad to hear of the offer of any further loans in the way of illustrative drawings. Nothing is said as to models; we should suggest that models, whether of stage machinery or of entire sections of theatres,

would be very useful. The practical interest of such an exhibition ought to be considerable; and one can only regret that in this country the art of architecture is so poorly represented in theatre buildings.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

THE NEW GOVERNMENT OFFICES SCHEME.

An ordinary fortnightly meeting of this Institute was held on Monday, at No. 9, Conduit-street, Regent-street, Professor Aitchison, A.R.A., President, in the chair.

The minutes of the previous meeting having been taken as read, Mr. H. H. Statham read a paper on "The New Government Offices Scheme," of which the following is an abstract.

Mr. Statham said that in that room they were bound to consider the treatment of Government offices from an architectural point of view, both in regard to the most effective treatment of the buildings themselves, as an important element in our national architecture, and to those questions of alignment of streets which came under the general head of what were called "public improvements." The subject was one of national importance. In order to appreciate the present position it would be well to look back a little. It was obviously important both for architectural effect and convenience of communication, that Government offices should be concentrated, and should be rebuilt from time to time in accordance with a definite scheme to which each new building would be a contribution. Such a scheme, on the grandest scale, had been drawn out by Sir Charles Barry in 1857, not only for the concentration of the Government offices, but for the improved laying out of the whole Westminster and Whitehall district. The greater part of that scheme was now rendered impossible by what had been done in a piecemeal way since; it was melancholy now to look at that plan and think what splendid possibilities had been lost, but he wished to draw attention to it and to include it in the Institute Journal, partly because it was well at least to have before our eyes a great ideal, and also because, as he would show, one or two points in it were still capable of realisation. In 1856 took place the great competition, open to the world, for a plan for the concentration of the Government Offices and for special designs for War Office and Foreign Office buildings, as the result of which the War Office, though there was the most urgent need for it, was abandoned, and Sir Gilbert Scott received the commission for the Foreign Office. It had been attempted to show that the Foreign Office was a complete failure, and a proof of the mistake of erecting palatial Government offices designed by an outside architect; but this was exaggeration; the faults which it had could easily be avoided in a future case; it was at all events a dignified building, and its quadrangle, of the dimensions of 240 ft. by 170 ft., was on such a scale as to have a really fine effect. The argument that such buildings would be better produced by the official surveyors of the Office of Works was sufficiently answered by the buildings which were so produced, notably the Post Offices, which were nearly all in a poor and commonplace style of architecture. In 1882 the competition for new War and Admiralty offices was announced, not on the Great George-street site, as had been expected, but on a site near Spring Gardens, in which a part of the new building, for economy and to avoid purchasing some street property on the west side of Whitehall, was relegated to the rear of the houses. The opportunity afforded for widening the upper end of Whitehall by throwing back the west line of the street, pressed on the Committee of eminent architects, was entirely ignored. The next step was that this scheme was abandoned, the building of the War Office was again postponed, and the Committee of 1887 reported that the Admiralty could be economically provided for by retaining and adding to the old Admiralty buildings. He could not understand how any Government could sanction the retaining of a building with such an interior as that of the old Admiralty; nothing short of entirely gutting it could enable it to be made a satisfactory building, and the architectural exterior was not worth that. The new buildings,

though well planned, represented a design originally commonplace though rich and costly, cut down to a cheap brick structure with stone dressings; the superficial richness being removed, only the commonplace remained. As a building for the administration of the greatest naval power in the world, it was little short of a disgrace to the nation. Coming to the Parliament-street site, the new proposed buildings there would be well situated parallel with the Foreign Office, but in order to produce their proper effect the design ought to range in its main lines with that of the Foreign Office and harmonise with it in character; to erect an inferior type of building would be to destroy the whole architectural effect. The alternative proposal to set back the Parliament-street part of the new buildings at an oblique angle, merely with the object of getting a full view of Westminster Abbey from a point eighty yards higher up Parliament-street, was absurd; it would be spoiling the whole building and throwing away part of a site, already too small, for an almost imaginary benefit. Coming to the question of the War Office, the fact that the money had been voted for the Carrington House site surely did not hind the Government either to build war offices and no other on that site, or to decline enlarging the site by the purchase of further property. It would be quite possible still to build the war offices on the Downing-street site, and to provide for the departments, now on that site, on the Carrington House site. This would realise, with some modification, Barry's fine conception of the War Office and the Admiralty Office as symmetrical blocks on either side of the parade ground, the Horse Guards in the centre. Probably none of the buildings on the Downing-street site could be permanently retained in such a case—the interior of the Treasury building even was too old-fashioned to retain; but the little domed vestibule of Dover House ought to be respected in any case, and could easily be worked into a new building. The vote for the Carrington House site had been unexpectedly taken; it was distinctly promised that the Committee would hold further sittings first, and it might be observed that for the first time, he believed, no architectural evidence at all had been taken on a scheme so important in the architectural embellishment of the capital. The official plan for the building on this site was a double mistake. In the first place, the shape of the building was to be settled by the irregular shape of the intersecting streets. That was an estate agent's and not an architect's way of planning; it was reducing what ought to be a national architectural work to the level of a block of flats or a monster hotel. In the next place, the site would be overbuilt both for architectural effect and sanitary conditions; the largest quadrangle, into which rooms would look, was only 105 by 100 feet, for a building five stories high. They might compare that in their minds with the quadrangle of the Foreign Office, the same height and 240 by 170 feet; or a model which he had there would show the facts still better. There was nothing to prevent acquiring some further property north of Whitehall-place, and treating that portion of the building in symmetrical architectural relation with the courtyard of the old Admiralty, if that really was to be retained. There was no objection to building up Whitehall-place; it was shown that it was now an unnecessary street as far as traffic connexion was concerned. The rest of the building could be planned symmetrically on the site, the greater portion of the Carrington House site, the building line on the south side being brought in a little so as to make Horse Guards Avenue central with the Horse Guards, as it always ought to have been. It was absurd that a street facing a famous building and named after it should have been laid down out of centre with it; such a plan would be laughed at in Paris, but in London the alignment of streets and buildings was utterly ignored. Having got the extra width, they might then also make Horse Guards Avenue a real "avenue" by planting two lines of trees in it. When on the subject of what might be done, it was fascinating to go a little further and sketch out a really stately scheme for the combined treatment of the Admiralty and War Office. Suppose the old Admiralty removed; the new block already built might be lengthened southward a little, and returned towards Whitehall, with a similar northern block built on the foundations now being laid. On the centre of the fourth side of the quadrangle thus formed, facing Whitehall, would be the First Lords

House, with a columned screen and entrance on each side of it. Opposite to this we would hup up all the east side of Whitehall up to Craig's-court, and plan the War Office with a similar but shallower courtyard facing the quadrangle of the Admiralty, and the Commander-in-Chief's house or staff offices in the centre, facing the First Lord's House. The new block of the Admiralty would be retained in its interior plan but faced with stone to form part of a new and superior architectural design. The whole west side of Whitehall up to Charing Cross would be set back on a new line to give it an equal width all the way up, and above all to connect it with the axial line of Trafalgar-square, the Charles I. statue being moved a few feet to get it also on the point of meeting of the axis of Whitehall and the Square. The Mall would be continued through in a straight line into Charing Cross, the space between that and the Admiralty being occupied by street buildings forming the offices of the Woods and Forests and one or two other small departments. Speaking of that reminded him that the official plan showed the Mall continued through in the same way, but evidence had been given before the recent Committee, by Police-Superintendent Beard, that it would be bad for heavy traffic to come out of the Mall on to the slope of Charing Cross, that the exit ought to be taken up at an angle into Trafalgar Square. This however was beside the mark; if the Mall were to be given up to heavy traffic it had better remain closed, and the very object of opening it was the straight vista along it. He had spoken plainly on the matter of the buildings, because it was a subject of national importance. Architecture was not everything, but in history it would be observed that the effort to produce great buildings was coincident with the greatness and ambition of a nation in other respects; it was when a people was going down hill that national architecture was neglected. This looked bad for us, when we got to the point that the attitude of our Government towards architecture reminded us of Mephistopheles' definition of himself—"I am that which says 'no' to everything." Let them try to realise what would be the difference to London if the Houses of Parliament, after the fire, had been rebuilt in a mere utilitarian manner by the Office of Works, as was at first intended, instead of our having the present grand building. The Government Offices question was only the same thing on a smaller scale. The Government had one chance yet left to do something fine with a War Office, something to atone for the long series of blunders with public buildings in this country, in regard to which one might say, "They have made us a by-word among the people, a very scorn and derision to them that are round about us."

Mr. H. W. Brewer said the general feeling of most Englishmen was that we were not to have public buildings, and it had been so for many years. For instance, it was a well-known fact that the objection to enlarging and making proper provision for the increased requirements of the Houses of Parliament led to the fire. Well, that catastrophe did take place, and it seemed for a certain time to have brought our countrymen rather from the error of their ways, and they seemed then to have come to the conclusion that we ought to have something like public buildings. However, even about that time there was a very terrible example of what happened in England from the neglect of providing proper public buildings. At that period the records of this country were kept in about sixteen or eighteen different places; and probably nothing would have been done to build the new Record Office had it not been that a Committee of the House of Commons met which had some of these records brought before them to see what they were like. They tried to open three or four, unsuccessfully at first; when at last they did succeed, they found the skeletons complete of three great rats, and the consequence was that after a time we got the Record Office, which, of course, ought to have been supplied years before; because a gentleman told him the other day that he had gone into a printed list of documents which ought to be in the Record Office, and he found that considerably more than a third of them had disappeared. Certainly, the old Admiralty building was not very interesting; but there was one part of it he would regret to see destroyed, and that was the Board-room, probably the only thing there worth preserving. In conclusion, he moved a vote of thanks to

Mr. Statham for his very admirable and most interesting paper.

Mr. William Woodward said Mr. Statham had not only been very hard indeed upon the Office of Works, but distinctly unfair. With regard to these plans Mr. Statham knew that they were prepared most rapidly in order to be proposed before the Select Committee which sat last year. Mr. Taylor stated that the plans were only made as sketch ideas, and were not to be taken as indicating the careful thought of the Office of Works. Then again, with regard to the architecture, it was very easy for any gentleman to get up and complain of the architecture of the Office of Works, or of any other office; but let him invite the gentlemen in that room to compare the architecture of the Office of Works with the architecture of three of their most distinguished architects, with regard to the erection of public buildings in London. As to Mr. Statham's alternative block plan for occupying the Carrington House site, he thought it far inferior to the Office of Works plan and hoped he should never see such a plan as that carried out. The larger of the proposed plans which Mr. Statham had sketched in the illustrations was one that there was no chance of ever seeing carried out, and for his part he thought that the placing of an official house in the centre of one side of the quadrangle, as shown in that plan, would have the worst possible effect. As to Dover House, it was a wretched concern, and it was absurd for any one to talk of its being worth preserving. He trusted the Government would pursue its course in the Select Committee now sitting, or which would be sitting shortly, and that it would give attention to men so fully qualified in planning as the Government Office of Works, and that the architecture this time at least, perhaps the last time, would be left to architects to show the Government what they could do in the way of exterior design. After these perhaps violent remarks he should wish to second the vote of thanks to Mr. Statham, because, although he disagreed with him, he was one of those who admired the care and attention and the time which he must have expended on this subject.

Mr. Mountford said that Mr. Statham referred slightly to the widening of the Mall and the necessity for carrying it right through in its whole width, instead of being narrowed to 70 ft. as shown upon that plan. It was perfectly obvious that if it was to be carried through at all it ought to be carried through for its whole width; and, furthermore, it should certainly be turned northward at the east end in order to continue to some extent the line of the Strand. Going south it did strike one that while the Government was about the subject at all it was most desirable to remove the Bank which Mr. Statham had referred to and widen the whole street in a westerly direction, and to bring the north end of the street central with the Central Column and Trafalgar Square, and the National Gallery in the centre. Coming to the War Office site, he did not quite agree with Mr. Statham in objecting so very strongly to that angle which was shown on the plan. No doubt a rectangle was better; but, supposing the site was so valuable, he did not see much harm in taking advantage of it in that way. The widening of the street on the south side of the proposed site would undoubtedly be a great advantage, especially when we got the Horse Guards in central with it. It seemed to him that Mr. Statham's sketch, Fig. 8, was really a grand idea in the way he had placed the Admiralty and War Office and surrounding buildings; it was something much grander than they were likely to get, he was afraid. Going to the very southern point of the street he agreed with what Mr. Statham said as to the extremely bad effect of setting back the proposed new building at that angle shown on one of the diagrams, but he could imagine that the effect might be improved if it were set back entirely, so as to widen the street. So far as he understood Mr. Statham's paper he agreed with everything he said, and that if they could persuade the Government to regard the public buildings as a matter of national importance, and not as a mere utilitarian scheme for housing certain departments, it would be a great thing for England and a still greater thing for London.

Mr. W. D. Carie said that the plan, fig. 8, pleased him very much indeed. There was no reason why Whitehall place should exist as a street, and there seemed to him to be a splendid opportunity of doing a really fine thing, as Mr. Statham suggested, even at the expense of keeping the present or partially

proposed new Admiralty. One of the curious results of this cheeseparing policy would be, beyond question, if the figures were compared, that this present scheme when it was completed would cost the nation actually more money than the original scheme which Messrs. Leeming & Leeming had prepared. One of the chief questions that must soon be dealt with was, what was to be done with these Admiralty buildings? His own view was that possibly the best improvement that could take place would be to build a narrow frontage and fill up the front of the courtyard. There was one point in connexion with Mr. Statham's plan, fig. 8, which perhaps was worthy of notice. They all, without exception, had the greatest regard and admiration for the Horse Guards, and in dealing with the Admiralty or with any building that came in connexion with the Horse Guards, one was inclined to fear that a large building five stories high might have the effect of making the Horse Guards look as if it ought to be put in a glass case; and that it would be injured by a high and lofty building being brought up close to the flank. With regard to the plan of the Parliament-street block, he could not help thinking that really the best treatment of it would be to leave out that circular corner, and the small courtyard just within that circular corner, and keep the front to the line of Parliament Square, and get rid of the unsatisfactory effect of the circular corner of a large building.

Mr. John Burns, M.P., said that he had not expected to hear either the Select Committee or the Office of Works criticised to the extent they had been by this paper, but his withers were unwrung, and he was not particularly concerned about the Office of Works, who seemed, both inside this building and outside of it, to be capable of defending themselves. He did not intend to follow the reader of the paper into the details of the various plans he had submitted for the reorganisation and general improvement of Government buildings; but, as a member of the Sites Committee he desired to show that they were not such vandals as the reader of the paper suggested. His presence here indicated a desire for information, and he wanted to deal with this question, not so much as a member of the Sites Committee as a citizen of London, and one who was anxious to see not only the improvement of Government buildings and their concentration and consolidation, which, from the point of view of economy, had to be considered, but a reorganisation of Government buildings from the point of view of architectural harmony and beauty. And first, let him say that it was not the intention of the Committee to exclude outside architects in the giving of evidence; they might take it from him that not only was it not meant to do so, but that he should demand that outside architects should be invited to give their views. In fact, he would suggest to the Institute of British Architects that on the question of the improvement of Government buildings and the completion of the public buildings that ought to be on the land between the National Portrait Gallery, say, and Lambeth Bridge (his ambition led him as far as that), they should elect a council of architects, resident or practising in London, to formulate their views, not on small details as to what the blocks of buildings individually should be, but as to how the space—say, between the National Portrait Gallery and the Houses of Parliament could be best utilised for Government buildings. If they were to do that, and were to select two of their number to represent the broad, general view of the architects upon that matter, he was sure it was not too late for their suggestions to have that weight and that authority that they undoubtedly would have, coming from such a body. Roughly let him give his views, as one of the Committee. He was not in favour of Mr. Statham's plan any more than of the Office of Works plan. He would suggest that Mr. Statham and the Office of Works should be put into competition with all the architects who liked to compete for the best block of buildings on land that was not now built upon, and for the completion of those buildings that were only partly finished. He believed the result of such competition would lead to the production of the best buildings, which only they ought to have. He could tell the reader of the paper that on the matter of vista, incline, and approaches to whatever buildings were built upon those sites, they were not going to be influenced by the evidence of a Superintendent of police, who certainly had but little weight in the points suggested by the reader of the paper. Roughly

this was his view; that from Charing Cross right down to King's-street they should have a fine sweep of Government buildings; the frontage, the height, the style, and the character of which he would leave to architects. More than that, if it was possible to be done, he was in favour of pulling down No. 10, Downing-street, notwithstanding the political and personal associations connected with that building, and of having an easy incline into the park, and on the site of the present Downing-street office, a building in keeping with Sir Charles Barry's original plan, which he accepted almost down to every detail; that they should clear the Treasury out of its present buildings and have a War Office erected where the Treasury and Dover House now were, leaving the Admiralty to the right hand side when looking towards the park. With regard to the Great George-street site, he believed it was not even now too late for the Government to be able to buy the whole property, including the Civil Engineers building (which he was very sorry was erected on that particular site), and running right down to Storey's-gate with those Government offices that were not only desired but for the completion of which Great George-street and Storey's-gate, from an architectural point of view, never ought to have been allowed to have gone out of Government hands. Coming to the Carrington House site, it was no secret that he strongly opposed its adoption for the War Office, and would continue to do so. He believed that on that site they ought to have other offices instead of the War Office. With regard to the approaches at Charing Cross he had only this to say: he was divided as to whether they should accept Mr. Statham's view and make the statue of Charles I. the objective or Nelson's Column. He had a preference for making Nelson's Column the objective from the rear. He did not attach much importance to the 50,000, or 150,000, that might be necessary to be spent in pulling down either one or both of the banks.

He believed, speaking that if the Government were strongly and properly approached, the House of Commons could be educated up to the necessity, ere it was too late, of dealing with this Government Office problem broadly, boldly, and generously. He believed that the Institute of Architects could, even now at the eleventh hour, do a great deal of good in that direction. On the broad general plan indicated in Mr. Statham's paper, many of the Sites Committee (not all of them) were practically agreed, and as to rates and money, he never allowed himself to be influenced by such considerations in discharging any public duty. He would suggest to Mr. Statham, in conclusion, that he get the Institute of Architects to adopt his plan and suggestions as the basis for discussion amongst themselves, to take the whole of the suggested government plan as only tentative, and that Mr. Statham's paper should be the basis of a series of suggestions from the London architects, who should select two of their number as witnesses to go before the Committee; and he believed that if it was put, say, a little more harmoniously, and if the architects were not inclined to take up the animated view that politicians alone, he was led to believe, indulged in, he had no doubt that Mr. Statham's paper would have done a great deal of good. Certainly any proposition that would lead to Parliament-street, and the House of Commons, and the approaches to our National Portrait Gallery, and to Trafalgar-square being improved would have his hearty support, and ere it was too late he asked them to buckle on their armour and not to be frightened at politicians, but to go before them in the interest of the beautification of London and the convenience of Government Departments.

The President said that unfortunately neither the public nor the politicians had that view of the importance of public architecture that distinguished some of the small republics from antiquity. When they reflected that a small town like Florence, by the month of its Council, desired that when it rebuilt its cathedral it should be a finer building than any that had ever been put up by the Greeks or Romans, that no expense should be spared, and that everything that was the best and most costly should be done by men with the greatest skill—if we could make our politicians see the importance of architecture to the country, I do not think that they would fall short of these ancient trading burghers of Florence. And he felt to a certain extent hopeful of this country. It was almost always the case when it was in the hands of persons of the middle

class, or of moderate means, that they took a comparatively small view of anything that had to be done; but when they applied to the whole nation, when every man felt that he would be raised by the excellence of the buildings and arrangements made, and that every foreigner who came here would be delighted with the views we have to give them then, it would not only strike him and all his friends and fellow citizens, but all the people in the country; then we might look forward to a finer scope than had hitherto been offered to the country. Simplicity was the great basis of everything great that had been done in any fine art in the world; less work was done on Greek buildings that had been the admiration of the world since they have been built, than on the things that were done to-day. To make the Nelson Column the centre of anything would be one of the greatest possible mistakes. What they ought to do with it was to put it into Leicester-square. It was a bad thing in itself, and it dwarfed the National Gallery. If it were put up in Leicester-square, it would look excellent, and he could not say the statue of Shakespeare did.

Mr. Statham, in reply, said that with regard to his friend Mr. Brewer's remark about the board-room of the Admiralty, he agreed, but one could not go into details in a paper that was getting long already; otherwise he should have said that what was valuable in the board-room, the carving, could be preserved and placed elsewhere. The model he exhibited was perfectly right with the exception that Mr. Taylor, he believed, objected to the lofty proportions of the main floor at the Foreign Office, and if he built the new offices would probably make it rather lower, but that could not make a material difference in the height. The official War Office plan was not a mere sketch, the position of the small courts showed that it had been considered in reference to the position of corridors and rooms, and he had no doubt it represented what the Office of Works would carry out if left to themselves. As to Dover House, if any one could go into the circular vestibule, and not see that it was a beautiful and charming architectural work, he was sorry for him. He was speaking, of course, for those who knew something of architectural design. As to the Mall, to which Mr. Mountford referred, it was not a question of what you saw from the Mall, but of what you see on looking into it. He wanted to see the beautiful vista of trees brought into Charing Cross. He was glad that Mr. Mountford was so complimentary to scheme 8, but these must not be considered as any finished expression of what he could or would do; they were sketched out, roughly, while he was writing the paper, and the reason he brought them forward was that he had always held that an architect when reading a paper to architects should be prepared to show how he would do a thing, and not merely find fault with other schemes; or otherwise it was a mere opinion in the air, with nothing to support it. As to setting back the proposed new building from the line of the Foreign Office, he thought if that were done it would be necessary to set back the east side of Parliament-street also, to make a symmetrical plan; but there was, no doubt, something in that suggestion. He quite agreed with Mr. Caröe about the circular corner shown in the Parliament-street; official architects seemed never tired of circular corners, the effect of which was often not good. He assured Mr. Burns he did not consider him a "Vandal;" on the contrary, he had observed many times with pleasure that Mr. Burns was on the side of aesthetics, and thanked him for coming there. But when he defended the Committee, and said that he had not excluded outside architects, he (the speaker) complained that they had passed the vote for the site without having sat again or called any architectural evidence, and he himself had actually been told by one of the Committee that it was now too late to discuss it.

Mr. Burns said that the Committee died with the Session, and it was not their fault that they had to recommend that a certain sum of money should go through. But as the Committee had been reappointed they would resume their deliberations, and Mr. Statham might rely upon it that he would not be excluded.

Mr. Statham said he was very glad to hear it. He was glad to find, too, that Mr. Burns really took his view as to the Carrington House site. Mr. Burns said that they might do a great deal



Staircase, Lordington Manor House.

of good if they put their views more "harmoniously." Well, his experience respecting any matter regarding Art was that you were never listened to unless you spoke very decisively; if you only put a thing in a moderate manner people did not mind you, but if you put it pretty strongly you might be listened to.

The vote of thanks having been put and carried, the Chairman announced that the annual general meeting would be held on May 3.

LORDINGTON MANOR HOUSE, SUSSEX.

This historical house was erected towards the end of the fifteenth century by Sir Richard Pole, K.G., a descendant of Cadwallader, the last British King, a cousin of Henry VII., who made him Esquire of the Royal Body Guard, Governor of Harlech Castle, Sheriff of Merionethshire, Steward of Montgomery, and also created him a Knight of the Garter. Sir Richard served the King in the wars in Scotland in 1497. During the reign of Henry VIII. this manor house formed a place of great interest, and was associated throughout the sixteenth century with the illustrious and distinguished family of Pole. Sir Richard was a son of the "last of the Plantagenets," was connected with the most distinguished personages of his time, and in 1495 he married Lady Margaret, a niece of Edward IV., her father being George Duke of Clarence, her mother a daughter of the "King Maker," Richard Earl of Warwick. She had four sons and a daughter. After her husband's demise, and in the fifth year of the reign of Henry VIII., she petitioned Parliament to be restored to rank as being the only sister of Edward Earl of Warwick and Salisbury, her mother being a daughter of the Earl of Salisbury, and succeeded in obtaining full right to the rank and title of the Countess of Salisbury. In May, 1530, this lady was attainted of high treason, and was beheaded within the precincts of the Tower in May, 1541, at which period her son,

Sir Geoffrey Pole, is said to have resided at Lordington.

The old panelling in the house, and the carved work in the principal staircase, bears sufficient testimony to their occupancy—the bear, with dragons *sejant*, the Tudor cognizance, to be also seen in Chichester Cathedral; the badge of Henry VII., and also of Henry VIII.; and the badge of the Earl of Warwick, who was so conspicuous in the Wars of the Roses. The red dragon, the ensign of the last British king, was adopted by Henry VII., and retained by the Poles as an emblem of their ancestry.

A portion of the eastern end of the house was pulled down in 1845, but sufficient remained to indicate what the original design had been. With ponds well supplied with carp and perch, an abundance of trout in the stream of the Ems flowing below Downs and Racton Park, with Lordington Woods in the rear, this place would seem to have possessed great charms. In 1608 the Pole family sold the property, which eventually passed to Thomas Peckham Phipps, who devised it to his godson, Admiral Sir Phipps Hornby, G.C.B., who saw much active service between 1797 and 1816. Sir Phipps married a daughter of Lieutenant-General Sir John Burgoyne, and on his death in 1807 the property passed to his son, the late Admiral of the Fleet, Sir Geoffrey Thomas Phipps Hornby, who commenced the restoration of this house in November, 1804, but did not survive to see the work completed.

Like Grafton Hall, a fine old example in Cheshire, and many other historical places one could mention, this fine old house had for many years been partly occupied as a farmhouse; its restoration is entirely due to the energy and spirit of the late Sir Geoffrey, who was much interested in the place. The work has been carried out by Messrs. Poate & Son, of Westbourne, from the designs and under the direction of Mr. John Birch, architect, London,



Lordington Manor House.



Lordington Manor House.

TRAMWAYS AND ASPHALT PAVING.

The Board of Works for the Holborn district are to be congratulated upon their open-mindedness in the action which they have recently taken, in connexion with the petition from the residents of that noisy thoroughfare, Theobald's-road, who are asking for something quieter for their roadway than granite setts.

The Board were prepared to meet the wishes of the inhabitants by substituting asphalt, but as the North Metropolitan Tramway Company run along Theobald's-road it was feared that the asphalt would become disintegrated by the vibration of the tram lines, and it was therefore decided to benefit by the experience obtained on the Continent before anything was done.

Mr. Lewis H. Isaacs was, therefore, instructed to proceed to Berlin, where it was reported that asphalt had been successfully used in connexion with tram lines.

He has just reported the result of his visit to that city. It appears that in the first instance pieces of stone about 4 in. wide and of a depth equal to the tram-rail were tried, as a margin to the rails, but without success.

The system now found satisfactory is to use a rail 6 in. deep, with a 4½ in. bottom flange, similar to that already laid along the Theobald's-road (which, however, is 1 in. deeper). The bottom flange of the rail is laid upon a layer of mastic asphalt, ¾ in. thick, and the same material 2 in. wide is placed next the rail, on each side of the head. The theory is that the mastic asphalt acts as a cushion, and receives the vibration occasioned by the passage of wheeled traffic proceeding over the surface of the road.

The result of this system of laying has, after two years' trial, turned out most satisfactory. The asphalt does not disintegrate near the rails; but everything seems to depend upon the rigidity of the rails. In Berlin the fish-plates have three bolts on each side of the joint, which the engineers think essential for a sound connexion. In England two only are generally used.

At siding points and crossings the Berlin authorities still introduce stone edging, but of somewhat large size (as much as 18 in. deep) because of the difficulty of making these portions of the road sufficiently rigid.

It is satisfactory to note from the report of Mr. Isaacs that his reception at Berlin was of the most cordial description, and that every facility was afforded him to obtain the information he was in search of.

THE LONDON COUNTY COUNCIL.

The usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, Dr. Collins, Chairman, presiding.

Temporary Structures and the Jubilee Procession.—Mr. Beachcroft, in reply to Mr. Westcott, said arrangements had been made with the Office of Works to reserve a portion of the site on the north side of Trafalgar-square for the erection of a stand for the accommodation of members of the Council on Jubilee Day.

Lord Onslow inquired of the Chairman of the Building Act Committee whether the Committee would, in cases where there was no thoroughfare for wheeled traffic, make any variation in their regulations prohibiting the erection of stands across the public way, and whether, if they could not see their way to do that, they would consent to the erection by Local Authorities of stands, provided that adequate provision be made for the passage of traffic underneath them.

Mr. Payne, in reply, said the Committee would firmly recommend the Council not to allow any encroachment on the footways, but there were some cases where there would be some encroachment on public rights. Those cases would be considered on their merits, and would be referred to the police to see whether there was a possibility of their being granted. He thought there would be no objection to the erection of stands in thoroughfares which were in view, but not in the actual line, of procession.

Sky Signs.—Mr. Payne, replying to Mr. Lawson, said all the existing sky signs would be removed as soon as the licences granted to the owners expired. He anticipated it would be a year or two before all came down.

The Works Department.—The Establishment Committee recommended—(a) That a charge

of 850*l.* be made to the Works Department in respect of salaries and expenses at the central offices for the year ended March 31, 1897. (b) That a sum of 96*l.* 10*s.* be allowed to the Works Department in respect of the same period for extra cost incurred in supplying details of estimated cost of jobbing works in pursuance of the Council's resolution of June 19, 1894.—Lord Onslow asked a question with reference to the estimated and actual cost of works completed by the Works Committee, and not deeming the reply given by Mr. Hoare, the Chairman of the Works Committee, to the effect that every effort would be made to get the reports completed in time, as satisfactory, he moved an amendment requesting the Committee to bring up a report of the estimated and actual cost of all works completed up to March 31, so that it might be discussed with the report of the Special Committee of Inquiry on May 18.

Mr. Ward, late Chairman of the Works Committee said it would be quite impossible to have all the accounts ready by the date proposed.

The Rev. Fleming Williams opposed the amendment, and accused the Moderates of wishing to raise a bogus discussion, in order to hide the humiliating defeat they had sustained in regard to their charges against the Works Committee.

Mr. Cohen said it would be impossible for the Council to have an adequate discussion without the information asked for.

Mr. Hoare, Chairman of the Committee, said he was not sure that something would not be done in the direction indicated by the amendment, but it would not be possible to carry it out in its entirety. At present the Committee could not always carry out the orders of the Council, and an alteration would have to be made in the standing orders before they would be able to do so.

Mr. E. White said that some of the works had been completed for six months, and the cost must be ascertainable. The whole policy of the department up to the present time had been most unsound.

Mr. J. Burns, M.P., saw no reason for binding the Committee to a fixed and arbitrary date. On Lord Onslow's simple-looking amendment they had had clouds of insinuations and showers of suspicion. The Moderates had already found their mare's nest, and it was because they had realised the truth of his prediction some weeks ago that they were now chasing another mare's nest. The course the Moderates had been pursuing was to make damaging statements which, immediately they had served their purpose in the Council and in the Press, were withdrawn. Their purpose was solely to damage the Works Committee. If Lord Onslow was in earnest let him alter his amendment by substituting for March 31 the latest possible date. By binding the Committee to March 31 they would prevent their bringing up accounts of works which would refute the charges that had been made.

Lord Onslow accepted Mr. Burns's suggestion; and the amendment thus altered was agreed to.

Council's List of Wages.—The Works Committee reported as follows:—"The Central Association of Master Builders return the rate of wages of wood working machinists at 10*d.* to 11*d.* per hour. The rate given in the Council's list for machinists employed in working the trying up machine, vertical spindle and hand-saw, is 11*d.* per hour, but we find that this rate is slightly above that in practice obtained. We therefore recommend—That the rate of wages in the Council's list for machinists working the following machines be altered from '11*d.*' to '10*d.* to 11*d.*' per hour.—'Trying up machine, tenoning machine, and hand saw.'"

"Having received an inquiry from the Asylums Committee with reference to the rate of wages to be paid to labourers employed in the engineering trade, we have ascertained that the wages paid by several engineering firms varies from 4*½**s.* to 6*d.* per hour. As we consider that the rate should not be lower than 6*d.*, we recommend—That the rate of wages of labourers employed in the engineering trade, viz., 6*d.* per hour, be included in the Council's list."

The recommendations were agreed to.

Dangerous Structures—Result of Legal Proceedings.—The Building Act Committee reported as follows:—"The recommendation being agreed to—"

"The premises No. 25, Brushfield-street, Old Artillery Ground, having been reported as in a dangerous state, the usual notice was served upon the owner. After service of notice the owner required arbitration under Section 107 (2) of the London Building Act; but owing to certain circumstances the meeting between the district surveyor and the surveyor appointed by the owner did not

take place within the seven days after the notice for arbitration, as, we are advised, the Act requires. Consequently a summons was taken out, and at the hearing of the case it was contended, on behalf of the owner, that the time specified in the section only applied to the appointment of his surveyor, and that the time for arbitration was, under the Arbitration Act, 1889, unlimited. The magistrate adopted this view and dismissed the summons ordered the Council to pay seven guineas costs. The decision, if undisturbed, would affect considerably the operations of the Council, having regard to the large number of notices served under the dangerous structures provisions in Part IX. of the Building Act. Upon consideration of the matter we came to the conclusion that the point, which is likely to continually arise in practice, whether arbitration proceedings under Section 107 of the Act are limited as regards the time within which the surveyors must report and the arbitrator make his award, and another point which also arises, namely, whether the Arbitration Act applies to such proceedings, ought to be submitted for the consideration of the High Court. We therefore directed the solicitor to ask the magistrate to state a special case, which he has since done. As the points raised are of considerable importance, we recommend:—

"That the solicitor do take the necessary measures, by means of an appeal from the magistrate's decision in the case above referred to, for obtaining the opinion of the High Court upon the points raised with reference to the conduct of arbitration proceedings under Section 107 of the London Building Act, 1894."

Millbank Prison Site.—The Housing of the Working Classes Committee reported as follows, the recommendation being agreed to:—

"We have had under consideration the question of providing central administrative buildings in connexion with the erection of the dwellings on the portion of the Millbank site acquired by the Council, and we have instructed the architect to proceed with the preparation of the necessary preliminary plans to be submitted for our approval. These buildings comprise a central laundry, superintendent's office and house, rent office, &c. It is necessary that a preliminary estimate of 200*l.* to cover the cost of plans and incidental expenses in connexion therewith should be obtained, and we have accordingly submitted such estimate to the Finance Committee. We recommend that the preliminary estimate of 200*l.* in respect of plans, &c., for central administrative buildings to be erected on the Millbank estate, submitted by the Finance Committee, be approved."

The Steps of St. Martin's Church.—The Improvements Committee reported that they had had under consideration a letter from the Vestry of St. Martin-in-the-Fields, forwarding a plan showing a suggested widening of St. Martin's place by the alteration of the steps in front of St. Martin's Church, and asking the Council to undertake the work as a county improvement. They had also received a letter from the Society for the Protection of Ancient Buildings, objecting to the proposal to alter the steps of the church. There were at present two flights of steps in front of the church with a terrace or landing between, and the proposal was to abolish the terrace and to make one continuous flight of steps, and so increase the width of footway between the steps and the carriageway from the present width of 5 ft. 6 in. to about 9 ft., the cost of the work being estimated at 700*l.* It appeared to them, however, that merely to widen the footway would be of little use, and that if any widening was required opposite the church, it was needed quite as much for the carriageway as for the footway. They had, therefore, had before them several plans, prepared by the Council's engineer and the architect, providing for a widening of both the carriageway and the footway. To obtain this greater width it would be necessary either to set back the steps to a position within the line of the columns fronting the church, or to substitute for the steps a vertical wall on the west side of the columns. The only other method appeared to be the setting back of the church about 30 ft. further to the east, which would involve the rebuilding of portions of the edifice. To all these suggestions, however, there were objections. It had been pointed out that the traffic was frequently congested owing to the fact that omnibuses stop in front of the church, but that was an evil which could be remedied by the police authorities. The several architectural societies would offer strenuous opposition to any alteration of the present architectural appearance of the building. Moreover, the existing steps were much worn, and would before long require to be renewed, a work which would doubtless be undertaken by the church authorities. After full consideration of all the facts, they recom-

ended—"That the Vestry of St. Martin-in-the-Field be informed that the Council is not prepared to undertake as a county improvement the suggested widening of St. Martin's place by the alteration of the steps in front of Martin's Church."

Major Probyn moved to refer the matter back for further consideration to see if something could not be done with these steps.

Mr. Wettenhall seconded.

Mr. Staveland hoped that the architect effect of the church would not be interfered with. To simply get rid of the terrace was a very small improvement, and a wider scheme could seriously interfere with the architectural appearance of the church.

The amendment was rejected, and the recommendation of the Committee agreed to.

Trinity-square, Whitechapel.—Mr. Lawson moved to refer it to the Parks Committee to consider and report upon the expediency of maintaining Trinity-square, Whitechapel, as a public garden.

In the course of the discussion on the motion was pointed out that there was not an open space within a mile of this spot. The following words were added to the motion, "and to consult with the Local Authority thereon;" and it was then adopted.

The Council at its rising adjourned till May 11.

APPLICATIONS UNDER THE 1894 LONDON BUILDING ACT.

At the meeting of the London County Council on Tuesday, the Building Act Committee reported that they had considered the undermentioned applications under the London Building Act, 1894, and had arrived at the following decisions. Those applications which have been agreed to are granted on certain conditions:—

Lines of Frontage.

Levisham.—That consent be given to the erection of one-story shops upon part of the forecourts of Nos. 1 and 2, Herbert-villas, Catford Bridge, on the either application of Mr. A. L. Guy.

Boya and Bromley.—That consent be given to the erection of a new factory at Wick-lane Works, Old Ford-road, Bow, on the application of Mr. F. M. Biddop on behalf of Messrs. Allan, Cookshat & Co.

Leppford.—That consent be given to the erection of one-story building in front of No. 283, and to the erection of two four-story buildings at Nos. 285 and 287, New-cross-road, on the application of Mr. L. Jacob on behalf of Mr. J. S. Clegg.

Deplford.—That consent be given to the rebuilding of a one-story building on the west side of and adjoining the "Five Bells" tavern, Nos. 153 and 155, Greenway-road, Greenwich, on the application of Messrs. F. J. Eedle & Meyers, on behalf of Mr. F. James.

Dalkeith.—That consent be given to the erection of one-story shops upon part of the forecourts of Nos. 103, 105, and 107, Maple-road, Penge, on the application of Mr. E. Watkins.

Leppford.—That consent be given to the erection of a one-story shop upon part of the forecourt of No. 43, Penton-street, Pentonville, on the application of Mr. H. H. Tasker on behalf of Mr. J. Gibson.

Hampstead.—That consent be given to the erection of a block of residential flats with projecting bay windows on the west side of West End-lane, between No. 93 and a house known as The Chimes, on the application of Messrs. Palgrave on behalf of Mr. E. Cornish.

Hampstead.—That consent be given to the rebuilding of Nos. 42, 44, and 46, High-road, Kilburn, with the main fronts advanced to the line of the present one-story shops, on the application of Messrs. Edmondson & Gabriel on behalf of the London and North-Western Banking Company.

Hampstead.—That consent be given to the erection of two one-story coal offices on the west side of Finchley-road, adjoining the Finchley-road Station of the London and North-Western Railway Company, on the application of Mr. A. Whitelaw on behalf of the Company.

Holborn.—That consent be given to the erection of a building with a projecting porch and bay windows, on the site of Nos. 150, 152, and 154, Southampton-road, Bloomsbury, on the application of Mr. G. D. Martin, on behalf of Mr. E. G. Marshall.

Levisham.—That consent be given to the erection of one-story shops on a portion of the forecourts of Nos. 57, 57A, 59, 61, and 61A, Dartmouth-road, Forest Hill, on further application of Mr. G. Tolley on behalf of Mr. E. C. Christmas.

Levisham.—That consent be given to the erection of one-story shops upon the forecourts of Nos. 32, 34, 36, 38, and 40, Lendon-road (formerly Nos. 2, 3, 4, 5, and 6, Whitechapel-road), Forest Hill, on the application of Mr. E. C. Beaumont, on behalf of the Freehold and Leasehold Investment Company, Limited.

Puddington, South.—That consent be given to the re-building to an advanced frontage of Nos. 123, 125, and 127, Queen's-road, Bayswater, with projecting bays and one-story shops, on the application of Mr. C. G. Maylard, on behalf of Mr. H. Gibbon.

Rothemith.—That consent be given to the erection of an open iron footbridge over Church-passage to connect Messrs. Dudin & Sons' premises on each side of that street, on the application of Messrs. W. A. Cripp & Sons.

St. George, Hammer-square.—That consent be given to the erection of an open porch and balcony in front of No. 37, Charles-street, Mayfair, on the application of Mr. J. Garlick, on behalf of Messrs. Garlick & Horton.

St. Pancras, North.—That consent be given to the erection of a one-story bar addition in front of the "Bull and Gate" public-house, No. 389, Kentish Town-road, on the application of Mr. A. J. Perriam, on behalf of Mr. H. Morgan.

Westminster.—That consent be given to the erection of a porch to a building at Albert-gate, Knightsbridge, to flank upon Seville-street, on the application of Mr. H. L. Florence, on behalf of Messrs. Woodland Brothers.

Strand. (a) That consent be given to the erection of an iron and glass shelter at the entrance to St. James's Hall, Piccadilly, on the application of Mr. W. Emden. (b) That so much of the application as relates to the erection of an iron-and-glass shelter at the entrance to St. James's Restaurant, Piccadilly, be not acceded to, as the Council is not prepared to permit the erection of structures of the character proposed, except for public buildings.

Clapham.—That consent be not given to the erection of seven three-story houses with bay windows and of two one-story shops on the south-east side of Queen's-road, Battersea Park, on the application of Mr. W. Pencock.

Hackney, North.—That consent be not given to the erection of ten houses on the west side of Park-lane, Stoke Newington, with the boundary fence at the rear at less than the prescribed distance from the centre of Aden-terrace, on the application of Mr. T. Pryor.

Islington, East.—That consent be not given to the erection of a block of five-story residential flats with two five-story bay windows between Nos. 20 and 21, Richmond-village, Seven Sisters-road, on the application of Mr. W. L. Kellaway, on behalf of Mr. F. Nicholls.

Levisham.—That consent be not given to the erection of a house with shop on the north-east side of Engleheart-road, to flank upon Jutland-road, on the application of Mr. H. J. Miller, on behalf of Mr. F. Belts.

Levisham.—That consent be not given to the erection of a building on the site of Nos. 306 and 308, Brockley-road, with the flank of the new building to abut upon Comerford-road, on the further application of Mr. J. Webster, on behalf of Mr. J. Ciappell.

Levisham.—That consent be not given to the erection of a house on the north side of Adamsmill-road, Sydenham, with the flank and a projecting bay to abut upon Nierlwald-road, on the application of Mr. A. J. Dorrell.

Norwood.—That consent be not given to the rebuilding of the "George Canning" public-house, Effra-road, Brixton, with the flank to abut upon Water-lane, on the further application of Messrs. Tanson & Co., on behalf of Mr. G. Gibbert.

Norwood.—That consent be not given to the erection of a mission-hall on the east side of Elder-road, West Norwood, on the application of Mr. J. C. Wright, on behalf of the Rev. H. Cooper.

Strand.—That consent be not given to the erection of an iron and glass covered way at the entrance to the Spitten Beer Restaurant, Shrewsbury-avenue, St. James's, on the application of Mr. W. J. Parker on behalf of Mr. G. Sedlmayer.

Wandsworth.—That consent be not given to the erection of three houses, with one-story shops in front, on the east side of Balham-road, upon part of the site of Nos. 109 and 201, on the application of Mr. W. C. Poole on behalf of Mr. J. Stone.

Clapham.—That consent be not given to the erection of houses on the east side of Cavendish-road, and also on the south side of Poynder's-road, between Chios House and Cavendish-road, on the further application of Messrs. Lee & Pain on behalf of Sir J. D. Poynder, Bart., M.P.

Width of Way.

Lincolshire.—That consent be given to the erection of a covered way and one-story office building at Ratcliff Cross Wharf, Broad-street, at less than the prescribed distance from the centre of that street, on the application of Messrs. Bradshaw, Brown, & Co., on behalf of Messrs. Pincheon, Johnson, & Co.

Deplford.—That consent be given to the erection of buildings on the east side of Hosier-street, Creek-street, Greenwich, on the further application of Mr. L. Jacob on behalf of Messrs. J. & A. Dandridge.

Lincolshire.—That consent be given to the erection of a one-story stable in a yard at No. 43, Broad-street, Ratcliff, at less than the prescribed distance from the centre of the road, on the application of Mr. C. Dinch on behalf of Messrs. Charrington, Sells, Dale, & Co.

Pophar.—That consent be given to the erection of two houses on the north side of Minmill-street,

Millwall, at the corner of Alpha-road, at less than the prescribed distance from the centre of each street and road respectively, on the further application of Messrs. J. & S. F. Clarkson on behalf of Mr. W. Legg.

Peckham.—That consent be not given to the erection of a dwelling house on the west side of an unauthorised street, known as Waxeney-avenue, Peckham-rve, with the flank of such house to abut upon Solomon's-passage, on the application of Mr. H. Long.

Bethnal Green, South West.—That consent be not given to the erection of a warehouse on the site of No. 53, Church-row, Bethnal Green-road, on the application of Mr. W. Stone on behalf of Mr. E. Atkins.

Hackney, Central.—That consent be not given to the erection of a three-story workshop, at the rear of No. 383, Kingsland-road, to abut upon the east side of Derby-road, Kingsland, on the application of Mr. K. Wakely.

Space at Rear.

Hampstead.—That the Council do, in the exercise of its powers under Section 41 (1) (iv.) (b) of the London Building Act, 1894, permit the erection of a building not exceeding 30 feet high on part of the open space at the rear of a house and shop on the west side of South-end Green, at the corner of Pond-street, on the application of Mr. C. Bell, on behalf of Messrs. Chessum & Sons.

Puddington, North.—That the Council do allow the erection of fifteen blocks of residential flats on the south side of Lauderdale-road, Maiden-vale, with the diagonal line of such buildings drawn in conformity with the rules of Section 47 (1) (iii) (b) of the London Building Act, 1894, but with open spaces at the rear not in accordance with the provisions of that Act, on the application of Messrs. Boehmer & Gibbs, on behalf of Mr. H. J. Cave.

Rothemith.—That the Council do, in the exercise of its powers under Section 41 of the London Building Act, 1894, allow a modification of the provisions of that Section with regard to open spaces about buildings, so far as relates to the proposed rebuilding of the "King of Prussia" public-house, Tooley-street, on the site of No. 186 and of two cottages abutting upon Parish-street, with an irregular space at the rear of the new building, on the application of Mr. E. Wilkinson, on behalf of Mr. W. C. Bessel.

Deviation from certified plans.

Southwark, West.—That sanction be given to certain deviations from the plan certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed building of No. 6, Surrey-row, Blackfriars-road, on the application of Mr. W. H. Cowlishaw, on behalf of Miss L. Fowler.

Line of Fronts and Width of Way.

Pophar.—That consent be given to the erection of a factory on the east side of Dove Common-lane, on the application of Messrs. J. & S. Flint-Clarkson, on behalf of Messrs. W. Pearce & Son.

Fulham.—That consent be not given to the rebuilding of the Hand and Flower public-house, No. 617, King's-road, with the flank abutting upon Edith-row, on the application of Messrs. Gardiner & Theobald, on behalf of Mr. A. W. Rice.

Hammersmith.—That consent be not given to the erection of three blocks of dwellings with projecting bay windows, to be inhabited by persons of the working-class, on the west side of Queen-street, between No. 34 and Church-lane, on the application of Mr. E. Sage, on behalf of Mr. W. Moss.

Kensington.—That consent be not given to the erection of a block of residential chambers on the site of No. 59, Drayton Gardens, with the boundary at the rear of the premises at less than the prescribed distance from the centre of Thistle Grove-lane, on the application of Mr. J. Norton, on behalf of Mr. T. Boyce.

Peckham.—That consent be not given to the erection of nine houses, with projecting bay windows, on the west side of Lower-park-road, and also of eight houses with similar bays on the south side of Commercial-road, on the site of Nos. 72, 74, 76, 78, 80, 82, 84, 86, 88, and 90, Lower-park-road, on the application of Messrs. Benison & Bargman, on behalf of Mr. Pennack.

Waltham.—That consent be not given to the erection of one-story shops on the forecourt of Nos. 282, 284, 286, and 288, East-street, on the further application of Messrs. P. W. Slark & Co.

Width of Way and Cubical Extent.

Whitechapel.—That the Council, in the exercise of its powers under section 13 of the London Building Act, 1894, do consent to the erection of a one-story addition on the west side of an ale-store, at the Albion Brewery, Brady-street, to flank upon Bath-street, and to the re-erection of the boundary or fence at less than the prescribed distance from the centre of Bath-street, and the retention of the forecourt boundary wall in Brady-street within 20 ft. from the centre of that street; and that subject to the provisions of Section 76 of that Act, the Council do consent to the erection of the proposed one-story addition, whereby each of the two divisions of the ale-store will exceed in extent 250,000 but not 450,000 cubic feet, such building to be used only for the purposes of the trade of a brewer, on the appli-

cation of Mr. R. Spence, on behalf of Messrs. Mann, Crossman, & Paulin.

Formation of Streets.

Clapham.—That an order be sealed and issued to Mr. C. J. Bentley, refusing to sanction the formation or laying out of a street, 40 ft. wide, for carriage traffic, to lead out of the south side of Nightingale-lane into Temperley-road, Wandsworth, on his further application to the Council.

Clapham.—That an order be sealed and issued to Messrs. Lee & Pain, refusing to sanction the formation or laying out for carriage traffic of new streets, 40 ft. wide, on the site of a house with grounds known as Bygrove House, and to lead out of the south side of Poynder's-road, Clapham Park, on the application to the Council, on behalf of Sir J. D. Poynder, Bart, M.P.

Hoxton.—That no order be made with respect to the application of Messrs. Clapham, Fitch, & Co., on behalf of the Governors of the Bishopsgate Foundation, for the Council's approval of a proposed scheme for widening to 40 ft. a portion of Shepherdess-place, City-road, Shoreditch, in connexion with the rebuilding of the Eagle public-house.

Norwood.—That an order be sealed and issued to Messrs. Cobb & Bottrill, refusing to sanction the formation or laying out for carriage traffic of three streets, 40 ft. wide, on the Meadowbank estate, to lead out of the east side of Knight's Hill-road, West Norwood, on the application to the Council, on behalf of the Land Mortgage Investment and Agency Company, Limited.

Wandsworth.—That an order be sealed and issued to Mr. S. G. Warner, refusing to sanction the formation or laying out for carriage traffic of a new street, 40 ft. wide, on the Spencer Lodge Estate, to lead out of Roehampton-lane into High-street, Roehampton, on his application to the Council.

Wandsworth.—That the Council do not approve of a variation from the plan sanctioned on November 21, 1873, for the formation of Parkmore-road, Balham, by the abandonment of the formation of the portion of that road eastward of Culverden-road, and the widening to 12 ft. 6 in. of the footpath leading from the latter road to Tooting Bee Common, on the application of Mr. A. Wellings, on behalf of Mr. H. Groombridge.

Means of Escape from Top of High Buildings.

Chelsea.—That the Council do, in the exercise of its powers under Section 63 of the London Building Act, 1894, decline to grant a certificate in respect of the means of escape, in case of fire proposed to be provided for the persons dwelling or employed in the fifth floor of a block of residential flats, with shops on the ground floor, on the north side of Basil-street, Hans-road, Brompton-road, on the application of Mr. C. W. Stephens, on behalf of Harrod's Stores, Limited.

Cubical Extent and Construction of Building.

Woolwich.—That, subject to the provisions of Section 76 of the London Building Act, 1894, the consent of the Council be given to the erection and construction on the south side of Harrington-road of a building to exceed in extent 250,000 but not 450,000 cubic feet, and to be used only for the purposes of the manufacture of electrical locomotives and other large electrical machinery, on the application of Mr. J. R. Brittle on behalf of Messrs. Siemens Brothers & Co., Limited.

Buildings for the Supply of Electricity.

St. George, Hanover-square.—That the Council do approve of the plans, dated April 1, 1897, submitted with the further application of Mr. C. S. Peach on behalf of the Westminster Electric Supply Corporation, Limited, for the construction of an addition to a generating station for electricity in Eccleston-place, Eccleston-street, Buckingham Palace-road.

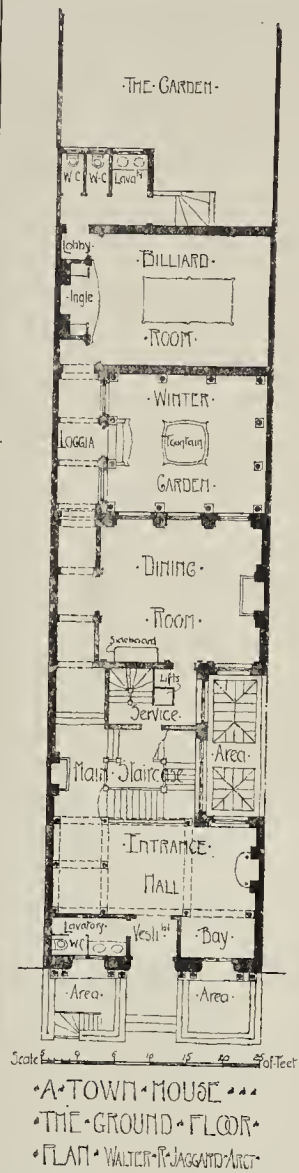
St. George, Hanover-square.—That the Council do approve of the plans, dated March 12 and 13, 1897, respectively, submitted with the application of Mr. C. S. Peach on behalf of the Westminster Electric Supply Corporation, Limited, for the construction of an addition on the north side of the generating station and works on the site of Nos. 87, 89, and 91, Davies-street, Oxford-street.

Recommendations marked * are contrary to the views of the Local Authorities.

Illustrations.

ALVASTON HALL.

HIS house has been practically rebuilt on the site of the old Hall of the Lords of Alvaston, of which probably not a vestige remains. The property was purchased by A. Knowles, Esq., and the reconstruction is not yet quite completed. A new story was added in solid sunken construction filled in with brick and cemented with Spa facing. The large hall is of oak with wood-ceiling and oak-panelled dado and frieze. The dining-room is also of oak stained dark. In the chimney piece is a beautiful portrait by Hoppner, the frame designed with the rest of the work. The drawing-room is panelled up to the frieze and



* A TOWN HOUSE
* THE GROUND FLOOR
* PLAN BY WALTER R. JAGGARD ARCHT.

Painted white. All doors are of dark mahogany, with specially designed bronze furniture and hinges. The ceilings to dining- and drawing-rooms and also that of the boudoir are in plaster all specially designed and carried out by Hindshaw, of Manchester, Mr. Cooper having executed the modelling. All the moulds have been destroyed. The billiard-room is finished in Cyprus wood stained a greenish tone. Panels in the frieze modelled in plaster, each panel illustrating a sporting subject, also modelled by Mr. Cooper. All floors on ground floor are either of oak or parquet executed by Messrs. Turpin and some by Messrs. Ebner. The entire house is heated by hot-water coils and pipes by Messrs. Harlowe, of Stockport. Large new stables, &c., have also been built. The contractor is Mr. Gresty, of Willaston, and the work has been carried out by his foreman, Mr. T. Fenna. The panelling of dining-room and hall dado were made by Messrs. Garnett, of Warrington. The stained glass by Messrs. Sutherland, of Manchester.

The ornamental metal work by Mr. G. Wragge, also of Manchester. The wood-carving by Mr. Millson, and the stable fittings by Musgraves. The whole under the superintendence of architects, Messrs. E. Salomons, F.R.I.B.A. and A. Steinhilber. The cost will be about 16,000l.

NEW THEATRE, DEPTFORD.

THE above theatre is now in course of erection on the site at the corner of New Cross-road and Tanner's Hill. The front to New Cross-road, and the return to Tanner's Hill, will be carried out in white Portland stone, and the continuation of the frontage in Tanner's Hill will be executed in dark red brick and stone dressings.

The auditorium will be constructed entirely of steel and concrete, and will be absolutely fire-resisting. The decorations will be carried out in the Renaissance style, and the electric light will be introduced in decorative manner into the scheme of decoration.

The building will be lighted with the electric light throughout, supplied by its own plant, and, as a further safeguard for the audience, gas will be laid on for use in the event of the electric light failing. A complete system of hydrants and heating on the low-pressure system is to be provided.

The theatre will be luxuriously furnished and generally equipped. The cost of the main structure, exclusive of the decorations or other sub-contracts, is 21,150l.

The theatre will be one of the largest in London, accommodating, as it will, upwards of 3,500 persons.

Mr. Walter Wallis, of Balham, is the general contractor, the clerk of works is Mr. Moss, and the general foreman Mr. Calvert. The building is being erected from the plans of Mr. W. G. R. Sprague. Beyond the actual space occupied by the theatre there is a large area at the rear which will be utilised for building the engine-house, heating-chambers, scenery stores, and painting-rooms, thus completely isolating the theatre from all danger of fire.

A TOWN HOUSE.

BY MR. WALTER R. JAGGARD.

THIS front was a design made as an alternative to the design for a house front by the same architect published in the *Builder* of September 12, 1896. The materials are to be red sand bricks and Ham Hill stone; the roof to be covered with Broseley tiles.

The study is an attempt to gain dignity of appearance by using large plain surfaces, and to obtain the necessary richness of effect by carving the large flat mouldings.

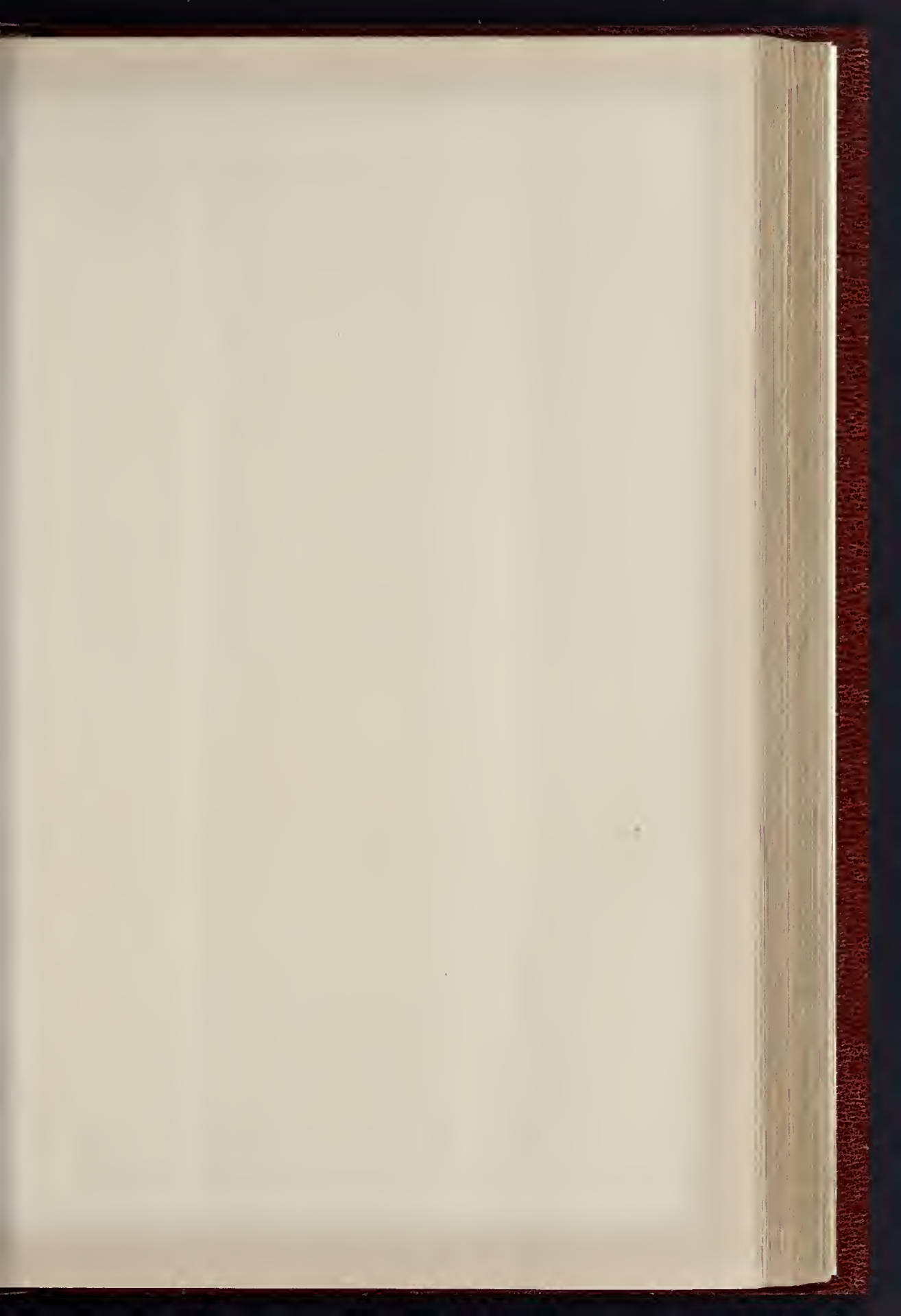
YIEWSLEY CHURCH.

THE drawing shows the interior of the proposed new nave. The present church is a quiet little modern Gothic building, a nave and apsidal chancel only, and was built about thirty years ago. It is considered too small to serve as a nucleus for the enlargements, and is therefore to be made into the north aisle of the new church, a large nave and chancel being added on the south side. The scheme has been modified since this drawing was made by the introduction of a square tower and flèche in the place of the south transept. The work will all be kept very simple and plain, and the materials are to be stock bricks, Bath stone, and tile roofs, which are to be ceiled inside. The work is estimated to cost about 3,000l.

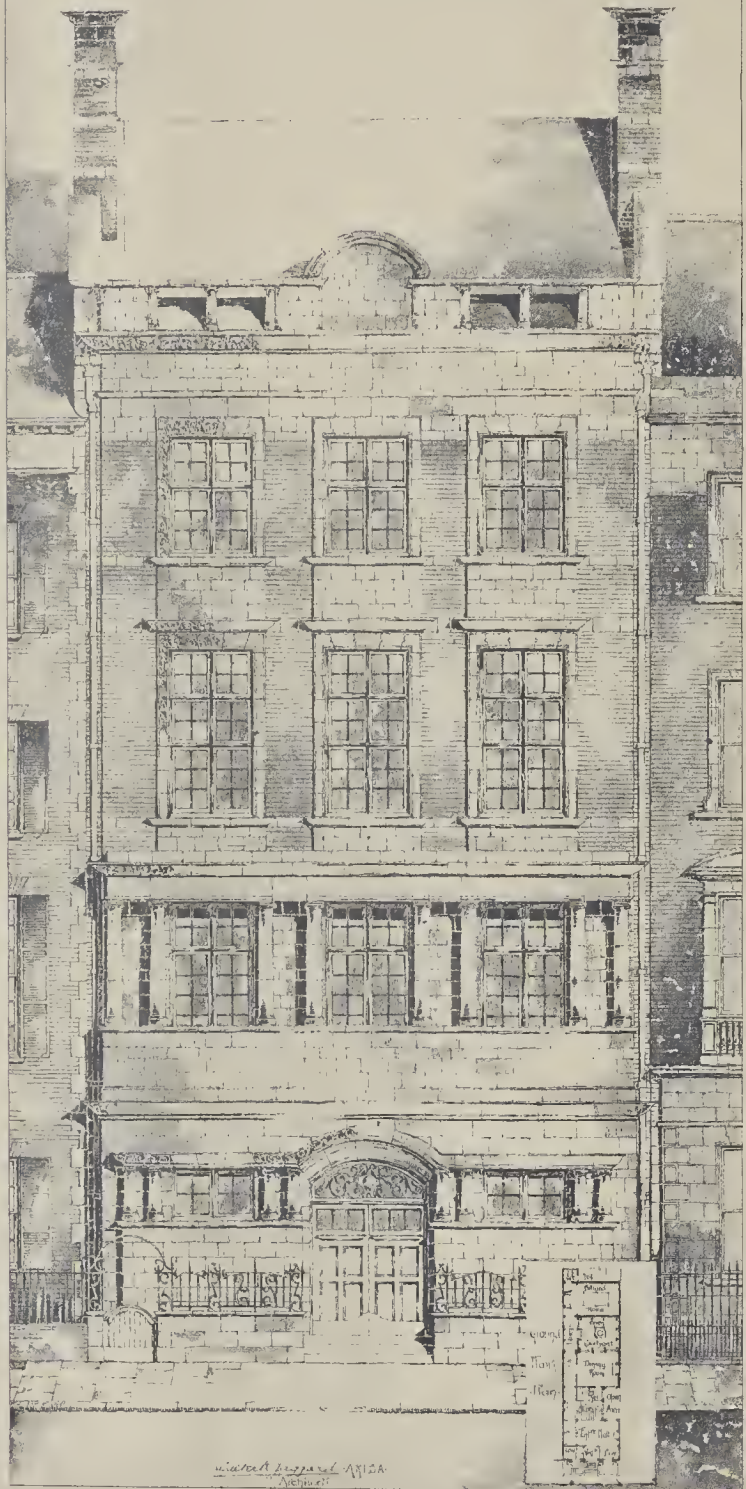
CHARLES A. NICHOLSON.

COMPETITIONS.

COLCHESTER NEW TOWN HALL.—The minutes of the Municipal Offices (Special) Committee of the Colchester Town Council, submitted at a recent meeting of the Council, embodied the report of the Sub-Committee, which showed that the Town Clerk and Borough Surveyor had been instructed to confer with the other officers as to the allotment and furnishing of the rooms at the temporary offices. They had resolved to invite Messrs. E. W. Mountford, B. Binyon (Ipswich), H. T. Hare, J. Belcher, J. Brydon, and Beresford Pite to prepare and submit competitive designs and estimates, and in event of one of them declining, to invite Mr. Burgess, of London. Mr. A. Waterhouse, R.A., having declined to act as assessor at a fee of fifty guineas, Mr. Norman



A TOWN HOUSE · THE FRONT ·



W. H. R. 1897
W. H. R.





NEW BROADWAY THEATRE. D.

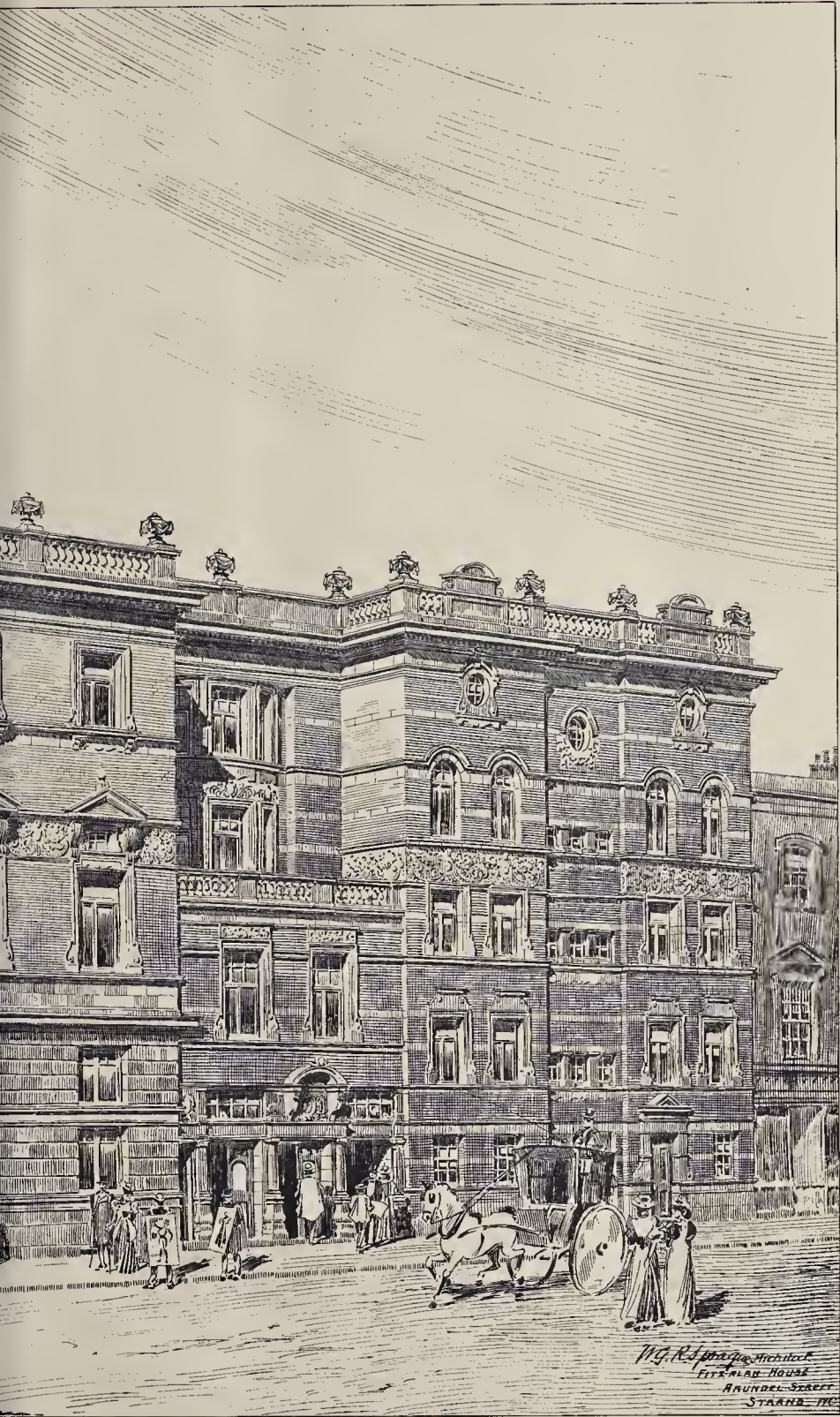
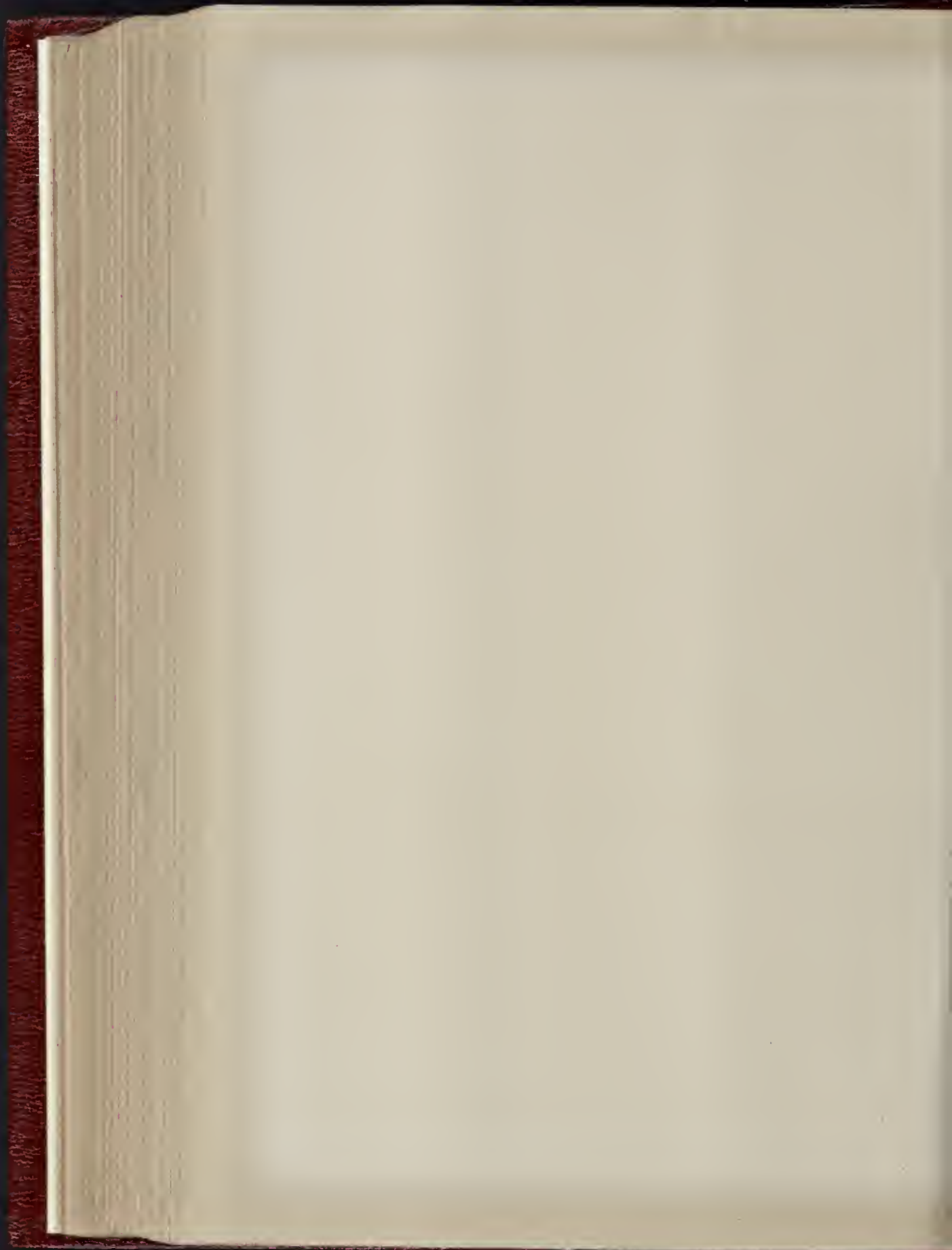


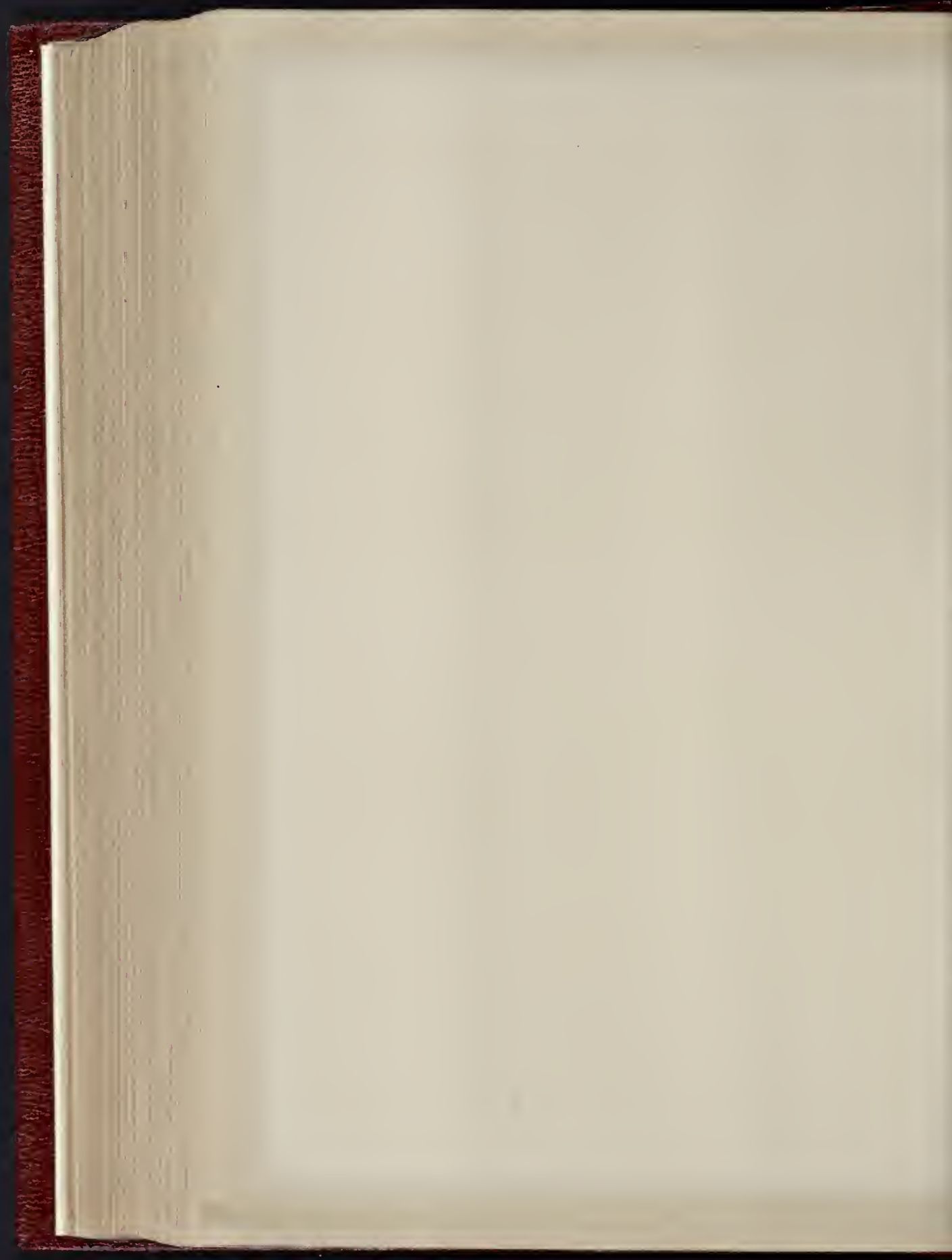
PHOTO LITHO. SPRAGUE & CO. 485, EAST HARDING STREET, FETTER LANE, E.C.

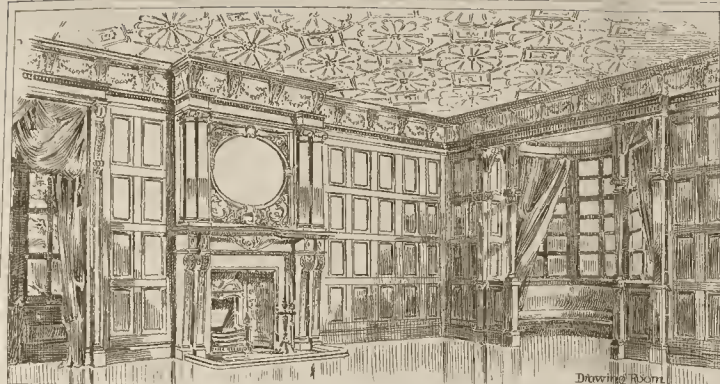




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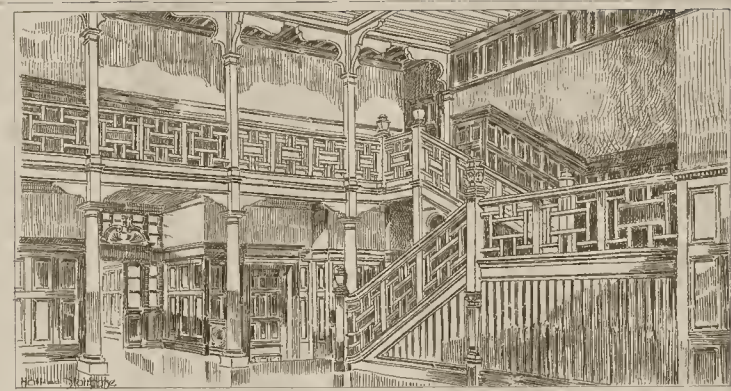
PROPOSED NEW NAVE AND CHANCEL, YIEWSLEY CHURCH, UXBRIDGE.—MR. CHARLES A. NICHOLSON, ARCHITECT.



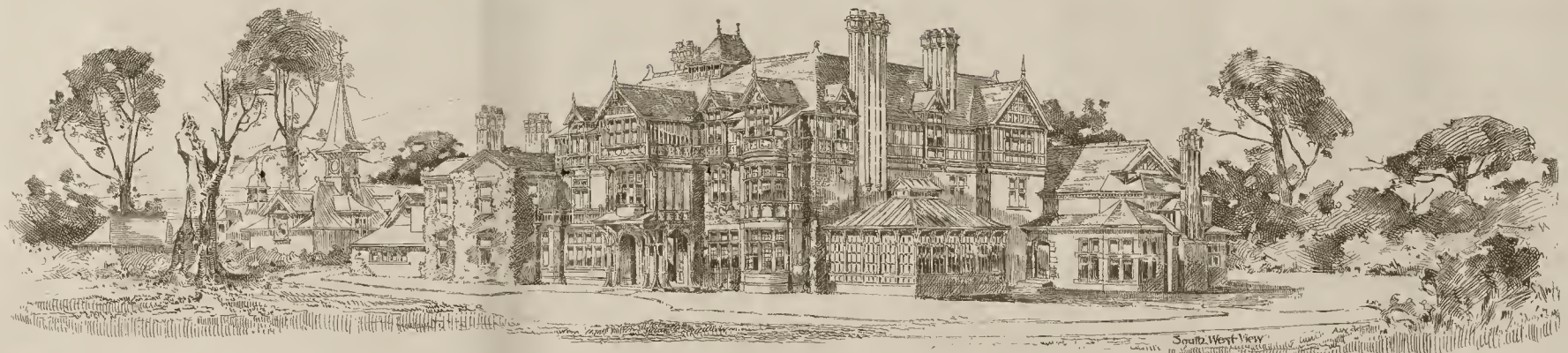


Drawing Room

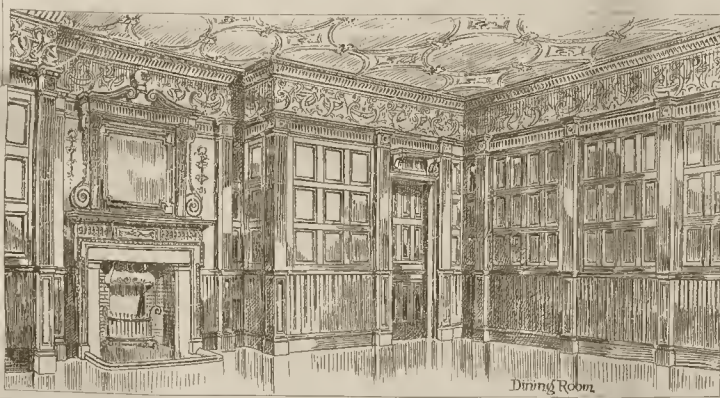
Alterations and Additions
 to
 ALYASTON HALL
 by
 R. B. B. B.
 for
 A. KNOWLES ESQ.



Staircase

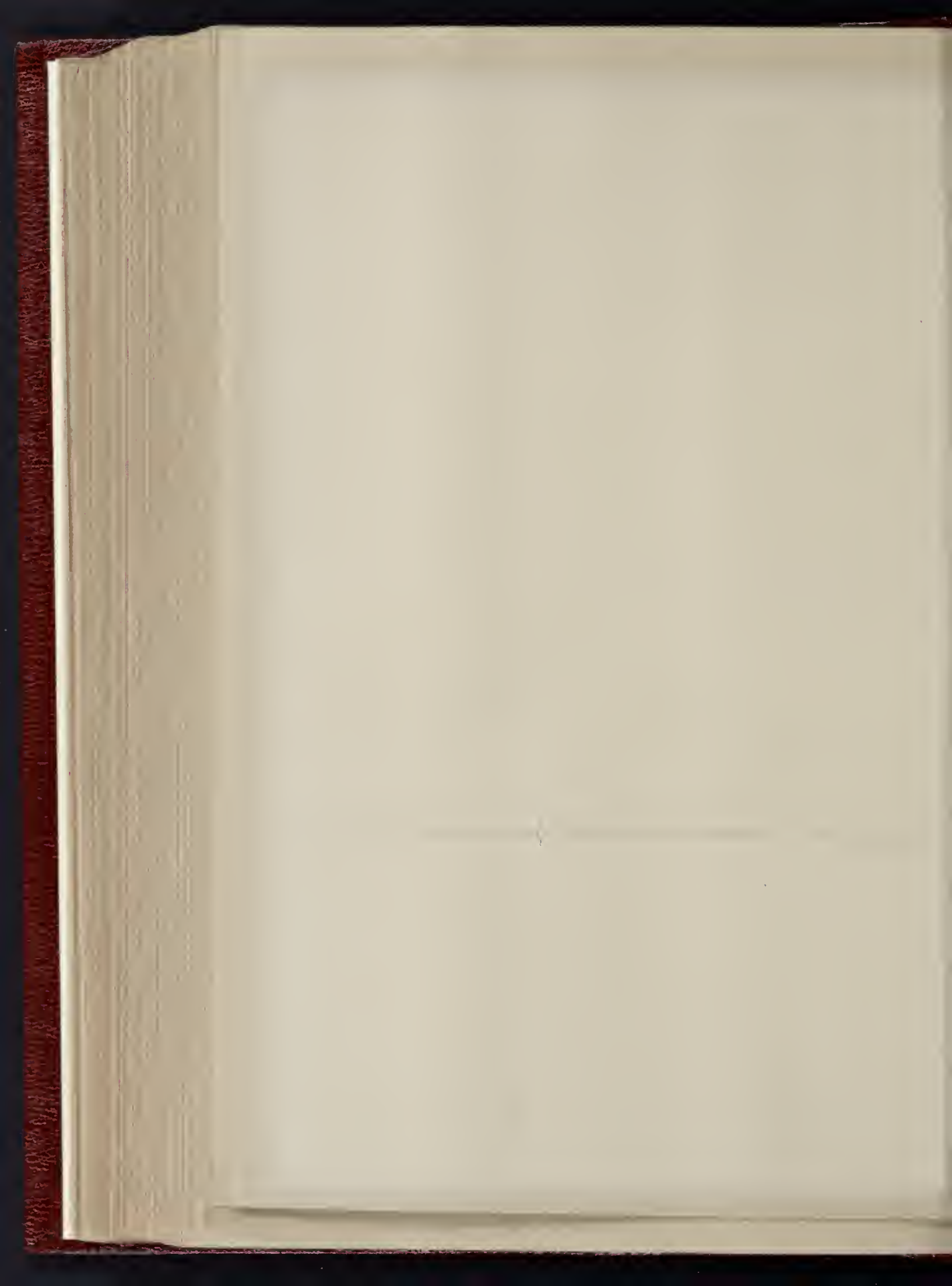


South West View



Dining Room





aw, R.A., had accepted. It had been resolved unanimously to leave it open to architects to submit designs. Messrs. Binyon, Pite, Fisher, and Brydon had accepted the invitation. Mr. Mountford conditionally to the travelling expenses of the successful architect and the time for drawings extended to June or July; and Mr. Hare had promised to do plans, but trusted the time might be extended to the end of June. The Committee therefore resolved that the travelling expenses of the successful architect be allowed, in addition to commission, and that the time be extended to June 30. The report was adopted at the meeting of the Council.

ARCHITECTURAL SOCIETIES.

GLASGOW ARCHITECTURAL ASSOCIATION.—At a meeting of the Glasgow Architectural Association, held in their rooms, 187, Pitt-street, the 6th inst., Mr. Tait Conner in the chair, Mr. Wm. Fraser read a paper on "The Influence of Economics on Architecture." He showed that he had effect the present land tenure had on architecture; how, especially where leases of a limited period existed, the buildings were built only to last out the lease. How building for profit and not for use tends to depreciate art, as the great proportion of the buildings in Glasgow are erected by the speculative builder, whose aim is to make a profit, and not erect the best building that he can. He showed also how the unequal distribution of wealth, competition, and the sub-division of labour, were against the appreciation of good architecture and unfavourable to thoughtful design and good workmanship. The remedy suggested was collectivism, which, he said, could give greater opportunities for good architecture, as building would only be erected if required, and not as profitable speculations. There would be no glaring inequalities in wealth, with the ostentation of riches and the degradation of poverty. The worker would be well fed and be sure of his work, and could therefore take greater delight in it and produce better work. There would be no need for work being cut down to the cheapest point to make things pay, for buildings would be erected for the good of the community, who would take a delight in seeing their own property safe. On the motion of Mr. Jas. Craigie hearty vote of thanks was accorded to the essayist.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Under the leadership of Mr. Hippolyte Blanc, the members of this Association on Saturday last week visited Niddry and Dunrobin Castles. The former, situated in Kirkcaldy parish, Mr. Blanc described as a fair example of an early keep, one showing the first development from the simple square tower. The doorway in the inner angle enters upon a circular staircase leading to the several towers, now in ruin. The walls average 9 ft. thick. The foundation of the tower was ascribed to George, fourth Lord Seton, probably in the last quarter of the fifteenth century. The castle receives prominence in history as having in 1568 afforded shelter and protection to Queen Mary. During the troublous times of Charles I. and II. the Castle and lands passed to the family of Hope-uton, the Castle being the title of Baron Niddry to Lord Hope-uton. Dunrobin Castle, situated in Abercorn parish, Mr. Blanc explained was a residential mansion house of about 100 years later date than Niddry. It presents a large rectangular building, 80 ft. long, facing south, with projecting wings at the extremes on the north side. This castle was in marked contrast to Niddry, the walls being so much thinner. There was much evidence to associate the period of foundation with the end of the sixteenth or beginning of the seventeenth century. The castle continued habitable until quite recently, and is now in ruin.

ARCHÆOLOGICAL SOCIETIES.

ROYAL ARCHÆOLOGICAL INSTITUTE.—At the general meeting of this Institute on the 7th inst., Judge Baylis, Vice-President, in the chair, Mr. E. Keyser, Squire and Lord of the Manor of Aldermaston, read a paper on "Aldermaston church, Berkshire." He gave a brief description of the distinguished personages who were lords of the Manor and owners of the Aldermaston Estates, and then described the church and the necessary repair which had been recently carried out at his expense under the

direction of Mr. E. Doran Webb, F.S.A. The church was probably built about 1120 on the site of the earlier one mentioned in the Domesday survey, and it was enlarged about the years 1260-1300, and in the fifteenth century, and additions were made to it about 1660, and at the beginning of the present century, when it was unfortunately thoroughly beautified. The mural paintings representing St. Christopher, and probably two scenes from the life of St. Nicholas, found last year in the South Chapel and elsewhere; the old glass, two panels representing the Annunciation and Coronation of the Virgin, dating from the middle of the thirteenth century, and numerous armorial shields, inserted by Sir Humphry Forster, circa 1540; and the various tombs and brasses, notably, the fine alabaster monument of Sir George Forster, and Elizabeth his wife, who died in 1520, were minutely described. An interesting discussion afterwards took place, in which Messrs. W. H. St. John Hope, Mill Stephenson, E. Doran Webb, P. H. Norman, and G. E. Fox, pointed out the various peculiarities and particular objects of interest, more especially with regard to the tomb of Sir George Forster. Some excellent rubbings of the brasses and inscriptions and photographs of the monument, mural paintings, and Norman west doorway were exhibited by Messrs. Mill Stephenson, A. H. Lyell, and the writer of the paper.

Correspondence.

To the Editor of THE BUILDER.

VENNER v. McDONELL.

"STRUCTURE" IN THE LONDON BUILDING ACT. SIR.—I regret to have to ask to be allowed to add to what I have already said, but, unless a perfectly false impression is to be created, it is absolutely necessary I should do so.

In your comment, you suppose that the court, in putting the fixing of the galleries and seating for the Military Tournament on a par with that of a cupboard in any man's house, meant only to show that the two cases would come *legally* under the same category; but that is just what I contest, the latter being in a private house and absolutely exempt from the District Surveyor's control, the former in a *public building*, and under special legislation. It is under this legislation only that I could be supposed to have any responsibility.

You further say, very naturally, following the wording of the judgment, you do not see how, in a legal sense, a detached framed seating, removable when required without taking it to pieces can properly come under the head of a "structure" in the sense in which the word is used in the Building Act; and with this I perfectly agree, and had that been a fair description of the staging I should never have dreamed of raising the point.

The principal erection (of which a model was shown) was a gallery, on posts, with stalls for horses under it, and so far from having the character ascribed to it, it was in separate parts, which, excepting that they were marked to save trouble, had to be put together practically as they would be were the structure entirely new.

I think you will allow this materially alters the case.

GEO. McDONELL.

* See our Note on the subject on p. 352-3.—ED.

"BODLEY v. MARSLAND."

SIR.—Mr. Blackwell's report to you of the above case (page 347 *ante*) is on the main facts quite correct. So that builders may now evade the very beneficial effects of Section 74 (2), I must dissent from his deduction that none but a District Surveyor could have arrived at the conclusion that the buildings were united, for, seeing that the Building Act was primarily intended to prevent the spread of fire, and Section 74 (2) particularly so, I should like to retort that none but a lawyer could see no difference between 9 in. and 6 ft. But these are the kind of impractical decisions we have to put up with at the Police-court. If, however, the Magistrate is satisfied, I am content.

ELLIS MARSLAND.

SHERBORNE ABBEY.

SIR.—It may interest some of your readers to learn that Allhallows Church, which was attached to the west end of the abbey church, possessed a tower with a peal of bells of its own. This tower, together with the other materials of Allhallows, was sold for building stone during the years 1542-1551, as I discovered from the old parish accounts, which I examined last Christmas. So far as I know, the fact of the existence of this tower had never been noticed before, at any rate for the last 300 years.

The site of this tower was at the west end of Allhallows, so far as I can judge; it certainly was not over the passage or porch which divided Allhallows from the abbey church.

Supposing the tower was at the west end of

Allhallows, the outline of the two churches must to some extent have resembled that of Wimborne Minster on a larger scale. That is to say, we had in Sherborne that rare combination of a central and one western tower.

W. B. WILDMAN.

Sherborne.

A DILAPIDATED HOUSE AT SHEPHERD'S BUSH.

SIR.—Kindly allow me to call attention to the disgraceful, and, from a sanitary point of view, dangerous state of one of a block of five freehold houses—No. 20—in Warbeck-road, Shepherd's Bush. There is no provision for carrying off rain-water, and the house has evidently never been finished, the roof of the bay-window is parting company with the main building; the windows, broken and dirty, are blocked up with planks and plate-racks; the fanlight over the door is unglazed, and the street-gate lock has rusted to pieces, the chain and padlock fastening the gate being almost useless from exposure to the weather.

This house has been left thus for years, and I think the authorities ought to summon the freeholder to either put the house into decent and habitable repair, or to pull it down altogether, and that immediately.

DOMITS.

The Student's Column.

SPECIFICATIONS.—XVI.

ELECTRIC WIRING (continued)

WOOD CASINGS.—All cases and covers, except those specially mentioned afterwards, to be of the best American whitewood, the covers being fastened to the casings with screws. When casings are covered with plaster they must be coated inside and outside with shellac varnish. Whenever casings pass through floors they must be protected by a covering of sheet iron extending two inches below the floor and four inches above it. In the dining-room and library the casings must be of oak, and in the drawing-room and hound of walnut, moulded to match the existing fittings. Patterns of the moulded covers must be submitted for the approval of the architect.

When there is no public supply of electricity, a power-house containing a combined mechanical and electrical power plant is necessary. The plant can be packed into very little space, so that some outhouse can usually be found that will serve for this purpose. Of course, a great variety of cases arise, and engineers must be guided by circumstances in each special case. The combinations of steam engines, oil engines, gas engines, steam turbines, water turbines, &c., with dynamos and accumulators are almost endless. Where space is limited, a favourite plan is to have a dynamo direct driven from a steam engine or turbine. A combined steam turbine and dynamo occupies less space than any other plant. It is a good rule, however, never to try experiments with any new prime mover or dynamo, whatever theoretical justification you think you have, and however long the guarantee of the makers. We have had experience with a theoretically perfect gas engine, which ran beautifully for six months, and then its explosions began to make alarming noises, sometimes as loud as a cannon firing. The contractors removed it, and put in one of an older type, but, naturally, there was an interruption of the supply, and the household were put to some inconvenience.

Steam Engine and Boiler.—One h.p. nominal vertical engine and boiler complete, with all fittings and variable expansion gear. It must make revolutions per minute and be fitted with disc fly wheel for direct coupling to the dynamo. The variation in speed from no load to full load shall not exceed 10 per cent. The makers are to deliver and erect the engine and boiler at the power house to the satisfaction of the consulting engineer, who may require them to perform any tests on their efficiency or to demonstrate their silent running.

The Foundations for Engine.—The foundations for the engine will be built by our builder according to the drawings and specifications of the makers of the engine. Our builder will also give all necessary assistance in the way of labourers and scaffolding for the erection of the engine, &c.

[The foundations for direct connected outfits extend under both engine and dynamo.]

Gas-Engine.—One h.p. nominal gas-engine complete, with fly-wheel and water reservoir.

Oil Engine.—One h.p. nominal oil

engine with cistern, igniting apparatus, vaporiser, air-pump, and all appliances.

Dynamo (For two hundred 16-c.p. lamps).—One dynamo having an output of 14 kilowatts when the armature is making revolutions per minute. It must be compound wound with a special switch so that it can be run either as a compound machine for running the lamps direct or as a shunt machine for charging accumulators. When run as a compound machine the E.M.F. between its terminals is to be 105 volts at no load and not less than 103 volts at full load.

The dynamo to have a sliding cast-iron bed-plate with brackets and tightening screws and to be supplied with adjustable sight-feed lubricators.

Armature.—The core to be made of the softest charcoal iron discs. The windings must be wound in separate sections on the core, and be well insulated from it. They must in addition be protected by some varnish which cannot be injured by oil.

Field Magnets.—To be of wrought iron, the magnet coils to be wound on wrought-iron cases which can be slipped on and off the field magnets. The insulation of the wires forming the coils to be mechanically strong and the insulation resistance between the coils and the framework of the machine to be greater than one megohm when tested by an Evershed Ohmmeter at 200 volts.

Commutator.—Of pure copper hard-drawn. The copper segments must be so constructed that it will be easy to replace them if necessary.

Brushes.—Of copper, carbon tipped.

Spindle.—Of best mild steel.

Copper.—All copper used in the construction must have a conductivity of at least 100 per cent. (Matthiessen's Standard).

The dynamo must be guaranteed to be capable of giving an output of 14 kilowatts running continuously for twelve hours without sparking on the commutator or undue heating of the armature or magnet coils. At this load also its mechanical efficiency must be guaranteed to be not less than 85 per cent.

The above dynamo is capable of supplying current to 200 16-c.p. lamps at once, but if we have a battery of accumulators as well, then by keeping the dynamo running during the day charging the accumulators, and then using them in addition to the dynamo at night we could supply 600 or 800 lamps.

Accumulators.—A battery of fifty-five accumulators in glass cells capable of supplying 400 16-c.p. 100 volt lamps with current for four hours. Each cell must have a wooden tray supported by glass insulators of mushroom pattern and a glass cover. A guarantee for at least two years must be given, and the cost of maintenance and repairs should be stated.

Battery Switchboard.—This switchboard must contain two dynamo fuses, one dynamo switch, one battery-charging switch, one battery discharging switch, one current indicator, one automatic cut-out, one shunt-regulating switch, one volt meter with switch for same, one ammeter with a special switch, by means of which the current in the dynamo, battery, or mains can be read, two circuit fuses, and one circuit switch.

All the above to be mounted on a plain slate slab, with an oak frame and a plate-glass front, with lock and key. All connections to be made from behind, and thimbles to be provided for cable connections. Every fitting of the board that carries current must be of copper, and the current density must in no case exceed 500 amperes per square inch of contact surface.

It is to be made for 300 amperes.

A drawing of the switchboard to be submitted for the approval of the engineer.

Arc Lamps.—Four 10 ampere arc lamps will be required to run two in series from the 100-volt circuit. The mechanism must be simple and strong, and the volts at the terminals and the watts in the arc must remain constant within 2 per cent. when using a 16 mm. cored carbon for the positive, and a 9 mm. solid rod for the negative carbon.

Motor.—One 6 h.p. shunt motor will be required for turning a line of shafting in the workshop. It is to be run direct from the 100-volt circuit and great regularity of speed is essential. The direction of rotation must be capable of being reversed, and the load is of a very intermittent character. Carbon brushes must be used, and the motor must be enclosed in a fire-proof case. A reversing and a regulating switch and starting resistances to be included in the estimate. When the output is 6 h.p., the efficiency must be at least 70 per

cent, but trustworthiness and mechanical strength will be considered of greater importance than high efficiency.

Electric Ventilator.—The fan to be able to remove 1,500 cubic feet of air per minute when working at full speed. The motor not to take more than 2 amperes at 100 volts, and be fixed noiselessly. A speed regulator to be used.

Combined Motor and Domestic Pump.—The pump must be able to deliver 1,000 gallons per hour to a height of 70 ft., and the motor must not take more than 25 amperes at 100 volts when working at full load. The necessary starting switch and resistance to be included in the estimate.

Telephones.

Sometimes in large hotels, warehouses, flats, &c., telephones are wanted to be fixed up between various rooms. At one time there was a very prevalent belief that telephones were difficult to put up and maintain, but now almost any one who has had experience with ordinary electric bell fitting is prepared to erect them. The convenience and cheapness of indoor telephones has made this branch of business not only profitable to the contractors, but very satisfactory to the users. Suppose that four rooms have to be connected with a central room, and with one another, then the following may be a help when making a specification.

Microphones.—Four combination sets, each consisting of a transmitter with a granular carbon, large watch receiver, circular electric bell mounted on walnut board with battery box containing two No. 2 dry cells. One desk combination set with transmitter, automatic switch ringing key and electric bell, one watch receiver, and one wall plug and cord.

Exchange Annunciator.—One four-line board with plug and cord. Plate-glass front with mechanical replacement. Terminals on the top of the annunciator. The case to be made of polished walnut. It must be suitable for a metallic circuit system.

Batteries.—In addition to the batteries on the microphone boards, one four-cell Leclanché battery with agglomerate blocks will be required. The cells to be of three-pint size, and to be enclosed in a painted wood box with heavy brass terminals.

Wire.—No. 20 indiarubber, double cotton covered and paraffined copper wire to be used. When wires go through plaster, they must be protected by zinc tubing.

When a country house has to be connected with another more than half a mile off, a magneto call-bell is necessary.

Magneto Machines and Bells.—Two combination sets each consisting of a best quality triple magnet, magneto generator, and two bells, transmitter with an automatic switch and a watch receiver. All fitted on a walnut board with a box containing 2 dry cells. On the top of the magneto machine-box a metal comb lightning arrester to be fixed so as to protect the instruments.

Out of doors it is usual to have the line partly aerial and partly underground.

Underground Work.—One mile of 2/20 twin telephone copper wire, well insulated and lead covered. A sample of the wire to be submitted for approval.

Overhead Work.—Four miles 220 yards of No. 16 phosphor bronze wire (or No. 16 mangan copper wire). All joints made when erecting to be soldered, resin being used as a flux.

Wood Poles.—Forty-two light poles of best Norwegian fir, well creosoted. Each to be 30 ft. long, diameter at the top to be not greater than 4½ in. or less than 5 in., and the diameter 5 ft. from the butt to be not less than 8 in. An effective lightning arrester shall be placed on every pole and connected to the ground. (Creosoted poles cannot be properly painted, as the oil oozes through; but unprotected poles are soon attacked by wet rot at the ground line in this country.)

Insulators.—(In specifying for insulators it is well to remember that mechanical strength is quite as important as good electrical insulating properties.)

For over-house work, pole brackets, chimney brackets, wall brackets—to be made of galvanised malleable cast iron, and well blacked. Bolts, straps, and swivels of galvanised wrought iron.

Electric Bells.

For electric bells in large houses, hotels, clubs, &c., many firms quote at so much per push or per hole in the indicator, the price depending on the difficulty of fitting and on

the quality of the material used. The general price depends also on the size of the order, for a twelve-roomed house 25s. per push is about the average price. It is, however, most satisfactory to have a plan of the wiring drawn up and to specify that the wiring be done strictly according to the plan.

Specification for a private house.—**General Conditions**.—The same as in all specifications, but it is important to add that on the completion of the work the whole installation must be given up in perfect working order, and that if for any reason the cells burst during the first six months after the completion of the order they must be replaced at the expense of the contractor.

Specification of quality of material, &c..—**Wires**.—All wires to be No. 20 tinned copper wire, covered with pure indiarubber, then double cotton covered and paraffined. In the wiring, all wires leading from the positive pole of the battery to have a red covering, all from the negative pole to have a black covering, and all wires not directly connected to the battery to have a white covering.

Tubes.—To be of zinc, of sufficient section to contain easily the wires along the various paths.

Staples.—Any staples used must be insulated.

Wall Blocks.—A teak block to be driven into the wall and fixed at every point in the diagram where a push or switch is indicated.

Pushes.—The tops of all pushes must be unscrewed. They must have large ivory plungers, and be fitted with ebonite backs and platinum pointed springs. Specimens, which must harmonise as much as possible with the door furniture of each room, to be submitted to the architect for his approval.

Front Door Pushes.—The front door and servants' door pushes must have water-tight barrels containing the contacts, and be mounted on a mahogany block.

Two-way Switches.—One plug switch, marked A on diagram, just inside the front door, to be mounted on an ebonite base. Another, marked B, is in the bedroom. When plug is in one position on A, it makes a circuit with the front door bell downstairs; in the other position, it makes a circuit with the upstairs bell. Every night and morning the positions of the plugs are changed. The plug in the best bedroom is to enable any one there to ring either upstairs or downstairs from the push.

Batteries.—Six Leclanché batteries (quarter size) with agglomerate blocks, in two painted wood boxes, with heavy brass terminals, screwed on them.

Trembling Bells.—Three bells will be required, two in the kitchen passage, and another on the top landing. The front door bell to have a sheep gong 6 in. in diameter, and an indicator drop with mechanical replacement. The other bell in the kitchen passage, and the one on the top landing, to have a cast bell-metal nickelled gong, 4 in. in diameter. The bells must be of best quality and highly finished. They must be contained in solid polished walnut cases, with bevelled edges, covers with brass screws, large, high terminals and brass eyelets, all lacquered. The springs must be of the best tempered steel, and the contacts of platinum.

Indicators.—One fourteen-number indicator and one three-number indicator, each with mechanical replacement. They must be in walnut cases, dovetailed and fitted with plate glass and enamelled zinc fronts. The names of the rooms to be written on the zinc screens in black enamel. On the small screen:—Front door, best bedroom, kitchen. On the large screen placed in kitchen passage:—Back-door, hall, drawing room, &c.

Lightning Conductors.

A drawing has to be prepared showing exactly the path of the lightning conductor, and where points have to be affixed.

Specification for a church steeple.—**Conductor**.—To be of copper tape, 1 in. broad and ¼ in. thick; 110 ft. of it will be required. It must be fastened to the walls in the position shown in diagram by copper clips and nails. A copper coupling must also be provided to fasten the tape on to the elevation tube, and a copper saddle for the apex.

Elevation Tube.—To be of copper, 6 ft. long and 1 in. in diameter, screwed at both ends.

Points.—Elevation copper rod to have four sharp multiple points on it.

Earth.—The earth plate to be of copper 6 square feet in area and ¼ in. thick. The plate to be buried at the point indicated on

diagram and surrounded with a load of
or a country house, &c. —
galvanised iron rope $\frac{1}{8}$ in. in diameter
led run up two corners of the house, and
the highest points of the roof, single
is of iron nickel-plated being taken off at
various points marked in the diagram and
final care being taken to protect the kitchen
metal. The earth plate to be galvanised
to square feet in area and $\frac{1}{16}$ in. in thick.

GENERAL BUILDING NEWS.

ETHELREDRA'S CHURCH, FULHAM.—The first
ion of St. Ethelredra's church, which has been
ted on a site in the Fulham Palace-road, near
Bishop's-avenue, was consecrated on the 9th
by the Bishop of London. The portion of the
ch completed consists of three bays of the nave,
a temporary east end and choir fittings. The
re cost has been under 4,000l., and there is seat-
accommodation for 500 persons. The estimated
of the completed building is over 8,000l. Mr.
I. Skipworth, of London, is the architect, and the
ders were Messrs. Holloway Bros., of Battersea.
strations of the building appeared in our issue
May 18, 1895, when we gave a short description
he building.

NEW PRUDENTIAL OFFICES, SHEFFIELD.—The
New Prudential Assurance Company
occupy a corner site in Pinstone-street, adjoin-
St. Paul's-churchyard. The lower stage of the
ernal elevation consists of a colonnade of pilasters
mounted by an entablature which runs the whole
th of the facade. The frontage, which is five
rs in height, is composed of Edwards's red
icks and red sandstone facings, &c. There are two
cks, three on the left leading into the Prudential
npany's offices. The right hand entrance
ces access to a staircase and a lift leading
wards to a restaurant, and upwards to a
ies of offices (to be let off), and to the
ard and other rooms connected with the
stant. All the sets of rooms on the upper floors
nd directly of the staircase landing, and the pas-
ger lift communicates with the same landing on
very floor. The general contractors are Messrs.
orge Longden & Son, to whom, under the super-
ence of Mr. Thos. Haigh, the principal share of
he work has been entrusted. The other sub-con-
ractors are:—Plumbing and glazing, J. B. Corrie &
hield; sanitary fittings, &c., Morris &
n, Manchester; steel work in floors, Hand-
ys, Derby; cement stairs, A. Walker, Leeds;
ramic Mosaic floors, Craven, Dunsill, & Co.;
namental ironwork, Hart, Son, & Peard, London;
etric lighting, Belshaw & Co., London; tiling
d slating roofs, Proctor, Sheffield; heating,
hwell & Nesbit, Leicester; gannets, casements,
hical & Co., Brimley; ranges, hot plates, and
arbro' grates, Steel & Garland, Sheffield; orna-
ental ceilings and wood mantelpieces, Shuffrey &
h, London; locks and furniture, James Gibbons,
olverhampton; headlights, J. V. Kowland & Co.,
verpool; plastering, Hodkin & Jones, Sheffield.
he cost of the building and the land is 25,000l.,
he architects were Messrs. Alfred Waterhouse,
A. & Son.

THEATRE OF VARIETIES, PLYMOUTH.—The com-
tees of the Plymouth Town Council and the
nehouse District Council, have before them plans
of a music-hall. Messrs. J. T. Wimperis & Arber,
hitects, of London, have prepared the plans for a
ndicate. The frontage, including Thomas's Great
estern Hotel, and main entrance, are in the
rough of Plymouth, and cover over 3,000 ft. super-
icial, whilst the stage and main body of the
all, covering upwards of 10,000 ft. superficial, will
be in Stonehouse, the gallery entrance and the main
its being located in Phoenix-street. It is under-
ood that the proposed new hall will cost upwards
f 45,000l.

SUNDAY SCHOOL, KEIGHLEY.—The foundation
ones have just been laid of a new Congregational
unday School, to be erected at the junction of the
akworth-road and Fell-lane, Keighley. The new
ilding will include an assembly-room, 52 ft. by
0 ft., three class-rooms, and a kitchen. The
hitect is Mr. John Haggas, of Keighley. The
ove is estimated at 11,100l.

CHURCH SCHOOLS, BATH.—The foundation stone
as just been laid of new Church schools, Bath.
he new schools are to be erected on a portion of
he site of the old building and adjoining land.
hey will accommodate 730 scholars, and are
lanned in three departments, the infants occupying
he ground floor, the boys and girls being placed
bove. Each department will consist of a large
choolroom and two class-rooms separated from it by
lazed partitions. The school buildings throughout
will be heated by hot water. The plans have been
epared by Mr. C. Brvan Oliver, architect, and the
uilder are Messrs. Jacob Long & Sons, whose
ender of 5,274l. was accepted.

BUILDING IN PAISLEY.—A building boom has
been going on in Paisley for over twelve months,
nd on the 7th inst. seventeen plans were submitted
to the Dean of Guild Court. Most of the plans
were for large tenements and villa residences. Plans

were also passed for a new technical college for
Paisley, the estimated cost being 20,000l. The
building trade in Paisley was never so busy as at
present. There is not an idle mason, bricklayer,
joiner, or painter in the town.—*Edinburgh Evening
News.*

CONSTITUTIONAL CLUB, NOTTINGHAM.—The
foundation stones of the Nottingham and County
Constitutional Club, Market-street, have just been
laid. Mr. A. R. Calvert, of Nottingham, is the
architect.

**PROPOSED CHILDREN'S WING FOR LOWESTOFT
HOSPITAL.**—The Committee of Management of the
Lowestoft Hospital had before them at a recent
meeting the offer to erect a children's wing. Plans
were submitted by the architect, Mr. W. J. Roberts.
The designs are for a ward and six cots, and an
isolation ward containing two cots, together with
lavatories, bath-rooms, sculleries, &c. It is proposed
to build the wing at the west end of the hospital,
along Alexandra-road, taking up a portion of the
present garden.

SCHOOL, NEW SEAHAM.—On the 8th inst. a new
school for infants was opened at New Seaham, from
plans prepared by Mr. W. Forster.

GIRLS' SCHOOL, ST. CLEMENT'S, WORCESTER.—
Earl Beauchamp recently opened a new schoolroom
at St. Clement's Girls' School, Worcester. The
room added is 41 ft. by 25 ft., and is over the present
Infants' School, the roof of which was raised
14 ft. The work has been carried out by Messrs.
Jos. Wood & Sons, from the plans of Mr. A. H.
Parker.

CATHOLIC CHURCH, KIRBY, CHESHIRE.—The
foundation-stone of a new Catholic Church, which
will be known as St. Agnes Church, was
recently laid at Kirby. At present it is only in-
tended to build the aisles, nave, and transepts of
the edifice, at a cost of between 1,500l. and 2,000l.,
but eventually it is intended to build a presbytery
and to further extend the dimensions of the church.
The plans for the church have been prepared by Mr.
E. Kirby. The contractor for the building is Mr.
R. Allen, of Birkenhead.

EMPIRE THEATRE, GLASGOW.—The new theatre
which has been built by the Glasgow Empire Palace
Company, to take the place of the old Gaiety
Theatre, has now been completed. It is situated
in Sauchiehall-street and West Nile-street. The
plans were prepared by Mr. Frank Matcham. The
elevations are faced with Dumfriesshire freestone,
of a light red colour. The front to Sauchiehall-
street contains four shops, with show-rooms above,
and in the centre are the entrances to the principal
parts of the theatre. The building will accommo-
date altogether 2,158 persons, divided in the follow-
ing manner:—Stalls, 156; pit, 655; dress circle, 220;
upper circle, 377; gallery, 750; private boxes, 50.
The total expenditure on the reconstruction of the
theatre will be about 30,000l.

WESLEYAN SCHOOLS, LOCKWOOD, YORKSHIRE.—
Memorial stones were laid recently of a new school
at Lockwood, A.D. B. Stocks is the architect. The
chapel and new school adjoin the Lockwood Board
Schools.

ASSEMBLY ROOMS, &c., FEATHERSTONE, YORKS.—
The Directors of the Featherstone Assembly
Rooms and Institute Company, Limited, have
accepted the tender of Messrs. Jackson, Bros., con-
tractors, Goole, for the whole of the work. The
architects are Messrs. Garside and Keyworth of
Pontefract.

RESTORATION OF THIRSK PARISH CHURCH.—The
architect of the proposed restoration of the exterior
of St. Mary's at Thirsk and the Cathedral Church of
the Archdeaconry of Cleveland is Mr. C. Hodgson
Fowler, F.S.A., of Durham.

NEW TELEPHONE EXCHANGE, BIRMINGHAM.—
The new Telephone Exchange is situated at the
corner of Newhall-street and Edmund-street. The
site has an area of about 830 square yards, having a
frontage of about thirty-five yards to Edmund-
street, and about twenty-five to Newhall-street.
The building is one of four stories, and has been
executed in Ribston red brick and terra-cotta. The
facade is divided by bold piers, with decorative
treatment of the upper portion, which consists of
arches and gables ornamented with moulded terra-
cotta. The main entrance to the building is
through a wide arched doorway in Newhall-street,
which wrought-iron gates are being prepared by
Messrs. Brawn & Co. The Telephone Company
propose to lay out of the ground floor, where there are
eight rooms suitable for offices, and a group of four
rooms, with separate entrance in Newhall-street.
There are also six rooms which are proposed to be
let as offices upon the first floor. The remainder of
the building the company retain for their own use.
In the basement are the apartments of the local
keeper, and eight rooms allotted to the local
manager's staff. Upon the first floor the provincial
superintendent and the district manager will have
their offices, while the second floor is chiefly devoted
to the largest apartment in the building—the actual
"exchange" or switch-room. A portion of this will
be partitioned off as dining and recreation rooms for
the girls employed at the Exchange, but these,
when necessary, can be absorbed, so as to
increase the length of the switch room from
68 ft. to 95 ft. The apartment has a width of 40 ft.,
and will accommodate about 200 operators. There
will be lavatory and cloak-room accommodation,
and the operators will have their own private

entrance and staircase. The new building has been
designed by Messrs. Martin & Chamberlain, and has
been carried out by Mr. Thomas Rowbotham,
builder.

**PROPOSED ENLARGEMENT OF CHARTHAM
ASYLUM, CANTERBURY.**—A public inquiry was held
in the Board-room at Chartham Asylum recently,
by Mr. W. A. Ducat, the inspector appointed for
the purpose by the Local Government Board,
respecting the application by the County Council
for permission to borrow a loan for the enlargement
of the asylum. There were also present, amongst
others, Mr. Prosser, Clerk to the Kent County
Council, and Mr. Jennings, architect. Mr. Prosser
spoke in support of the application of the loan, the
amount of which was 44,000l.

POST OFFICE, WOLVERHAMPTON.—A new post-
office in Lichfield-street, Wolverhampton, has just
been opened. The architect was Mr. H. Tanner, of
the Board of Works, London, and the contract for
the work was entrusted to Mr. Henry Lovatt,
builder, Wolverhampton. The total cost is estimated
at about 15,000l.

TECHNICAL SCHOOL, LOWESTOFT.—At Lowestoft
Town Hall recently, Colonel Albert Smith, R.E.,
one of the Inspectors of the Local Government
Board, held an inquiry with regard to the applica-
tion of the Town Council for a loan of 5,000l. for
the erection of a new technical school. The cost of
the fittings, and apparatus will be upwards of
7,000l. Mr. G. W. Leighton, of Ipswich, is the
architect.

PRIMITIVE METHODIST CHURCH, HEeley.—The
Primitive Methodists in Ann's-road, Heeley, have
just built a new church, Sunday school, and insti-
tute. Mr. W. J. Taylor was architect for the build-
ings, Mr. J. Mason did the mason's work, Mr.
Thomas Lee the joinery, Mr. Braithwaite the
plumbing, Mr. Puttall the decorating, and Messrs.
Wright Brothers placed the installation of heating
apparatus.

CATTLE MART, BELFAST.—A new cattle mart has
just been built at Belfast on a site adjoining Stewart-
street and Stanfield-street. The length of the pre-
mises is about 300 ft., while the width is 80 ft.
The building was designed by Mr. R. I. Catwell, C.E.,
the contractors being Messrs. McLaughlin &
Harvey. Messrs. Misgrave supplied the heating
apparatus and fittings for the ring; the tyre fittings
were supplied by Messrs. Houston & Hamilton;
Mr. Galloway executed the painting, and the plum-
ing work was entrusted to Mr. Harrison McCloy.

**EXTENSION OF HEELY PARISH CHURCH, YORK-
SHIRE.**—The Jubilee of Heeley parish church, York-
shire, is being commemorated by an extension of the church.
The scheme now being carried out consists of the
erection of a south aisle, which will make the church
uniform, and provide accommodation for about 150
more worshippers. The length of the aisle is 66 ft.,
and the width 15 ft., and, wherever possible, the old
stones will be utilised. The porch has been re-
moved and rebuilt with necessary alterations. The
cost of the whole scheme is 1,200l. Mr. J. D.
Webster is the architect, and Messrs. J. Bee & Son
are the contractors. The woodwork is entrusted to
Messrs. J. Badger & Son, the plumbing to Mr. F.
Hickson, and the painting and decorating to Messrs.
Johnson & Appleyard, and Messrs. Newton,
Chambers, & Co. are providing the heating
apparatus.

SANITARY AND ENGINEERING NEWS.

THE OLDHAM WATERWORKS MANAGEMENT.—
The Waterworks Committee of the Oldham Cor-
poration have had before them a tabulated list of
the eighty-seven applications sent in for this position,
and now the number has been reduced to six.

The selected candidates are as follows: R. C. Frain,
C.E., Deputy Engineer of the Staffordshire Potteries
Waterworks Company; C. T. Lyman, Assistant
Borough Surveyor and Engineer, Aberdeen; C. J.
Batley, Assistant Waterworks Engineer, Bury; C.
Henzell, Resident Engineer of the Newcastle and
Gateshead Waterworks; W. A. Legg, Resident
Engineer of the Birmingham Corporation Water-
works, Rhayader; and A. A. Garside, Assistant
Waterworks Engineer, Cardiff.

NEW WORKS, ABERDEEN HARBOUR.—The
Harbour Board has resolved to erect two goods
sheds on Regent Quay, to be of two stories in height,
one 250 ft. long by 50 ft. wide, the other 150 ft. long
by 50 ft. wide. The respective costs are 6,565l. and
3,040l. The designs are by Mr. R. G. Nicol, harbour
engineer.

Mr. H. H. Wake, engineer to the River
Wear Commissioners, has been requested to advise
on the scheme of the resident engineer as to
Aberdeen Graving Dock.

ELECTRIC LIGHTING NEWS.

ELECTRIC LIGHTING, CARDIFF.—Alderman
Jacobs presided over a special meeting of the Cardiff
Electric Lighting Committee that was held at the
Town Hall, Cardiff, recently. A report was read
from Mr. Applebee with reference to the extension
of the electric lighting plant. Referring to ques-
tions, Mr. Applebee, electrical engineer, said that
the present plant, in addition to the plant now on

order, would supply power enough to light 17,000 lamps. The number of lamps now being supplied was 14,000, and they had orders which would amount to another 3,000, so that when the plant now on order was laid down they would only have had enough for present demands. In reply to further questions, the Engineer said that they had no spare machine in case of an accident happening. What he would really recommend was the purchase of two more machines, each capable of lighting 8,000 lamps. This would allow for a total output of 33,000 lamps. The makers of the best machinery were all so busy now that they would not be able to supply machines until twelve months after they were ordered. On the motion of Councillor Evans, seconded by Councillor Brain, it was resolved to instruct Mr. Applebee and Mr. Harpur, Borough Engineer, to go into the matter and present specifications, &c., as speedily as possible.

ELECTRIC LIGHT, BOSTON DOCK, LINCOLNSHIRE.—At a special meeting of the Boston Harbour Trust recently, tenders were received for the provision of an electric light installation at Boston Dock. The scheme was prepared by Mr. Adrian Collins, A.M.I.N.E.C.E., and includes the provision of eight arc lamps of 2,000 candle power, thirty-nine 10-candle power lamps for public lighting, and sixty-nine 16-candle power lamps for private lighting. Eight tenders were received, and that of Messrs. Spagnoletti & Crookes, of London, at 1,682l. 13s. 11d. was accepted.

FOREIGN.

FRANCE.—A small exhibition, composed of paintings and sculptures of animals, is shortly to be held in the Palais des Machines (Champ de Mars), where there is now a general agricultural competition going on.—A delegation of the "Société des Amis des Monuments Parisiens," under the direction of M. Charles Normand, architect, has just been examining the state of the church of St. Pierre de Montmartre, which the Municipality of Paris wishes to destroy. After a thorough examination, they have declared it quite possible to restore the building without a very great expenditure of money.—A new square is to be made in the centre of Paris, at the angle of the Rue Réaumur, the Rue d'Aboukir, and the Rue du Petit Carreau.—The Congress of Architects will be held this year from the 18th to the 22nd of June at Lille. The Congress will visit Lille, Roubaix, and Tourcoing on the 10th, 20th, and 21st. It is probable that two days will be given up to visiting Brussels and Antwerp.—Count Pozzo di Borgo has just offered to the town of St. Cloud the necessary ground to make three large streets near the Gare de Montretout. These streets will quite alter this part; the names to be given to them are Avenue Pozzo di Borgo, Avenue Crillon, and Avenue Montesquieu.—On Sunday last, at Clichy, the inauguration of the new covered market took place. It is built partly of iron, partly of stone, each façade has a large door ornamented with sculptures. The building does credit to M. Sichel, the architect, and estate agent of the town of Clichy. The cost has been 182,000 francs.—The municipality of Nancy is shortly to proceed with the rebuilding of the St. Julien Hospital. The cost is estimated at 1,040,000 francs.—The "Société Académique d'Architecture de Lyon" has just chosen, for the open competition this year, the following subjects:—"For architecture, 'A Circus';" for archaeology, "The Restoration of the Roman Amphitheatre at Fourvière."—A new line of railway is to be established in the Departments of Nievre and the Côte d'Or, between Corbigny and Saulieu, with an extension from Corbigny to Chitry-les-Mines.—It is announced that Alfred Lanson, sculptor, and Prix de Rome, only forty-seven years of age, has been seized with general paralysis, and has been placed in a "Maison de Santé."—M. Paul Giffard, engineer, to whom is due the invention of the freezing machines by the dilation of atmospheric air, has just died at Nice at the age of sixty.

GERMANY.—We understand that the fees for examinations held at the technical colleges of Prussia will be raised for all foreigners visiting the classes.—Particulars have now been published of the extensions intended at the State Hospital of Berlin, which is to undergo considerable alterations, and have better accommodation, both for the patients, and for the purposes of scientific research. On examining the long list of alterations suggested, it appears that the work practically means the entire reconstruction of this enormous block of buildings, excepting the section known as the "Women's Hospital," the Administration block, and the Barracks of Professor Koch's Institute.—Professor Herter has now obtained the commission for the Helmholz monument for the University garden, for which there was a limited competition among sculptors.—The historical building known as the "Old Post Office," in the Königstrasse at Berlin, is to be pulled down, and the site has been sold for 90,000l.—There has been a considerable rearrangement of the pictures at the National Gallery, and the halls, which have been closed for some considerable time, have now again been opened. Much of the sculpture has also been rearranged.—There appears to have been the same difficulty in obtaining

seats in windows overlooking the National Monument at Berlin on the occasion of the ceremonies, as will be the case in London for the Jubilee. The highest price paid for seats, however, is reported to be 5l. There were a large number of grand stands on which seats were obtainable for 1l.—Considerable alterations have been taken in hand at the Alexander-street Station at Berlin, which has long been too small for its purpose. A series of art-guide-books, known as "the German Glaciers," is being published at Leipzig, and the first volume on architecture has been issued. Herr G. Ebe, a well-known architect, is the author.—An exhibition has been opened by the Historical Society of Berlin, at which a number of paintings and mementoes of the Emperor William I. are shown; some of the portraits of Manzel, Lenbach, and Krueger are particularly interesting.—On the occasion of the special meeting at the Royal Academy held at the time of the ceremonies, the principal oration was by the Minister of Education, Herr Gossler, and treated of the advancement of the Arts during the reign of the Emperor William I.—The competition for the design of a bridge over the Elbe, near Hamburg, has been decided, and the first premium has been awarded to Messrs. Harkort, Schneider, & Thiel, the former being an ironfounder at Duisburg, the second a contractor of Berlin, and the last-named an architect practising in Hamburg. In the same way the second premium was given to the design signed by a contractor, a firm of engineers, and an architect, the latter in this case being Professor Steir, of Hanover. There was a very influential jury of assessors, under the presidency of Herr Baensch, of Berlin.—A competition has been opened at Goerlitz for the design of a new town hall, and 400l. has been offered in premiums.—A medal has been struck in connexion with the celebrations at Berlin last month, and it appears that the Emperor has ordered some five hundred thousand of these medals to be distributed amongst those who participated in the festivities.—A monument to the Emperor Frederick is to be erected at Wiesbaden, the sculptor being Herr Uphues. The Dowager Empress Frederick has visited the works of the founders, Messrs. Martin & Piltzing, to see the progress made, and the unveiling of the memorial will probably take place in October next.—Herr Max Broemel has been giving a lecture at Berlin on the various Continental exhibitions of last year, more especially as regards their financial aspect, which we have already explained was not very satisfactory. It would appear that six and a half million visitors attended last year's Berlin Exhibition, as compared with the thirty-two millions of visitors in 1886.—Budapest had three and a half million visitors, Geneva two and a quarter million, Nuremberg two million, Dresden one million, and Stuttgart half a million. Curious to say, the Stuttgart Exhibition was the only one financially successful in Germany, making a profit of 25,000l.—Messrs. Krupp, the great ironfounders, are about to take up ship-building, having lately bought the "Germania" Dockyard at Gaarden. These docks are to be considerably extended, and a permanent staff of 4,000 men will be engaged up to the present time Messrs. Armstrong have alone been able to build and arm a ship completely, but they will now apparently have a rival.—Messrs. Siemens & Halske, the great electrical specialists at Berlin, are to celebrate the fiftieth anniversary of their existence, including their branches at Vienna, at St. Petersburg, and elsewhere, there are 15,000 employees depending on their electrical trade.—The Government Architectural Studentship has this year been divided equally between Herr Strantzky, of Dresden, and Herr Werdelmann, of Breslau. The premium is awarded under the auspices of the Prussian Royal Academy, and has a value of somewhat over 500l.—In the *Centralblatt der Bauverwaltung*, we observe a somewhat belated article on the Peterborough Cathedral controversy, but we are pleased to find that the subject has been impartially treated, and the facts described with a better knowledge of our local requirement and peculiarities than used to be the case. There are a number of useful hints in the article, and, though we are afraid that there is an equal amount of restriction and practicality in Germany, we can certainly learn much from that country as far as the organisation of official control over public monuments is concerned, with its system of provincial custodians, &c.—The Boissonnet studentship of the Royal Technical College at Berlin has been awarded to Herr Paul Lehmann, a quæstor, of Muehlhausen; the subject is "The Development of the Modern Town Hall." His official residence is to be erected at Berlin for the Presidents of the Upper and Lower Houses of the German Imperial Parliament, and 50,000l. will be voted for the purchasing of the freehold of the new block.—A monument is to be erected as a memorial to the great German naturalist, Johannes Mueller. A site has been given for the purpose at Coblenz-on-the-Rhine.—A semi-official paragraph is being circulated in the German Press warning householders against the dangers of electric light installation, as a considerable number of fires have lately occurred in Berlin, either owing to bad workmanship or neglect.—Further alterations are to take place in the arrangement of the picture collections at the National Gallery at Berlin, and

the upper floor will shortly be closed for that purpose.—We regret to record the death of Mr. Arnold Borsig, a member of the great firm of ironfounders at Berlin, for whom Schinkel built the central works, a building with some considerable architectural pretensions. His death was caused by an explosion in one of his mines which he was inspecting.—The German Colonies Authorities propose building a church at Dar-es-Salaam, and a voluntary subscription has been organised for the carrying out of the Baurath Steinbrecht recently read an interesting paper upon the further development in the restoration of the Marienberg Castle at Berlin, and it would appear that considerable alterations will have to be carried out before the work is complete.—The National Monument to Emperor William I. which was lately unveiled, is again in the hands of the sculptors, who are completing the bas-reliefs.—We understand that Stettin is to have a Society of Architects and Engineers for members of the professions resident in Pommernania, which province has 1,600,000 inhabitants. At the provisional meeting sixty-five members entered their names, and M. Tobian was elected President.—We understand that the articles of Constantine Lipsius, who held the chair of Architectural Professor at the Dresden Academy on Semper's retirement, will be shortly issued as an illustrated publication.—We observe from our contemporary, *Deutsche Bauzeitung*, that one of the most popular positions advocated for the proposed memorial to the German soldiers who fell in the Franco-Prussian war is opposite the new Houses of Parliament, at Berlin.

AUSTRIA.—The gardens of the Horticultural Society at Vienna will probably be destroyed by the Municipality running a new thoroughfare over their grounds in connexion with the new street improvement.—The well-known central station of the Ambulance Association at Vienna will be pulled down this summer on account of various street improvements. This building has been considered to be a model structure for its purpose, and is planned not unlike a fire brigade station, as the horsed ambulances have to turn out with a few seconds' notice. The Szecheny monument is to be unveiled at Oedenburg during May.—A competition has been opened at Graz for a large sanatorium.—The very excellent exhibition buildings of the great exhibition held at Budapest last year are to be illustrated in a publication issued under the direction of Herr Zoltan Balaiz, a young architect who was associated with the arrangements of the grounds of a new Society of Austrian Artists will be formed at Vienna.—The proposed alterations of the thoroughfare around the historical Karl Church, already referred to in an earlier number, have now been practically settled, and it appears that the proposed street improvements will greatly add to the beauty of this part of the town, and give the church a far better aspect than has hitherto been the case.—At the Vienna Architectural Society the extensive improvement of Vienna continues to be the subject of considerable discussion, and at the first lecture of this month, when Herr Hubtz was the lecturer, these improvements around the Karl Church were very energetically discussed.—We recall the record of the well-known sculptor, Joseph Weitzmann, who was the oldest of the Vienna artists. He was particularly associated with the architectural bas-relief work of a number of important buildings.—Vienna is to have a monument as a memorial to Gutenberg, and the Emperor has subscribed 1,500 florins towards its erection.—A remarkable theft of valuable pictures from the Hungarian National Gallery is reported, and it would appear that the originals were replaced by copies, so that the theft was not noticed for some little time.—We hear of an interesting invention from Vienna of portable barrack buildings, of considerable lightness, which can be put together without the use of any tools, and we understand that these will be used for army and hospital purposes by the Austrian Government, to replace tents in many instances. The inventor is Mr. Bruemer.

THE INTERNATIONAL EXHIBITION OF ART AT VENICE.—The second of a series of International Art Exhibitions to be held at Venice every three years is appointed to be opened on the Saturday next, but as the usual difficulties are occurring in late arrivals, and proper location of a mass of exhibits, it may be delayed until May 2. The buildings in which it is arranged are the Palaces della Permanente and della Zecca (or Mint), where twelve large rooms have been prepared; the surrounding park has been embellished for the occasion by freshly planted gardens, many Italian kiosks, and other necessary additions. The sections are as follows:—Italian, French, Spanish, Belgian, Dutch, Russian, German, Austro-Hungarian, Anglo-Saxon (England, Scotland, America), Scandinavian (Denmark, Sweden, Norway), and Japanese. The last section comprises a private collection, and works which are coming direct from Japan. The prizes to be given are:—For the best work by an Italian artist, as previously exhibited, £400 (10,000 lire); by the Municipality of Venice; for the best work by a foreign artist, not hitherto exhibited, 400l., by the citizens of Venice; the Government of the province of Venice, and the Savings Bank, each provide 200l., and the Municipality of Marano 100l., for prizes for which Italian

foreign artists have the right to compete; the latter, Max Liebermann, offers a prize of 1000 francs to the artist of the provinces who obtains the highest number of votes in the provincial exhibitions, and the Communes of the provinces give 50 francs for Italian artists' competitions. With such incentives there is little doubt of the exhibition being completely successful. In sculpture, Butili sends a full-size model of the statue of a warrior, which is to be erected at Legaano. This work, which most imposing in its conception, and well worthy of the illustrious artist, has been anxiously expected many years. The work contributed by Enlilotti is a colossal Sampson.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS. Messrs. B. Cooke & Co. have removed their offices from Phoenix Wharf, Battersea, to 10, Victoria-street, Westminster.

LIVERPOOL CITY STREETS AND PASSAGES.—On the 8th inst. at the Liverpool Town Hall, Mr. E. P. Reid, Inspector of the Local Government Board, laid an inquiry into the application by the Liverpool Corporation for power to modify their building regulations so that new streets shall have a minimum width of 30 ft., and back passages a minimum width of 9 ft. Mr. W. Pierce, assistant Town Clerk, appeared in support of the application, and Mr. A. G. Cole for about seventy property owners, who opposed the proposed increase in the width of passages. Mr. Pierce, in stating the case for the Corporation, said that the existing bye-laws, framed under the Liverpool Sanitary Amendment Act of 1849, required all new streets to be of not less width than 30 ft., and back passages of not less than 3 ft., except when exceeding 100 yards in length. In the latter case the minimum width must be 4 ft. In 1865, when the boundaries of the city were extended, it was decided to extend the streets of West Derby, and to alter the bye-laws in force required a width of 30 ft. for streets, and 9 ft. for back passages; and similarly in Toxteth and Walton the least width of streets allowed was 30 ft., although there was no regulations as to passages. What was now proposed was to apply to the whole of the extended city the regulations as to streets and passages in West Derby, and to the districts of West Derby, in which these regulations had not involved hardship. He understood that the Liverpool Land and House Owners' Association, the Liverpool Architectural Society, the Liverpool Master Builders' Association, and the North Liverpool, Bootle, &c., Property Association, in June last held a joint conference to consider these and other proposals for the Corporation. Certain proposals of a contentious nature were taken exception to by these associations, and the Corporation had decided not to proceed with them. As regarded the width of streets, however, the conference approved of the minimum of 30 ft., provided the regulation applied only to new streets and not to the rebuilding of old streets. As to back passages, the same meeting agreed the 9 ft. width, provided the Corporation would adopt and maintain such passages in repair. These suggestions the Corporation agreed to, but the Local Government Board was of opinion that the adoption of the passages was a matter of arrangement between the Corporation and property owners. He was authorised to say that the Corporation would take care to maintain such passages if constructed to their satisfaction.—Several witnesses were then called for the Corporation. Mr. Boutinos, City Engineer, stated that 9 ft. back passages were desirable as facilitating scavenging, and as promoting public health. Mr. Steele produced plans with a view to show that the new regulation would bring the streets to a width of 30 ft. nearer, since the eaves of each row of houses were at an angle of 45 deg. from the foot of the backyard wall or the opposite row. It was, however, pointed out by Mr. Pierce that the amount of yard space, 150 square ft., was not to be diminished. Mr. T. T. Wainwright and Mr. T. H. Walker, architects, both spoke of the 9 ft. passages as conducing to nuisances, and the annoyance to tenants. Mr. F. Stewart, architect and surveyor to Lord Salisbury, and Mr. W. F. Beavan, house agent and auctioneer, gave similar evidence. Mr. Steph Wilson, as a property owner, also opposed the application as curtailing backyard space, and causing accumulations of refuse.

BRIDE'S ALLEY IMPROVEMENT SCHEME, DUBLIN.—The 7th inst. Mr. Charles Brian Smyth, C.E., Local Government Board Inspector, held an inquiry at the Dublin City Hall regarding the proposed Bride's-alleys improvement scheme. Mr. McCarthy, City Engineer, submitted a plan of the proposed work. The Corporation, he said, proposed to acquire the area between Nicholas-street and Bride-street, bounded on the south by Bride's-alleys, and on the north by the Church of St. Peter's. It was proposed to move the houses in that area, and to erect new dwellings in accordance with the plans submitted. The area was nearly three acres. In 1864 there were forty-four houses in the area comprised in the scheme, occupied by 800 persons. A great many of the houses had been razed since that time. The Corporation proposed to widen Bride-street and Nicholas-street, and to erect new dwellings in those streets and also in Bride's-alleys. Under the new scheme there would be 128 separate tenements, each of which would accommodate a family. Each

tenement would be provided with separate sanitary arrangements. The tenements would be, in his opinion, most suitable for artisans. Mr. Hartly, City Engineer, said that they were widening both Patrick-street and Nicholas-street. No objection had been taken to the scheme.

FEDERATION OF MASTER BUILDERS' ASSOCIATIONS, BRISTOL.—A conference of representative master builders of Bristol, the West of England, and South Wales was held on the 6th inst. in Bristol for the purpose of considering the advisability or otherwise of forming a Federation for the district. The chair was occupied by Mr. A. Krauss, President of the Master Builders' Association, who was supported by Mr. W. Church (Vice-Chairman), Messrs. G. Humphreys, C. A. Hayes, R. Wilkins & Son, and A. S. Scull; Cardiff was represented by Mr. W. Simonds and Mr. James E. Turner; Bath, by Mr. Jesse Hayward and Mr. C. H. Long; Weston-super-Mare, by Mr. W. Dyer and Mr. C. Addinot; Taunton, Mr. A. J. Speller; Bridgewater, Mr. J. Harris and Mr. W. H. Ketch. The Chairman, in opening the proceedings, said he had received letters from several other localities expressing sympathy with the movement. The meeting proceeded to the discussion of the rules for the Federation, the principles of which are conciliatory to the operatives, and provide that in all cases of dispute with them the Federation should do its utmost by arbitration or otherwise to avoid strikes or lock-outs. If the operatives refuse any equitable settlement of the dispute affecting any member of the Federation, the matter will be brought before the Executive Committee, and if they decide that the members affected are to be supported, each branch and every member thereof will do their utmost to bring the dispute to a successful issue. The general constitution will consist of a union of district associations connected with the building trade throughout the districts referred to, and also such individual members of the trade as are not members of any district associations. The mode of election of representatives and the government of the Federation were thoroughly discussed, and it was arranged that the rules as submitted at the meeting should be printed and circulated amongst the various associations, and that the first meeting of the Federation should be held in Bristol on May 18. A vote of thanks to the Chairman terminated the proceedings.

THE CITY COMMISSION OF SEWERS.—On the 13th inst. at the Guildhall, the Commissioners of Sewers held their usual fortnightly meeting, Mr. H. G. Smallman in the chair. The report of the Finance and Improvement Committee stated, "That having further considered their report of January 20 last relative to the proposed widening of the eastern and Widgegate-street, they again recommend that, as the London County Council declined to contribute towards the cost, no further action be taken in the matter, and that the vacant land belonging to the Commission on the north-eastern side of the new thoroughfare be now offered for sale by auction." After some discussion, the report was referred back to the Committee for further consideration. The Streets Committee reported, "That relative to the applications to erect a stand and balcony for June 22 in London House-yard and Gresham-place respectively, they recommend that the Commission refuse to consent to any such erections upon or over the public ways." Mr. Miller moved an amendment, and Mr. Deputy Dowling seconded, "That permission be given to Messrs. Hitchcock, Williams, & Co., London House Yard, to erect a stand," saying that the proceeds were to be given to several charities. Mr. Morton, M.P., objected on the ground that if their consent were granted there would be such a number of applications sent in that it would be impossible to grant all, and that they would be convicted of favouritism. After some further discussion, the amendment was rejected by a large majority, and a similar recommendation with reference to Gresham-place was also rejected, the report of the Committee being adopted.

THE ART UNION OF LONDON.—We are requested to announce that the Art Union of London, 112, Strand, has no connexion with any other institution professing to have the same objects.

NEW LIGHT RAILWAY, ABERDEEN.—The Light Railway Commissioners, after a local inquiry on the 9th inst., have passed the Great North of Scotland Railway Company's Scheme for a light railway to Skene and Echt.

ANCIENT CARPENTRY.—The British Institute of Certified Carpenters held a special meeting on the 3rd inst. at Carpenters' Hall, London Wall, to hear a paper read by the hon. secretary, Mr. T. M. G. Lloyd, on "Ancient and Historical Carpentry." Mr. Lloyd said that the oldest specimens of the craft were in the British Museum, one of them being an Egyptian door and the other a coffin.

PHOTOGRAPHY AND ARCHITECTURE.—A meeting of the Edinburgh Photographic Society was held in the Society's rooms, 38, Castle-street, on the 7th inst., when Mr. Hippolyte J. Blanc, R.S.A., delivered an address on "Photography as an Aid to the Architect." It was largely owing to the employment of the camera that the architecture of Great Britain during the last 25 years undergone such rapid changes. The architect shared liberally in the facilities for travel, and by means of the camera there had been brought under his notice excellent representations of what was best in the architecture of other

countries. It was chiefly as a means of instruction in itself, and as an education to others, that he ventured to advocate the architect making photography an indispensable study in co-relation to his art.

DISCOVERY AT THE GREY FRIARS MONASTERY, CARDIFF.—A very interesting find was made a few days ago at the Grey Friars Monastery, Cardiff, the ruins of which are being excavated on behalf of Lord Bute and under the direction of Mr. C. B. Fowler, architect. At the north-west corner of the church of the monastery, outside, but close to the north wall, there was found, about 4 ft. beneath the surface, some 200 pieces of original fourteenth century glass, which, no doubt, formed one of the windows of the church, and was bidden or thrown in a heap at this spot when the church was demolished. All the pieces have been carefully taken out.—*Hibern Mail.*

CRYSTAL PALACE SCHOOL OF ENGINEERING.—On the 9th inst. the distribution of prizes and certificates in connexion with the Crystal Palace School of Engineering took place. Mr. J. Head occupied the chair, and others present included Mr. J. W. Helms and Mr. J. Furness (examiners), Mr. J. W. Wilson (principal), Mr. J. Wilson jun., Mr. R. G. Hodgson, and Mr. Gardiner. In addressing the students the chairman said he would suggest that the students before him should take for their motto, "Noblesse oblige." Engineers should always endeavour to keep themselves like sharp instruments always in order and ready for work. Pluck was a most necessary attribute in their profession, and he urged them never to be discouraged by failure, for blunders taught them to avoid a repetition of failure. A vast field was open for engineering enterprise, and one which struck him was the opportunity for further utilising the energy stored in coal, of which only at present 14 per cent. was developed in the steam engine.

THE ELECTRICAL ENGINEERS' STATION DIRECTORY.—This is a useful publication for those interested in the application of electrical power in cities and by public bodies. The towns or localities are given in alphabetical order, and under each heading is a statement of the particulars of the system in use, with the area and population of the town or district served. A list is added of stations contemplated, and of applications for the current year; and a reprint of the Board of Trade regulations in regard to electric installations. The Directory is issued by Biggs & Son, Salisbury-court.

AMERICAN PUBLIC HEALTH ASSOCIATION.—This Association will hold its twenty-fifth annual meeting at Philadelphia on October 26 to 29 of this year. The Executive Committee have selected a number of subjects for special consideration. The following are those which will be of interest to our readers:—The Pollution of Water-Supplies; The Disposal of Garbage and Refuse; The Relation of Forestry to Public Health; Public Health Legislation; River Conservancy Boards of Supervision; Sanitation, with special reference to Drainage, Plumbing, and Ventilation of Public and Private Buildings; Existing Sanitary Municipal Organisations of the countries belonging to the Association, with a view to a Report upon the most successful in Practical Results. Papers presented later than nine o'clock a.m., of Monday preceding the meeting will not be placed in the programme, as the entire programme for the week will be printed on Monday preceding the first day of the session, which is on Tuesday. The Secretary is Dr. Irving A. Watson, Concord, N.H., and the Chairman of the Committee for local arrangements Dr. Benjamin Lee, 1532, Pine-street, Philadelphia.

THE GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE.—The undernoted buildings have been visited on the past five Saturday afternoons by the students attending Professor Gourlay's classes in architecture and building construction:—A new brick-kiln of the Hoffman type, at Seedhill, near Paisley; Mr. R. W. Forsyth's new warehouse, Renfield-street, Glasgow, by Mr. John James Burnet, architect, Glasgow; Miss Cranston's new restaurant, Buchanan-street, Glasgow, by Mr. George Washington-Brown, architect, of Edinburgh; Langside-road United Presbyterian Church, Glasgow, by Mr. John B. Wilson, architect, Glasgow; The New Art Galleries and Museum, Kelvingrove Park, Glasgow, by Messrs. Simpson & Milner-Allen, architects, of London. There was a good attendance at all these visits.

PETROLEUM LIGHTING AND CONSTANT SUPPLY.—A novel apparatus for regulating the supply of oil to several lamps from a common reservoir has recently been introduced by the Petroleum Lighting Syndicate, Limited, of 43, Cannon-street, E.C. In the case of a country mansion lighted by oil the reservoir is placed on the roof, and the whole of the pipes in the house are fed from it. To prevent overflow of oil in the lamps, a regulator is placed on each level, and will serve for every lamp on that level. Thus, suppose the lighting were arranged on six levels in the house, six regulators would be required. In the case of a single room, provided all the lights were on one level, in alignment with, or slightly below the regulator, only one of these latter would be required, but if the lamp brackets were at irregular heights from the floor, no two of them being on the same level, then as many regulators would be wanted as there were lamps. The system is particularly suitable for oil chandeliers. The regulator is of

simple construction, consisting of a float working in a closed cylindrical chamber through the medium of a column of mercury. The action of this float is automatic; it regulates the supply to the cylindrical chamber from which the oil is drawn by the lamps. These latter have no reservoirs, the oil being supplied to the wicks direct from the common regulator. The advantages of this system, which is certainly very ingenious, may be summarised as follows:—It obviates the necessity of supplying each lamp with oil, the whole being supplied from a common reservoir; it minimises the risk of fire or other accidents, as each lamp merely has a saturated wick, whilst there is no chance of explosion on lighting, or on turning the light out; the system is clean, and we could detect no smell from the lamps in a small room which had been lighted for several hours by seven lamps. Having to provide several regulators where lamps were not on a common level might, at first sight, be regarded as unfavourable to the system; but the regulators are remarkably cheap. The invention appears to be very useful.

BUILDING TRADES DINNER, MANCHESTER.—The annual dinner of the Building Trades Association of Manchester, Salford, and district took place on the 1st inst. at the Albion Hotel, Manchester. In the unavoidable absence of the President, Mr. Councilor Holland (Bricklayers' Association), the Vice-President, Mr. George Macfarlane (Joiners and Builders' Association), took the chair, and in proposing the toast of "The Lancashire Federation of Building Trade Employers," said they had the pleasure to have with them as guests that evening a deputation from the organisation referred to in the toast. Their object was to advocate the adhesion of the trades represented in the Manchester Association with the Lancashire Federation. The Council of the Manchester combination had already considered the matter, and looked favourably on the proposal. The demands made upon the employers in the various trades had become so frequent, and often so unreasonable, that the organisation on a wide and comprehensive scale for the purposes of defence was becoming more and more an urgent necessity, and it seemed to him that the scheme of the Lancashire Federation met immediate requirements and deserved general and unqualified support. Mr. W. Cuillière, in responding, explained that the Lancashire Federation was not antagonistic to the National Association, nor did they propose to invade in any degree the ground covered by the older body. They felt that a local combination covering a sufficiently wide area, and devoting itself exclusively to local interests, could render valuable services to the trades, supplementary to those rendered by the National Association. Nearly all the towns in the county had joined the Federation, and the only place of importance necessary to complete their organisation was Manchester. He made a strong appeal to the constituent trades of the Manchester Association to join the Federation. Messrs. Storrs and Tomlinson spoke to the same effect.

CAPITAL AND LABOUR.

THE BIRMINGHAM BUILDING TRADE.—Recent negotiations between Birmingham building firms and the builders' labourers have resulted in a rearrangement of working conditions. In the future the men are to be allowed time and a half for working on Bank Holiday, instead of ordinary time. Walking time is to be allowed at the rate of three miles when the job is two and a-half miles from Stephenson-place. An attempt was made to obtain time and a half pay after five o'clock instead of six as at present, but this was abandoned, and a notice of an advance of wages was also withdrawn after a comparison of the Birmingham rates with those paid in other towns.

STRIKE OF PLUMBERS AT SCARBOROUGH.—All the working plumbers in Scarborough, numbering about fifty, left work on the 3rd inst., with the determination not to return until the master plumbers would concede them an advance of one penny per hour on their present wages—7½d. Some time ago the masters offered their workmen one halfpenny (making eightpence per hour), but this would not satisfy the men.

STRIKE OF CARPENTERS AT TAVISTOCK.—Members of the Amalgamated Society of Carpenters and Joiners at Tavistock, on December 30 last, gave notice to their employers that on April 1 they would require an increase of wages to 6½d. per hour. The present rate is from 5d. to 5½d. an hour. Since the notice there has been some correspondence between the employers and the men, but no proposal having been made to the men, the men have gone out on strike in support of their demand. There are eighteen society men out, and a few non-union men are also keeping from work.

THE BUILDING TRADE DISPUTE IN DOUGLAS.—The Douglas joiners have sent notices to the masters for an advance of wages from 28s. to 32s. a week. This demand has been influenced through some of the Masters' Federation employing non-union men to do fibrous plaster work at 33s. a week, and boycotting union men. The consequence is that most of the latter are coming out on strike in support of those

who have been boycotted. The plasterers on strike have passed a resolution not to return to work until the joiners' question is settled.—*Liverpool Courier.*

LEGAL.

THE CLAIM AGAINST THE ST. PANCRAS GUARDIANS:

SUCCESSFUL APPEAL BY THE DEFENDANTS

THE case of *Drew Bear & Co. v. the Guardians of the Poor of St. Pancras* came before a Divisional Court of Queen's Bench, composed of Mr. Justice Grantham and Mr. Justice Wright, on the 13th inst. on the appeal of the defendants from the judgment of Mr. Edward Ridley, Q.C., the Official Referee delivered on the 17th ult. In this case it will be remembered that the plaintiffs, the trustees of creditors of Mr. Wm. Brooks, a builder and contractor of Folkestone, sued the Guardians of the Poor of St. Pancras and their architects, Messrs. A. & C. Harston for a balance of 24,226l. or, alternatively, 24,262l., alleged to be due on a contract for the completion of the St. Pancras Workhouse. The plaintiffs' case was that some years ago the Guardians resolved to reconstruct the Workhouse in King's-road and appointed Messrs. Harston as their architects. The contract for the work was at first taken by Messrs. Kirk & Randall, of Woolwich, but disputes arose and in 1892 that firm requested to be relieved of further work under the contract. Fresh tenders were then invited for the unfinished work, and that of Brooks was accepted for 50,861l. The work was to occupy fifteen months from May, 1892, but delays arose, and in November, 1894, the work was stopped. Messrs. Drew Bear, Perks, & Co., of Queen Victoria-street, who supplied the ironwork, Mr. H. Tolpatt, of Folkestone, who supplied timber, and Mr. J. Brown, of Cannon-street, who supplied bricks, sued on behalf of creditors for the balance alleged to be due to Mr. Brooks. The net cost of the work executed was stated to be on the first claim 65,479l., plus 10 per cent. profit, 6,547l., making 72,026l., of which 47,800l. had been received under the architects' certificates leaving a balance of 24,226l. In the alternative claim the net cost of the work executed was estimated at 65,479l., as before, but the 10 per cent. profit was reckoned on the contract price of 50,861l., which, with other amounts claimed, brought the alternative claim to 24,592l. The plaintiffs alleged that Brooks was hindered from continuing and completing the contract by the action of Mr. George Poole, the clerk of the works, who interfered without sufficient cause and condemned materials supplied wholesale. It was also further alleged that the architects were seldom on the works, and that the interference of the clerk of the works caused needlessly a net loss to Brooks of 2,526l. in addition to 193l. the value of the materials left by Messrs. Kirk & Randall, and not permitted to be used. The defendants generally denied the charges against the clerk of the works, and alleged that Brooks had not carried out his undertaking to complete the work left unfinished by Kirk & Randall. The Guardians further relied on the Public Authorities Protection Act, 1893, as being a defence, inasmuch as the matters referred to in the action occurred more than six months before the action was brought. Messrs. Harston, the other defendants, pleaded that they were not liable, and said that they had received no complaints from Poole with respect to the manner in which the works were being carried out by Brooks. The learned Referee decided that, inasmuch as the plaintiffs had failed to make out that Messrs. Harston had been guilty of fraud, dishonesty, or collusion, those gentlemen were entitled to judgment as against the plaintiffs, with costs. He, however, decided that the contract entered into between the plaintiffs and the Guardians, owing to the special circumstances of the case, had been set aside, and that the plaintiffs were entitled to *quantum meruit*, or, in the alternative, to substantial damages, to be ascertained at some future time, and he, therefore, gave judgment for the plaintiffs as against the Guardians, with costs. The Guardians now appealed from this decision on the ground that the judgment and the findings upon which it was based were erroneous in fact and in law, and that there was no evidence, or any sufficient evidence, to justify the learned Referee in finding either that the plaintiffs' contract with the Guardians was set aside, or that the plaintiffs were entitled to substantial or any damages, or to any allowances or allowances not duly provided for in the contract.

Mr. English Harrison and Mr. Wm. Moyses appeared as counsel for the appellants (the Guardians), and Mr. R. M. Bray and Mr. A. A. Hudson for the respondents (the plaintiffs).

At the conclusion of the arguments of counsel the Court allowed the appeal.

Mr. Justice Grantham, in giving judgment, said that he and his learned brother both felt that the case must go back or be re-opened, so far as it related to the action against the Guardians. He (the learned Judge) had read the judgment of the learned Referee very carefully, and he could not help feeling that throughout the learned Referee's own view of the case was that, owing to alterations in the contract—in getting possession of the site and so on—the plaintiffs were justified in claiming on

quantum meruit. The case of *Bush v. the Trustees of the Port and Town of Whitehaven*, which learned Referee felt bound by, in his opinion, did not apply to the present case. The circumstances of the case of *Bush v. the Trustees of the Port and Town of Whitehaven* were entirely different to the circumstances in the present case. There might have been some delay in giving the builder possession of the site which might have occasioned some expense to him, but he was bound to that he could not read the contract in any way suggested by Mr. Bray, viz., that Brooks was entitled to have the entire area given up to him absolutely, so that he could have the whole work in progress at the same time. He could see any justification for that. If there had been delay, and the contractor had been damaged by the contractor was entitled to damages for delay; but in his opinion there was no ground for claiming on *quantum meruit*. In those circumstances he thought that the judgment of the learned Referee must be set aside, so far, at least, as the question was concerned.

Mr. Justice Wright said that he was of the same opinion. The learned Referee had told them facts upon which he based his judgment; but it did not seem to him (Mr. Justice Wright), that he justified him in holding that the case of *Bush v. the Trustees of the Port and Town of Whitehaven* was applicable to the present case. In the case of *Bush v. the Trustees of the Port and Town of Whitehaven* there was abundant evidence to satisfy the jury that the plaintiff and the defendants permitted the works to go on under the understanding that the contract was to be under altered conditions. There was no suggestion of that in the present case.

Mr. Justice Wright said that the decision of the Court came to was that the judgment against the Guardians must be set aside, and practically there must be a new trial. The question to be determined was, what form the new trial should take.

Mr. Harrison said that he should like to go before another Referee.

Mr. Justice Wright remarked that he should like to think Mr. Ridley would care to try the case again.

Mr. Harrison said that he was ready to agree with his learned friend on a gentleman to try the case.

Mr. Bray replied that he should like to take the opinion of the Court of Appeal on the point that before the Court, and therefore the question of naming a gentleman to try the case would not arise at present.

In the result their Lordships ordered that judgment obtained by the plaintiffs against the Guardians should be set aside, with costs, there being a stay of execution for three weeks, with a view to the plaintiffs appealing from this decision of the Court of Appeal.

TYERMAN V. MARSLAND.

MR. DENMAN gave his decision at the Lambeth Police-court on the 9th inst. in the case of *Tyerman v. Marsland*, which raised a question of some interest to builders. It was an appeal by Tyerman, a builder, against a notice of objection served upon him by Mr. Ellis Marsland, District Surveyor, in connexion with some alterations which the appellant is carrying out at the "General Hospital," Park-road, Pocklington.

Mr. Passmore appeared for Mr. Tyerman, appellant, and Mr. Marsland conducted his own case.

It appeared that the public-house in question was used partly for the purposes of trade and partly for the purposes of a dwelling-house, and the notice served by the District Surveyor was based upon Section 2 of Section 74 of the London Building Act, 1894, which provides that in every building exceeding ten squares in area used in part for purposes of trade and in part as a dwelling-house, the part used for the purposes of trade or manufacture shall be separated from the part used as a dwelling-house by walls and floors constructed of fire-resisting materials, and that all passages, staircases, and other means of approach to the part used as a dwelling-house shall be constructed through of fire-resisting materials. Mr. Marsland relied upon Section 207 and 209 of the Act as connecting the building with Section 74. The first Section provides that shall not be lawful to make any alteration of a building in such manner that when so altered it will by reason of such alteration, not be in conformity with the provisions of the Act applicable to a building. Section 209 provided, "that every addition to or alteration of a building, and any other work made or done for any purpose in, to, or upon a building (except that of necessary repair affecting the construction of any external or party wall) shall, so far as regards such addition or alteration or other work, be subject to the provisions of this Act, and of by-laws thereunder relating to buildings."

On behalf of Mr. Tyerman, the appellant, I. Passmore submitted that the words "By reason of such alteration," in Section 207 entirely exempt the building in question from the provisions of Section 74, Sub-Section 2. He took it that Section 207 would apply to a case where the existing building had been less than ten squares in area or which had been used solely for the purposes of trade and solely for the purposes of a dwelling-house, and v

altered into a house which was to be used for the purpose of trade and as a dwelling, but in this case neither of such alterations being made. Practically the only alteration was being made was a direct staircase. A house alterations in the district of the County cell, and the question had never been suggested by any other of the District Surveyors. Denman, who had reserved judgment, said in opinion that the case was settled by the order under the earlier Act in "Scott v. Legge" (L.R. 10 Q.B. 355). The wording of the section of the Act is the same as that in the present case, and he has no reason for supposing that this Act was intended to apply to buildings which could not have dealt with under the earlier Act. The District Surveyor's notice would accordingly be set aside.—*Building Advertiser.*

REGGED BEGGING-LETTER IMPOSTERS

Bow-street Police-court, on the 6th inst., was Charles Stewart and Francis Stewart, father and son, of Waverley-road, Tottenham, were fined for obtaining money and goods by false names. Mr. Francis Thomas William Miller, an agent of Bedford Park, stated that on March 27, 1900, a prisoner went to him with a letter from another. The writer stated that he was in the prisoner's employment as foreman in 1885, and was just recovering from a severe attack of pleurisy. He represented that he had received an offer of £100, but had pawned all his clothes and tools, and was afraid he would be unable to accept it unless he could get his goods out of pawn. The writer complied with a pathetic reference to his little children. A witness afterwards found that the prisoner's name as to having been foreman was untrue, and the boy called again he was arrested. The prisoner was remanded for seven years. The prisoners remanded.

MEETINGS.

- WEDNESDAY, APRIL 22.
Children's Foremen and Clerks' of Works' Institution.—Monthly meeting of the members. 8 p.m.
Ingham Architectural Association.—Exhibition of drawings of old Scottish work by students of Applied Art, and notes on same by Messrs. Smith and Ransauy, next students.
Ingham Architectural Society.—Paper by Mr. E. Onon. 8 p.m.
THURSDAY, APRIL 22.
Institution of Electrical Engineers.—Continuation of session on Mr. A. K. Baylor's paper on "Recent Developments in Electric Traction Appliances." 8 p.m.
Sanitary Institute (Lectures for Sanitary Officers).—J. Wallace, "Peggs on Principles of Calculating and Cubic Spaces, &c.; Interpretation of Plans and Notes to Scale." 8 p.m.
London Institute of Architecture, Science, and Art.—W. McGregor on "Heating by Steam and Hot Water." 8 p.m.

RECENT PATENTS.

- ABSTRACTS OF SPECIFICATIONS.
1959.—ROOF LADDERS AND STAGING: J. R. Hamilton. Invention consists in (1) a roof ladder and staging, fitted with a propelling gear, which is portable and unattached to the building and requires no fixture to support it or assist it in its descent; and (2) a roof ladder and staging on which a person may stand and propel himself along the roof of a building, ladders, &c., without the use of any ladder track.
1963.—STOVES: E. Laroche.—Inventor claims a safety stove, comprising a hermetically closed body, in which combustion takes place, and which is provided with two petticoat closing doors; and an outer jacket, which is surrounded by the said inner body, and between which the inner body air entering from the outside of the stove is heated before passing into the same room, through a series of baffles, and various accessories for supplying air, and for admitting fresh air, &c., &c.
1968.—LATERAL MOVEMENT STAGING FOR BUILDERS, &c.: E. J. Palmer.—Invention consists in a mode of supporting cradles, boats, platforms, &c., with

capability of easy lateral adjustment from within, the same said means consisting of a wire rope extended horizontally by cantilevers, or other means of support, in combination with sheaved hangers or blocks running upon the said wire rope, and a hauling line or rope connected to said hangers and suitably guided.

19,374.—FLUSHING CISTERNS: F. Price.—Inventor proposes to provide a means whereby more than one flush may be effected from one filling of a cistern, if under any circumstances the supply from the main should be stopped, also, to provide means whereby the quantity of each flush may be determinable, adjustable, and equal, or nearly so. In order to secure these advantages, inventor provides a flushing system divided by a partition, so as to form a supply chamber and flushing chamber. The latter is partly filled by a hollow tank, at one end of which a siphon is connected for conveying the contents of the supply chamber to the flushing chamber. Means are provided for operating the siphon.
23,731.—CHIMNEY-TOP SMOKE-PREVENTER AND EXTRACT VENTILATOR: J. Erick.—The chimney top, constructed of any material, is a vertical shaft of 6 in. diameter, with its upper portion tapering to 6 in. at top. On this fits the extract ventilator, formed of nine curved louvers of semicircular section, spaced at intervals around shaft, and either vertical, tapering inward at top, or bell cut at any angle up to 45 deg., the point where the louvers surround top of lower shaft.

25,521.—DRAIN-PIPES AND TRAPS: R. C. Birtley.—Invention consists in (1) the introduction of a detachable cover joint to all sanitary pipes, &c., to secure a water-tight joint (2) each pipe can be laid and connected to the next one with Portland cement, &c., and the portion cut out of pipe forms a hand-hole to a thoroughly flush joint when laid, and a means for surveyor's inspection and (3) with detachable cover a broken pipe can be replaced without disconnecting or disturbing other pipes.

NEW APPLICATIONS FOR LETTERS PATENT.

- MARCH 20.—3,002, J. Pinnington, Sash Frame.—3,047, J. Brayton, Window Catches and Fasteners.
MARCH 20.—8,116, H. Lloyd, Sewers, Drains, &c.—8,154, F. Hon and J. Morley, Window Frame and Sashes.—8,210, A. Tillman, Ventilators.—8,211, E. Wollard and A. Walker, Window Opening and Closing Apparatus for Greenhouses.—8,228, J. Haskett, Anti-Rattling Devices for Windows.—8,229, J. Henock, Spring Hinges.—8,235, A. Habershon, Fireproofs.
MARCH 31.—8,267, J. Howden, Fireproof Floors.—8,263, L. Baxendale and W. Sinclair, Combined Hot and Cold Water Taps.—8,268, J. Sayers, Artificial Stone, &c.—8,274, G. Powell, Material suitable for Paving, &c.
APRIL 1.—8,357, A. Eldster, Door Holder and Stop.—8,358, P. Nicholls, Securing the Sashes of Windows when Open for Ventilation.—8,409, J. Hill and W. Egginton, Door Fastenings.
APRIL 2.—8,443, O. Howl, Carriages for Conveying and Drying Bricks, &c.—8,434, M. Alerno, Manufacture of Bricks, Tiles, &c.—8,441, L. Mondron, Plates of Glass Designed for Covering Walls, Ceilings, &c.
APRIL 3.—8,578, J. Hamlett, Jointing Collars for Earthenware and other Butt-Jointed Pipes or Conduits.—8,532, S. Holgate, Sawing or Cutting Stone, &c.
PROVISIONAL SPECIFICATIONS ACCEPTED.
3,266, R. Liftwich, Closet Sashes.—3,650, A. Fry, Water-tight Metal Bar for Glass Roofing.—4,535, G. Beck, Attaching Door Knobs to Spindles.—5,671, J. Hutchinson, Earthenware Pipes.—6,242, J. Vidal, Flushing of Water-closets.—6,275, W. Edwards and E. Runtz, Flooring and Floor Construction.—6,520, F. Chapman, Blocks for Floor Paving.—6,324, T. Sanderson, White Lead.—6,384, J. Kalls, Appliances for noiselessly Filling Flushing Cisterns.—6,385, J. Ralls, Discharging Apparatus, Connecting of Flushing Cisterns, &c.—6,545, G. Armstrong, Buffers and Fittings of Automatic Tilting Tanks for Waste Closets.—6,654, J. Johnson, Water Closets.—6,657, A. Parnacott, Water Waste Preventers.—6,759, A. Giblin, Flushing Cisterns.—6,833, W. Thompson, Gutter-head.—6,906, R. Eversed, Water Closets, &c.—7,017, W. Hewitt, Tiles.—7,093, T. Parker, Brick-making Machines.—7,157, W. Keys, Manufacture of certain Bricks, Tiles, &c.—7,258, S. F. Fildes, Window Fasteners.—7,262, F. Krenzin, Window Hinge.—7,320, W. Chappell, Joiners' Sash Crane.
COMPLETE SPECIFICATIONS ACCEPTED.
Open to opposition for two months.
7,293, J. Cowling, Drain Tests.—17,230, H. Schwartzman, Screw especially adapted for Stone, Brick, Plaster, &c.—25,795, S. McClellan, Bit Braces adapted for Boring Holes in Corners or Angles, or for other purposes.—26,654, O. Kramer, Process for the Production of a Material for making Floors, Plastering Ceilings, Walls, Roofs, &c., without Joints or Chinks.—1,926, H. Ilmer, Door Hinges.—2,425, W. Cliff, Glazed Bricks and the Manufacture of the same.—2,850, E. Haworth, Door-holder or Stop.

SOME RECENT SALES OF PROPERTY.

- ESTATE EXCHANGE REPORT.
March 29.—By LANGRIDGE & FREEMAN (at Tonbridge).
Tonbridge, Kent.—62 and 64, Shipbourne-rd., f. 1, £120
25 to 32, Garden-rd., f. 1,630
Canon-lane, enclosure of land, 4 a. 3 f. 13 p., f. 530
Hadlow-rd., two blocks of building land, 5 a. 1 r. 24 p., f. 1,810
Sevenoaks-rd., a building plot, 1 a. 1 r. 5 p., f. 200
Hadlow, Kent.—Golden Green, house and shop, 16 cottages, and blacksmith's premises, f. 1,470
March 31.—By ABERCROMBIE & EDMUNDS.
Gravesend, Kent.—1, Portland-villas, f. 400
By MARK LIELL & SON.
Bow.—17 and 17a, Wellington-rd., ut. 69½ yrs., g.r. 44, 108, f. 65.
Poplar.—5 and 6, Cotton-st., f. 1,276. 6s.
Leyton.—1 to 4, Arthur-st., ut. 82½ yrs., g.r. 20½.
Leytonstone.—Woodhouse-rd., three freehold building plots 480

- By ELLIS, MORRIS, & CO.
Hamstead.—Arkwright-rd., "Hurstleigh," ut. 80 yrs., g.r. 19½. 684s
By PROTHEROE & MORRIS.
Limehouse.—121 and 123, Court's-rd., f. 1, 48½.
Stratford.—2 to 10, and 12 to 32, New-st., ut. 27 yrs., g.r. 60½; also 11, New-st., f. 125
37, 38, and 39, New-st., f. 339
Stratford.—18, 20, 22, and 24, Windmill-lane, and 17, 19, 21, and 23, Waddington-st., ut. 53 yrs., g.r. 84, 108. 1,250
9, 11, 13, and 15, Waddington-st., ut. 53 yrs., g.r. 84. 499
Leytonstone.—11 to 33 (odd), 151 and 211, Harrow Green, ut. 33 yrs., g.r. 45½. 866
473 to 436 (even), High-rd.; also 147, 151, ut. 33 yrs., g.r. 35½. 890
Wanstead.—Chigwell-rd., "Holly Lodge," f. 1, 1,680
Gordon-rd., two blocks of building land, f. 1,810
Woodford.—Heron Hill, "The Stone Works," and 5, Squire's-cottages, f. 444. 6s. 755
1, 2, 3, 6, and 7, Squire's-cottages, f. 715
Wanstead.—1 to 19, Squire's-cottages, f. 1,150

- By TUCKETT & SON (at Stockton).
Stockton-on-Tees, Durham.—4, St. John's-rd., c. 1,304. 2,800
High-st., "The Unicorn" Inn, f. 1,200. 2,800
April 1.—By TOWNES, ELLIS & CO.
Bayswater.—20, Sutherland-ter., ut. 52 yrs., g.r. 124. 600
Waltham Cross.—1 to 4, Waltham Villas, f. 1, 654. 14s. 670
1, Putney-rd., f. 1, 136. 135

- By MERRETT & MOULD.
Wandsworth.—High-st., "The Antelope" Tavern, f. 1, 744. 5,120
Barnes.—High-st., "The Coach and Horses" Tavern, with shop and house adjoining, f. 1, 105½. 6,400

- By STIMSON & SONS.
Old Kent-rd.—1 to 19 (odd), Victory-pk., ut. 48½ yrs., g.r. 50½. 7,100
Clapham.—32, Hazlebridge-rd., ut. 65 yrs., g.r. 54, 108, f. 324. 250
Waltham.—20, Waltham-rd., f. 1, 85½. 1,490
263 and 265, East-st., ut. 46 yrs., g.r. 106, f. 65½. 320
97, Waltham-rd., beneficial lease for 204 yrs., r. 100½, with goodwill. 275
Barnesley.—95, Southwood Park-rd., ut. 37 yrs., g.r. 44, 108. 300
Peckham.—60, Hill-st., f. c. r. 50½. 600
1 to 11 (odd), Furley-st., ut. 50½ yrs., g.r. 34½. 1,100
10, Hazelmerer-st., ut. 74½ yrs., g.r. 26, f. 404. 335
63, St. Aidan's-rd., ut. 84½ yrs., g.r. 54. 200
Victoria Docks.—233, North Woolwich-rd., ut. 84½ yrs., g.r. 61. 185

- By VICTOR VAUGHAN.
Oxford-st.—No. 439, also 4, North-ter., ut. 10 yrs., g.r. 30½, r. 204. 1,150
Lambeth.—62, Waterloo-rd., ut. 26 yrs., g.r. 91, f. 65½. 575
Holborn.—Fetter-lane, f. g. r. 50½, reversion in 7½ yrs., ut. 100. 1,440
Richards Hill.—1 and 2, Russell-cottages, f. 50. 560
Poplar.—71, Christ-st., a profit rental of 60ol., for 14½ yrs. 620

- By TABERNACLE & SON (at Masons' Hall Tavern).
Oxford-st.—Binstead-st., "The White Hart" p-h., ut. 15½ yrs., r. 110½, with goodwill. 10,500
Shepherd's Bush.—Goldhawk-rd., "The Wheat-sheaf" p-h., ut. 35½ yrs., r. 290½, with goodwill. 26,150

- April 2.—By EDWARD MILLARD.
Belgravia.—St. George's-sq., &c., f. g. r. 30½, 168, 168 yrs., g.r. 29½, with reversions from 84 to 81 yrs. 8,650
Islington.—White Horse-yd., a set of stabling, ut. 85 yrs., g.r. rd., K. 204. 200

- By NOTLEY & CO.
City of London.—18, Fenchurch-bdgs, f. r. 240½. 3,300
By F. J. HUBLEY & SONS.
Barnesley.—415, Southwark Park-rd., ut. 48 yrs., g.r. 54, r. 404. 430
Rotherhithe.—4, Neptune-street, f. r. 22½, 28. 435
Deptford.—6 and 8, Bestwood-st., ut. 20 yrs., g.r. 36. 280

- By EDWARD WOOD.
Finsbury Park.—43, Palmerston-rd., ut. 68½ yrs., g.r. 61. 170
Wandsworth.—134, 136, and 140, Earlfield-rd., ut. 90 yrs., g.r. 214, r. 106½. 830
Penge.—15, Avington-grove, ut. 66 yrs., g.r. 84, r. 30½. 245
Croydon.—66, Clyde-rd., ut. 67½ yrs., g.r. 76. 305
Pinner.—15, Claverton-st., ut. 56½ yrs., g.r. 104, c. r. 204. 490

- By W. A. BLAKEMORE.
Updon Park.—1, 5, 7, 9, 11, and 13, Redcliff-rd., f. r. 156½. 1,500
April 5.—By J. W. KEASLEY, and another.
Woodford.—George-lane, "The Rookery," and another. 2,000
By MULLETT, BOOKER & CO.
Hyde Pk.—34, Gloucester-sq., ut. 39 yrs., g.r. 34½. 4,000

- By PERCIVAL HODSON.
Stoke Newington.—82, Farleigh-rd., ut. 67 yrs., g.r. 71, c. r. 42½. 375

CONTRACTS AND PUBLIC APPOINTMENTS.

CONTRACTS.

Table with columns: Nature of Work or Materials, By whom Required, Forms of Tender, &c. Supplied by, and Tenders to be delivered. Includes entries for Siphons, Street Works, Sewers, Wesleyan Church, etc.

CONTRACTS—Continued.

Continuation of the Contracts table, including entries for Alterations, Enlarging School Rooms, Iron Structures, etc.

PUBLIC APPOINTMENTS.

Table with columns: Nature of Appointment, By whom advertised, Salary, and Application to be made. Includes entries for Head Surveyor, Architect's Assistant, etc.

Those marked with an asterisk (*) are advertised in this Number.

Contracts, pp. lv. vi. viii. & xviii

Public Appointments, pp. xvi. & xviii.

Main table of land advertisements with columns for location, area, and agent. Includes entries for Kentish Town, Holloway, Hyde Park, etc.

LONDON.—For the purchase of materials for the repair of the roads and paths at Victoria Park, for the London County Council.—
 Flints, Hoggins, Shell, S. d. s. 11. s. 11.
 W. Gibbs 5 0 0 7 5
 L. Sommerfeld 6 10 5 5
 W. Griffiths 8 3 7 3
 * Accepted.

LYDIARD MILLICENT (Wills).—For the erection of a hospital for the Gricklade and Wootton Bassett Rural District Council, Mr. R. J. Bewick, architect, Fleet-street, Swindon.—
 H. Flewelling, Wootton Bassett £19,408

MILL HILL (Middlesex).—Accepted for the Cottage Home Scheme of the Linen and Woollen Drapers' Institution (inst. contract). Mr. George Hainthlower, architect, London, W.—
 Mr. William Tont, Hendon £19,408

PARSONSTOWN (Ireland).—For the erection of a residence, Clonally, Mr. James Kennedy, C.E., Parsonstown.—
 James Stone £500
 * Accepted.

PONDERS END.—For new workshops at Ponders End, Middlesex, for the Edison & Swan United Electric Light Company, Limited. Mr. Evelyn Hellier, architect.—
 T. Almond & Son £3,504
 Fairhead & Son £3,548
 Stimpson & Co. 3,500
 W. Cooper 3,397
 Perry & Co. 3,488
 E. W. Newman 3,397
 Wm. Grear & Son 3,737
 * Accepted.

PORTSMOUTH.—For the erection of a board school, for the Portsmouth School Board, George-street, Buckland, Mr. G. C. Verrenjakpen, architect, Whitlington Chambers, Southsea.
 Quantities by Mr. C. W. Ball, Southsea.—
 W. W. Evans £19,754
 W. R. Light & Son £19,594
 E. & A. Spriggins 23,232
 H. Cooke 19,580
 J. W. Perkins 20,070
 J. Cricknell 19,459
 G. Quick 19,849
 Hall 19,020
 H. Jones 19,797
 * Provisionally accepted.

PONTYFRIDD.—For the erection of school buildings, Lion Wood, for the School Board. Mr. A. O. Evans, architect, Post Office Chambers, Pontyfridd.—
 Alban Richard £11,444
 Morris & Thomas 12,964
 D. Turner & Son 11,434
 St. Smith 10,000
 D. Evans & Son 11,350
 W. Williams 11,973
 Cox & Burd 11,656
 Watkin Williams 11,800
 J. C. Richards 11,235
 St. Jenkins & Son 11,750
 Williams & James 11,670
 Wm. Davies 11,737
 Wm. Jenkins 10,984
 Arthur Steaton 11,741
 W. Thomas & Co. 10,150
 Williams Bros. 11,685
 Rowlands & Lloyd 9,050
 Rattray & Jenkins 11,611

SHEFFIELD.—For erecting new premises in High-street and Mulberry-street, Sheffield. Messrs. Flockton, Gibbs, & Flockton, architects, 15, St. James-row, Sheffield. Quantities supplied.—
 S. Anderson £78,948
 J. Bland £57,000
 J. Gourly 77,600
 Ash, Son, & Biggin 61,700
 J. E. Greenoak 75,000
 G. Longden & Son, Shef. 61,228
 G. Cave 57,381
 field 61,228
 * Accepted.

SNARESBROOK.—For building villa residence at Snarebrook, Essex, for Mr. Harry Jones. Mr. Joseph G. Needham, architect, 47, Powerscroft-road, Clapton, N.E.—
 W. Scott £2,920
 W. Lawrence £2,453
 R. & E. Evans 2,598
 W. J. Maddison 2,150

SNARESBROOK.—For building villa residence at Snarebrook, Essex, for Mr. Herbert G. Day. Mr. Joseph G. Needham, architect, 47, Powerscroft-road, Clapton, N.E.—
 W. Scott £2,300
 W. Lawrence 2,315
 R. & E. Evans 2,074

C. B. N. SNEWIN
 MAHOGANY, WAINSCOT, WALNUT,
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STAVERTON.—Accepted for additions to school at Landscope, Staverton, for the school committee. Mr. C. G. S. Acock, architect, Totnes.—
 Ash & Hill, Totnes and Staverton £370

SWINDON.—For building a skittle-alley, Ashford-road Club, Swindon. Mr. R. J. Bewick, architect, Swindon.—
 W. Chambers, Swindon £202

WEETON (York).—Accepted for the erection of a farmhouse and outbuildings, Haby. Mr. W. Bevers, architect, 25, Bond-street, Leeds.—
 Brickwork and Masonry. — J. & W. Dickinson, Timble Great, near Oley, £372 10 0
 Fencing.—H. A. Thomas, Idle, near Bradford 160 0 0
 Slating.—R. Hartley, Idle 61 0 0
 Plumbing.—J. W. Hemley & Sons, Leeds 26 0 0
 Fitting.—J. P. Neuman & Sons, Leeds 55 0 0
 Fanning.—G. Thomson, Leeds 22 10 0

WOODFORD.—For building two houses, Malmshury-road, Woodford, Essex, for Mr. J. T. Goswamy. Mr. J. G. Needham, architect and surveyor, Clapton, N.E.—
 W. Laurence £999
 H. Walls £839
 R. & E. Evans 599
 A. Edwards 793

WROUGHTON.—For the erection of house, bakehouse, stable, &c., for Mr. Phillimore, Wroughton, near Swindon. Mr. R. J. Bewick, architect, Swindon.—
 Lyddington & Selby, Swindon £606

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The Builder.

VOL. LXXII. NO. 239.

APRIL 24, 1897.

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St. Paul's Church.—Mr. M. H. Holding, A.R.I.B.A., Architect	Single-Page Ink-Photo.
St. Matthew's (Phillips Memorial) Church.—Mr. M. H. Holding, A.R.I.B.A., Architect	} Single-Page Ink-Photo.
New Wing, St. Andrew's Hospital.—Mr. Charles Dorman, Architect	
College-street Chapel.—Mr. W. Hull, Architect	} Double-Page Ink-Photo.
Shoe Factory.—Messrs. Mosley & Anderson, Architects	
Leather Warehouse.—Messrs. Mosley & Anderson, Architects	
Masonic Buildings.—Messrs. Ingman & Shaw, Architects	} Single-Page Photo-Litho.
Premises, Gold-street.—Mr. S. J. Newman, A.R.I.B.A., Architect	
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The Architecture of our large Provincial Towns.

VI.—NORTHAMPTON.



NORTHAMPTON is pleasantly situated on the southern slope of a hill in a bend of the river Nene, and claims to have existed before the Roman occupation. Of this direct proof is wanting; but there is nothing inherently improbable in the supposition, and as no one can disprove the claim any perhaps pass; especially as the question would hardly, in any case, affect the present architectural aspect of its streets. There are no Roman remains; the site is set to the north of the first defensive line of those invaders, and they never seem to have occupied it. The history of the town commences with a record of marauding Danes, who, notwithstanding its great distance from the sea base, occupied it for three or four years early in the tenth century, and burned it in the course of another raid about a century later. Whether the structures they destroyed, or those which more immediately succeeded them, had any sort of architectural interest we are never likely to know; probably not: there is no record of any building till towards the end of the eleventh century when the castle was erected by Simon de Liz, a Norman adventurer.

The foundation of this fortress," says James Mackenzie,* "is connected with the history of a bad Norman woman, the untutored Judith, daughter of the Conqueror's first sister, Adeliza." This woman betrayed the king the part taken by her English husband, Waltheof, in a conspiracy of some

of the Norman nobles. Waltheof, who was Earl of Northumberland, Northampton, and Huntingdon, was beheaded, and Judith was ordered to marry Simon de St. Liz, but refused on account of his lameness; whereupon her husband's property, including sixteen houses in Northampton, was confiscated and given to Simon.

This little domestic scandal was, architecturally speaking, the making of Northampton. St. Liz seems to have had the disease so dear to architects, the building fever. He not only erected a castle on the high mound by the river to the west of the now Royal borough, but, if tradition and certain chroniclers are to be believed, surrounded the town with embattled walls, rebuilt the Priory of St. Andrew, and erected the still existing churches of St. Peter and the Holy Sepulchre, besides endowing All Hallows, now called All Saints, and other churches with considerable landed property.* Whether he really did all this, or having gained a name as a builder was afterwards credited with some things he did not do, he at any rate made Northampton a place of considerable importance and a favourite stronghold of the Norman and earlier Plantagenet kings. During the twelfth and thirteenth centuries the castle was the scene of many picturesque and historic events, but in the fourteenth it fell into decay, and became, like so many others, merely a gaol, and so remained until 1662 when the greater part was demolished by order of the king together with the walls and gates of the town. The last traces of the structure were recently destroyed by the London and North-Western Railway Company, and their new station, a building of no architectural importance, now stands upon a part of the site. All that is to be seen at the present time is a wall next the street, on Black Lion Hill, built of some of the old stones, and, inserted in it, a pointed arch of plain squared masonry

which once formed the head of a postern gate.

The approximate position of the old walls may be detected on merely glancing at a map of the town, where it will be seen clearly marked by a continuous line of streets which runs from the gas works on the south, past the infirmary on the east, to the barracks on the north; the circuit being completed by the river on the west and part of the south sides. At the same time it will be noticed that the town, exclusive of detached suburbs, now covers rather more than three times the area of the mediæval borough, and that the greater part by far of the growth has been on the east side, between the racecourse on the north and the Billing road on the south. No particle of the fortifications now remains, and of the greatest of the other works attributed to Simon de St. Liz, St. Andrew's Priory, the name alone survives attached to a church built on a part of the site, near the north end of the old town, in 1841.

The church of the Holy Sepulchre was erected on the apex of the hill, to the north-east of the city and only just within the wall. The main piers and a large part of the outside wall of the circular nave survive, almost hidden externally between the later additions on the east and west (see sketch, fig. 1, for which we are indebted to a Northampton architect, Mr. Herbert Norman). The work is very plain, without any of the rich detail seen at St. Peter's, which is, no doubt, the origin of the suggestion that it was built about 1070, six years before the conspiracy which gave St. Liz, its reputed founder, the property, and a quarter of a century before the first crusade, which made this form of church popular, if, so far as France and England were concerned, it did not originate it. It seems unquestionable that the many circular churches of this age and similarly dedicated, including the Church of the Holy Sepulchre at Jerusalem erected during the Christian occupation, derived their form and arrange-

* It is said he also built Fotheringay Castle.

"The Castles of England; their Story and Structure," p. 30.

ment directly from the so-called "Dome of the Rock," built by Constantine over the supposed true sepulchre, and not merely in a general way to the sepulchral edifices of the lower empire, and that they were expressions of the prevailing idea of the age. St. Liz was a Crusader, and if he built this church he probably did so subsequently to his return to England after the fall of Jerusalem in 1099. Perhaps it was a thank-offering for his safe return: there is nothing in the work itself to suggest an earlier date. The columns in the circular church average about 3 ft. 10 in. in diameter, and, including the cap and base, are, roughly speaking, 14 ft. high; the central space is about 30 ft. across in the clear, and the surrounding aisle 11 ft. The arches, sharply pointed, and the octagonal wall upon them are of Perpendicular date and coeval with the small clearstory windows. The high tower arch, taking the place of the original west door, is also Perpendicular, and the arches to the aisles and to the later nave Decorated; the jambs, however, which carry the latter are Transition work.

The aspect of this interior, with its eight great columns, is exceedingly solemn and impressive, and before the insertion of the three Decorated windows in the outer wall the dim light must have made it far more so. In the massive rubble-built outer wall, 8 ft. up, are the remains of the string-course under the windows, and some indications of great interest and suggestiveness. The wall leans outwards considerably almost all round, and there are obvious indications of wide-splayed Norman windows having been built up; but more suggestive still is a set-off of 15 in. or 18 in. on the inside, at a height of between 4 ft. and 5 ft. above the springing of the pier arches, and about the same distance below the eaves. It seems clear that the aisle was originally covered with a barrel vault, springing above the heads of the semicircular pier arches (which would have had a rise of about 4 ft.), and probably heavily and clumsily built. The large windows may have been built up to strengthen the wall when this vault began to thrust it out, but without much effect, and eventually the vault fell, or was taken down. This must have happened during the round-arched period, for the smaller windows which took the place of the large ones, and one of which remains, are of that form, and so are those irregularly inserted and still existing in the wall above the set-off, in positions they could not have occupied while the vault remained. That there was, as usual, a chancel to the church, and that it occupied the position of the later rectangular nave, and was of the same width, is shown by the remains of the original windows in the north wall above the arcade. The height of these windows suggests that the floor may have been originally level with that of the circular part, and has been raised, necessitating the steps which now lead from one to the other.

The length of the chancel is indicated by the external corbel-table, still to be seen in its original position in the north aisle: on the south side it seems to have been rebuilt. A north aisle was added in the Transition period, for the responds of the arcade, with beautifully carved caps, remain. The second north aisle was built, and the pier and arches of the nave arcade renewed, apparently towards the end of the thirteenth cen-

tury, but the work is of the poor and clumsy kind which the men of even that period were sometimes capable of doing. The church was equally unfortunate in the Decorated period, when the south arcade was inserted or rebuilt in an extraordinary manner with piers and arches that are equally ugly, but do not in any other way accord with one another. Towards the end of this period, however, the nave arcades were lengthened by the insertion of a third arch on each side, and the three arches opening into the round church were rebuilt in a much better style; it was probably at the same time that the large windows in the round church were inserted. The tower and spire form a very telling piece of Perpendicular work, on account of its situation visible from many parts of the town and neighbourhood: the spire has the delicate outline and light effect so especially acceptable in such a feature, and its lines are cleverly continued to the ground by well-shaped angle buttresses. Its appearance is possibly none the worse at a little distance for the absence of the pinnacles, which have disappeared. The north aisle and eastern bay of the rectangular nave have been rebuilt, and a chancel with aisles and organ chamber added by Sir Gilbert Scott, in a rich and even rather florid manner. His fancy for parti-coloured material has found an outlet in the use of alternate courses and voussours of white Bath stone and the strong orange-coloured Duston stone of the neighbourhood; a combination not unpleasing in itself, but which contrasts in a rather too striking manner with the stern simplicity of the round church. If the architect of the work had not been Sir Gilbert Scott, some people might have been disposed to quarrel with the archaeological consistency of some of the mouldings and so on; but apart from the feeling that it is perhaps a little "overdone," no one can dispute its beauty. The woodwork, some of which is inlaid, is hardly more satisfactory than other conscientious efforts to apply early Gothic mouldings to wooden screens and stalls, but that only goes to show that most such efforts are mistaken. The church is surrounded by a large churchyard, and is well seen from all sides except the north. The western exit to Sheep-street is by a good modern lychgate, the woodwork of which is rich but rather thin looking.

If St. Peter's, the other Norman church of the town, which stands to the south-west of the position formerly occupied by the castle, and on the south side of the main thoroughfare from the west, was founded by the original Simon de St. Liz, he either did not proceed far with it, or his work has disappeared. The nave, which is apparently the earliest work remaining, must, unless we are much mistaken, have been built in the first part of King Henry the Second's reign, not earlier, that is to say, than 1150. It is one of the richest examples of Norman work in any parish church in the country, and in excellent preservation. The span is about 17 ft., and the length over 90 ft., exclusive of the tower; the aisles are barely 7 ft. wide, and parts of their outer walls are, no doubt, original, though they have been considerably raised, and are now pierced with Decorated and Perpendicular windows, and supported by buttresses of all periods. The arcades are of eight bays, of which the three at the east end no doubt always, as now, were

included in the choir. The first, third and fifth piers from the west end are clusters, with shallow sections of the inside shafts running up through the clearstory, supporting the roof principals, and dividing the nave into two double bays and a single one at the west end. The clearstory windows are small, symmetrically disposed inside, and worked into a continuous arcade outside, the other arches being blanks. The nave arches bear deeply-cut chevron ornaments; the caps, including the abacus mouldings, are richly carved, and the neckings cut into cables of various patterns; the plain shafts have moulded bands about halfway up, on which are also cable ornaments. It is noticeable that whereas the banded shafts are built of large drums, the others are in small stones, several in each course. The long, narrow nave and chancel, all under one roof, the solid style, and heavy, rich ornamentation, produce an effect of stability and magnificence combined, not attained by the builders of any other age with the use only of rough freestone and coarse workmanship. The west tower (fig. 3), opens to the church by an arch of the full width of the nave—wide that the thick tower walls have had to be thinned to get it in. It is of three orders richly carved on the face towards the church like the pier arches; and it is noticeable that the jamb shafts do not very well fit the positions, that the stone jointing against the side walls is bad, and that the wall over the arch projects over the clearstory window. Outside—apart from the belfry stage, which is of a different coloured stone, and obviously late workmanship—the indications equally point to the tower having been built at a later date than the body of the church, and of old materials; or that it has been rebuilt or largely altered. The finished workmanship of the banded masonry in the lower part, and the fact that it is carried across the ends of the aisle (which it fits badly); the wider and irregular spacing of the arcades, which continue those in the clearstory; the fact that this arcade is not carried across the west front, but that the stones of an enriched Norman arch of three orders are here built in instead; and the detail of the upper arcade, indicating another date of work altogether, are all noticeable. It would be rash to speculate positively, but it may be suggested that the nave and aisles were originally one bay longer, making three complete double bays; and that by accident or design this last bay was destroyed, and the tower built partly on the site, the old materials being used up. The arch stones built in over the west window no doubt belonged to the original west door, and the incised band which occurs only on the south side may have been the string over it. Sir Gilbert Scott took down the Perpendicular east wall of the church, and lengthened it by about 15 ft., building on what he held to be the original foundations. He found many fragments of original work and used them again with great skill in a new east wall, designed in a masterly manner in perfect harmony with the old work. The font is an exceptionally charming piece of Decorated work, an octagonal prism in form, and very similar in design and detail to the Eleanor cross. There is a good modern oak reredos framing a painting of the crucifixion, but Scott's screen-work is little more successful than that noticed at the Church of the Holy

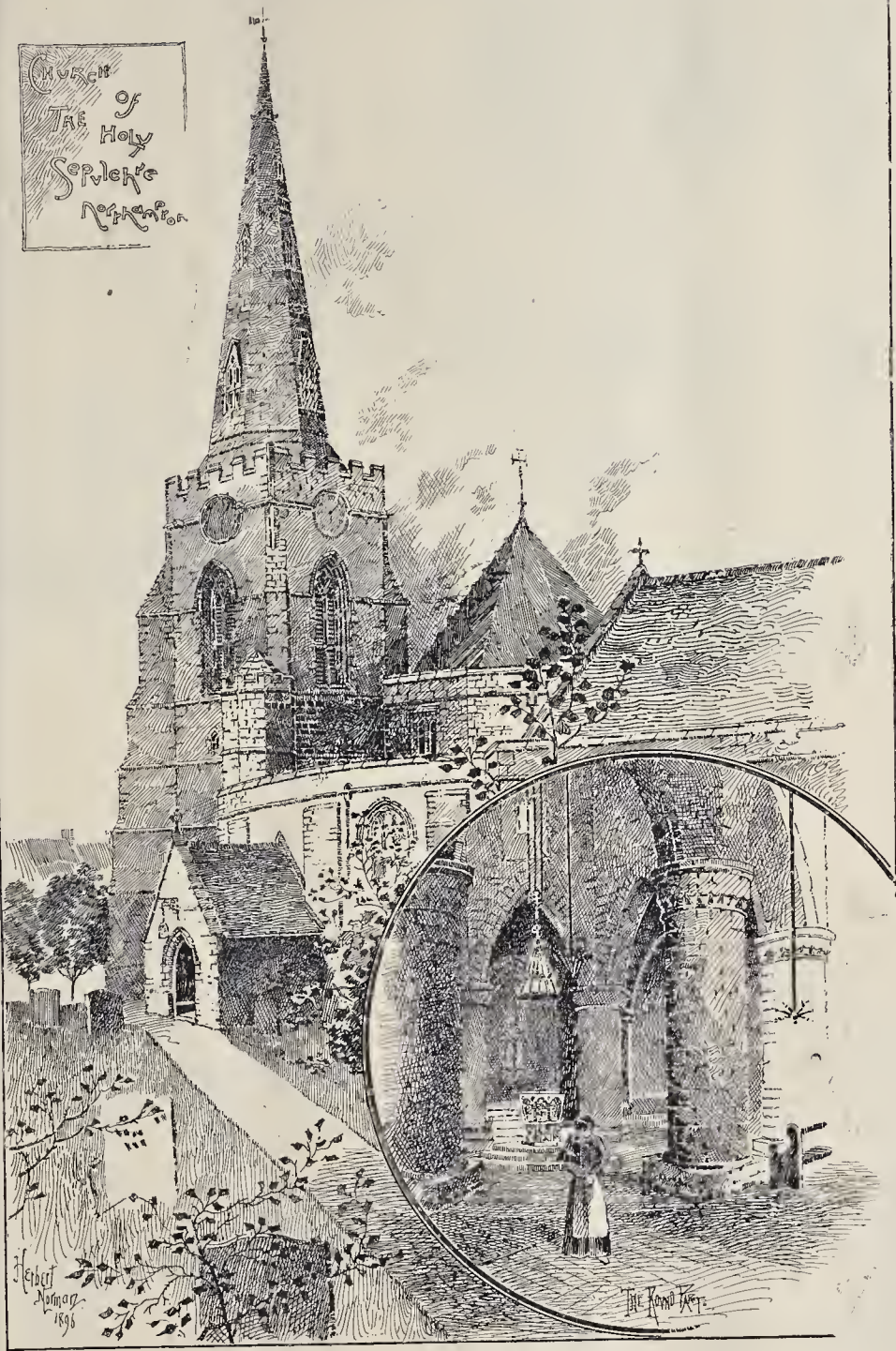


Fig. 1.

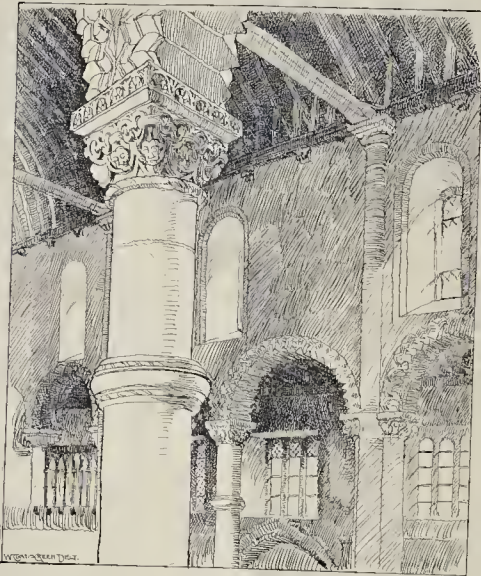


Fig. 2.—Sketch in interior of St. Peter's Church.

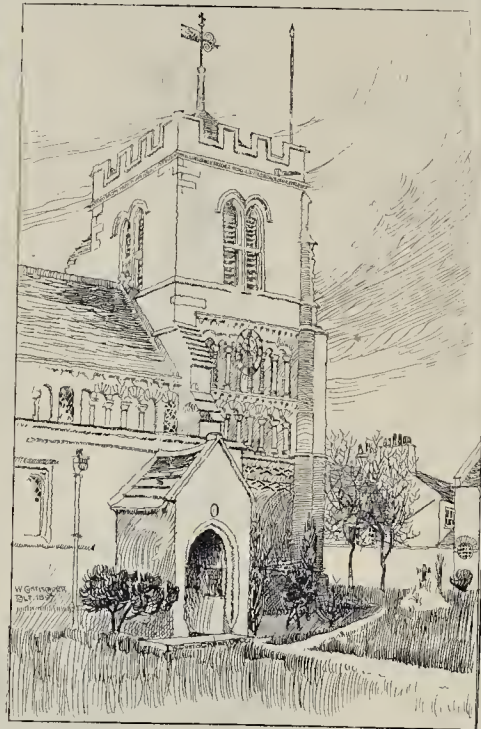


Fig. 3.—Tower, St. Peter's Church.



Fig. 5.—The Queen's Head, College-street. Messrs. Dorman & Stevenson.



Fig. 4.—Haselrig Mansion.



Fig. 6.

pulchre, and the timbers of the trussed
 ter roof look thin and paltry over the solid
 Norman stonework. Externally, the long
 e of the roof and clearstory arcades, and

the low solid-looking tower, are very satis-
 factory and restful.

Although not within the town, Queen
 Eleanor's cross is, after the two Norman

churches, the most interesting relic of
 mediæval Northampton architecture. It has
 been so frequently described and is so well
 known that no account of it is necessary.



Fig. 7.—The County Hall

It stands on a hill about a mile to the south of the town in an exposed situation beside the main London road, and has stood there, exposed to the weather and the chance of ill-treatment from mischievously-disposed travellers, for just over 600 years. Although erected between 1291 and 1294, it is in the fully developed Decorated style, and covered with delicate mouldings and carving. The top pinnacle with the cross is gone, possibly broken off by some Puritan iconoclast, but otherwise the monument is, all things considered, in a really marvellous state of preservation. The cusps of the niches are much decayed and two of the principal figures have each lost a hand; but the features are visible and one face is almost perfect; while all the rich foliage and crockets, the cresting, the pinnacles and the coats of arms, are still sharp and clear. Little appears to have been done by way of repair beyond a little stopping, apparently with Roman cement: it seems to owe its preservation only to the

good qualities of the stone and of the many generations of travellers on the road. The only other survival from the Middle Ages which is of much interest is St. John's Hospital, a little oasis, though possibly a damp one, in the architectural wilderness of Bridge-street. It is said to have been founded in 1138, but the two buildings of which it now consists appear to belong to the Early English period. They are both gabled structures, standing one at the side and the other at the bottom of a little courtyard. The former, the hospital proper, is now divided up by a floor and partitions, with irregularly inserted square-headed windows, but it appears to have been originally of one story only, and to have been entered from the end now, and perhaps originally also, abutting on the street by a doorway at present half buried by the raising of the ground. The Perpendicular windows at the further end of this building, as well as the west window and door of the chapel, are

insertions; the little turret on the chapel gable is modern, and is quite unworthy of its position. The only inhabitant at present is a caretaker. St. Giles's Church, a large cruciform edifice at the east end of the mediæval town near the walls, though dating also from the twelfth century, has been so frequently altered and so badly restored after the fall of the tower in 1613 that it is not now a very interesting building. St. Gilbert Scott found traces of no less than four roofs, including the seventeenth century one, erected when a great part of the church was rebuilt. His own restoration seems to have been very partial, and insufficient to add a modern interest. The chief remnant of the original structure are the west and north doorways and the eastern arch of the tower; the one lancet window in the sanctuary and the remains of two more are the most likely relics of the first alteration or addition. The church possesses a pretty little Jacobean pulpit.

The dawn of the Renaissance in Northampton is represented by the remains of two houses of the Elizabethan period. One of them, at the north-east corner of the Market-square, bears, besides some interesting coats of arms, the date 1595; which may well have been that of its erection or completion; and it is, without doubt, the one house mentioned as having escaped the great fire of 1675 that destroyed all the centre of the town. It has plain mullioned windows and three large dormers with ogeeables; but the front is now covered with a thick coating of paint, and has, besides, lost much of its beauty through the destruction of the ground story, in which were a characteristic doorway and bay window, now replaced by a modern shop front. The other, the house known as the Haselrig Mansion, on the south side of Marefair, the main western thoroughfare, is more interesting. It also is of two stories, besides three large dormers, but is said originally to have been longer and to have had five, a statement to which the greater width and importance of the existing easternmost dormer gives some support. The setting forward of the dormers on heavy corbels is peculiar and unusual, and the projection of the door and window dressings in front of the wall face is noticeable, though by no means unique; there is no feature one can point to in proof of such a theory, but the general appearance in some way suggests that the present form and details of the front are not original, but alterations of an older structure.

All Saints, the principal church of Northampton (fig. 6), situated to the south of the Market-place at the crossing of the main streets through the town, was destroyed, with the exception of the tower, in the great fire already mentioned, and instead of the cruciform Gothic edifice, there is now on the east side of the tower a Renaissance church with a square nave, strongly reminiscent in idea and detail of Wren's London churches, with some of the earlier of which it is contemporary, having been opened in 1680. The pendentives of the dome are carried by four finely proportioned stone columns with boldly carved Ionic capitals, and the plaster ceiling, of four elliptical vaults forming the arms of a cross and four bays with flat ceilings in the corners, is, as well as the dome, ornamented with bold, well-proportioned mouldings and rich modelling in high relief. The whole design is conceived in the large and simple manner and pervaded by the fine feeling for form and proportion characteristic of Wren and his school, and is worthy of more appreciation than the town, rightly proud of its two old Norman churches, seems able to spare it. The narrow chancel seems contemporary with the nave, and has some equally fine plaster modelling in the ceiling and good panelled dados of the same date on the side walls. It has been much modernised and spoiled, especially by injudicious colouring, the insertion of a sun-light of the usual pattern and an attempt to decorate the walls in harmony with the ceiling by covering them with modelled plaster ornaments, which, however, have not the scale, nor the relief, nor the fine form of the original. The one piece of good modern work is the reredos. Across the west front stretches a long portico, which may or may not have been a part of the first design for rebuilding



Fig. 8.

—it was not completed until Queen Anne's reign—but which adds a breadth and dignity to the front that would otherwise be wanting, and makes it worthy of its important situation. The inharmonious tracery in the windows is probably an insertion of the present century. The arches on the four faces of the old tower are remarkable; they look as if they must thrust out the angles, as indeed they have done to some extent, and one can hardly understand the builders of the Middle Ages erecting them. The cornice of the tower and all above it are parts of the rebuilding.

Another relic of the same period is the interior of the old Crown Court, at the back of the County Hall, which has a modelled plaster ceiling of similar but even better design and execution than that in the church, and bolection moulded woodwork, now quite black, with large raised panels and little well-proportioned Ionic columns. The County Hall, facing the south side of All Saints' churchyard, is another building of the same age, said to have been designed by Sir Roger Norwich, an amateur architect; a statement any credible explanation of which must shear away its strict veracity. The interior might perhaps have been the work of a skilful mechanic, though hardly of a gentleman amateur; but the exterior is obviously the design of an architect of more than average culture and skill, who knew very well not only what he wanted done but how to get it done, for the workmanship is as excellent as the design is dignified and pleasing. The building adjoining the County Hall in George-row, and now used as offices in connexion with it, is probably about a century later in date, and, some of the details of the one being imitated from the other, it is easy to compare the two, and to note the immense superiority of the older example. The order used in the later work has three-quarter columns of a curious flattened sec-

tion, which gives them a ridiculous appearance of being put upon a shelf where they have not room to stand. In the rear of this building is Mr. Edmund Lav's new County Council chamber, a semi-octagonal room with a high oak dado, surmounted by an arcade above which are a series of rectangular windows and recesses separated by pilasters, which in the corners become three-quarter columns. The seats and desks for the Councilors are arranged in a semicircle, with a raised dock for the public behind, facing the chair and Aldermen's bench, which occupy the long side; a well-arranged and well-lighted room for its purpose, but the ceiling is, perhaps, too much cut up by the panelling. In Market-square, the cornice of the Peacock Hotel and a couple of well-proportioned Ionic pilasters on the front of a house on the south side seem to mark the buildings to which they belong as having been erected soon after the fire, and one of the houses at the corner of Gold-street, now being demolished to make way for a new bank, was probably of about the same date; fortunately Mr. Herbert Norman has preserved the recollection of it in the sketch shown as fig. 8.

There are some relics of the eighteenth century in Sheep-street in several deeply-recessed doorways with the characteristic panelled linings, flanked by wooden columns and pilasters, and surmounted by pediments—such doorways as are almost always charming, partly because the details and proportions are almost always good. The same class of work, though of a poorer description, and some of it probably belonging to the early part of the present century, is to be seen in several parts of the town. But the best example is a small house in the upper part of St. Giles's-street—No. 71—a little two-story symmetrical brick building with deep bay windows, flush frames, quoins, and a good cornice and doorway.

The Greek revival of the present century

is only represented by two buildings in Northampton—the Northamptonshire Union Bank in The Drapery, by Mr. E. F. Law, and some business premises on the north side of Goldstreet. They are both important fronts with an order running through the first and second floors, and, if not very interesting, are distinguished by breadth, a fine sense of scale, and, on the whole, good detail. The Greek character of the bank is, however, rather marred by the incongruity of its rusticated basement and its balustrades. The front of the College-street chapel (see lithograph), built in 1862, has the same general idea in its design, but is without the refined detail, and is altogether rather "Palladian" than classic. The Corn Exchange, on the Parade, built in 1850, and the Capital and Counties Bank (Mr. E. F. Law) next to it, are still more frankly Renaissance in style, though there is still the same breadth and scale. The Corn Exchange has a Roman Ionic order *in antis* running through the upper floors with a rusticated ground floor, which, however, is disastrously weakened in effect by three great arches. The rich frieze and well-proportioned cornice are carried on across the bank front, which is the more satisfactory of the two, owing chiefly to its more solid ground story. It probably rather gains by the absence of the order, and the consequent increase of unbroken wall spaces. The corn market at the back of the Exchange building is a large bare hall of no architectural interest.

The principal monument in Northampton of the earlier Gothic revival is the little Roman Catholic chapel of St. Felix at the north end of the town, on the Kingsthorpe road, built by the elder Pugin in 1843 in the Decorated style. The details of the work are not perhaps calculated to entirely satisfy the critics of an age which has learnt so much about Gothic architecture since, but it is a remarkable proof of the mastery which that great leader had laboriously acquired over a hitherto unrecognised style. The great cathedral church added to the chapel by the architect's son in 1863 is, unfortunately, almost as remarkable for its lack of feeling. Nazareth House, the Roman Catholic charitable institution adjacent, though severe and almost prison-like in its aspect, is an admirable piece of work, in strong contrast with the trivialities of the cathedral, and dependant for its effect upon the simple and natural grouping of the windows and large dormers.

Northampton owes by far the most important of its modern architectural monuments, the Town Hall, to the Gothic revival. The eastern part of this building (see lithograph), which stands on the north side of St. Giles's-square, close to the centre of the town, was commenced in 1861 from the design of the late Mr. E. W. Godwin, and the western part in 1889 from those of Messrs. M. H. Holding, of Northampton, and A. W. Jeffery, of Hastings. Mr. Holding informs us that while Mr. Jeffery designed the internal arrangements, he alone is responsible for the street front. The building is two stories high (exclusive of the extra one in the tower and main gable), and the front, which is extremely rich in effect, is altogether fifteen bays long, of which eight belong to the addition. The general disposition of the original front is Italian, and the details are of the early French character popularised by Burges. It



Fig. 9.—House, Abingdon-avenue. Messrs. Mosley & Anderson.

is perhaps the most successful front of its class ever erected, and its success is obviously due to the resourceful expedients by which Godwin succeeded in retaining some of the best points in his Italian models, and in finding some compensation for what he was obliged to lose. The most important of these expedients are the broad recessed portico by which the deep shadow is obtained under three, at any rate, of the ground floor arches, and the long, strongly marked, horizontal lines, emphasised by the bands of orange stone, the Duston stone which gives so much warmth and variety to most buildings in the town. The great breadth of wall space in the upper part of the Italian buildings was unattainable in our climate, but the many curved lines of the window heads are carefully neutralised by the vertical masses of the statues and canopies. The projecting balcony to the centre window, which breaks the monotonous flatness of the front, though a small feature, is an important element in the general success. The carved panels, judiciously placed under the protection and in the favourable semi-light of the arch heads of the ground floor, are stiff and formal in design, and less decorative in effect than the fuller and more naturally carved panels of the later work. The tower is no doubt a failure; something of the kind was wanted in the position, but it need not have been so thin and commonplace. The best feature of Mr. Holding's work is the fine broad gable with flanking pinnacles, a good piece of design in itself, with which he has, as it were, echoed the tower. It is unfortunate that it was necessary to make a second centre to the front, but difficult to see how it could have been avoided, or how it could have been done with less injury to the general appearance of the building. The Town Hall itself is in the rear of the three easternmost bays and is a rather remarkable room. lofty, but not very large, it is almost bare of mouldings and carved ornaments, but richly and very successfully decorated with colour on the bare brickwork; and cleverly lighted by large circular openings in the lower part of the roof, which is in two slopes, the

lower one, in which the openings are forming a sort of mansard. The glass is grisaille with a little strong colour introduced, and has an extremely rich effect. There is a stage at the north end and an organ gallery at the other, both opening to the hall by semicircular arches. The decoration is graduated from dull and generally cold tones and simple forms on the lower parts to great richness in the roof, where it culminates in a fine series of coats of arms over the windows, surmounted by canopies and finials which branch out and spread up to the ridge. The general idea of the exterior of the building is carried into the corridors, staircase, and new Council Chamber, and would have a rather cold effect but for the large admixture of Duston stone with its warm tones. Mr. Jeffery's Council Chamber is a particularly dignified and characteristically Gothic apartment, with arched stone walls and a vaulted ceiling.

Next to the Town Hall on the west is a very successful office front by Mr. Holding in rubbed brickwork with flush window frames; a restrained, well-proportioned example of the so-called Queen Anne style which even the tawdry vases on the parapets cannot spoil. The Stamford, Spalding, and Boston Bank opposite (see lithograph), is a simple, dignified stone building of Renaissance character. Near this, in Guildhall-road, is the Opera House—a pretty miniature theatre by Mr. Phipps—with a narrow little street front, mainly taken up by a recessed portico of three arches, and in quieter and better taste than is usual with theatre architecture. In the old business centre of the town are singularly few buildings of recent date. The only one that calls for notice is the "Admiral Rodney" Inn in The Drapery by Messrs. Dorman & Stevenson, a building with a rough-cast top story and gables and a very wide bay window to the first floor. The picturesque elements of the design are well kept under control, and prevented from looking too broken up by long, strongly marked white wood cornices. In Goldstreet the most architectural modern building is No. 8, by Mr. S. J. Newman; a high gabled front with three quadrant cornered oriel windows running up through the first and



Fig. 10.—St. Edmund's Parochial Buildings and Mission Hall. Mr. M. H. Holding.

second floors, and a good doorway: with lighter and more elegant mouldings it would have been an exceedingly striking design. No. 14, at the corner of College-street Messrs. Dorman & Stevenson, is an effective piece of work with good detail and well-shaped gables (fig. 5), its balance rather upset by the very common mistake of making the angle turret too high and important. The quiet little front of the Grand Hotel opposite (see lithograph), by Mr. Chas. Dorman, is more dignified and less obtrusive than hotels usually are. Nos. 47 and 49, by Mr. Edmund Law, are two large glass shop-fronts, two stories high, with a range of windows and two large gables above. Such a façade could not be expected to be altogether satisfactory, but the upper part, crowded though it is with small detail, certainly has a very spirited effect. All the western part of the town, south of Gold-street to the river, and north as far as building extends, is a region almost entirely of small houses, relieved only by a few factories, and the usual allowance of schools and places of worship of various denominations. The older buildings of architectural interest have already been noticed. By far the best of the recent ones is St. Paul's Church (see lithograph), by Mr. M. H. Holding, at the northern extremity. The walls externally are of the hard, rough Kingsthorpe stone in thin courses, which gives an extremely pleasant surface and sense of scale, and it has well-marked vertical lines and character, with buttresses of good outline, and high,

narrow windows; the detail is of the Decorated period, and the tracery in the window heads is a little too crowded; the interior is as lofty in effect as the outside, and it is altogether a very satisfactory building. In the north-eastern district, near the Militia Stores, is the Military-road school, the best and one of the most recent of the Northampton Board Schools. It is a one-story building, chiefly remarkable for its satisfactory and symmetrical grouping. St. Lawrence's church, in Duke-street, is a red brick structure with lancet windows, unremarkable outside but very satisfactory in the interior, which has a fine spaciousness to which the lofty clearstory largely contributes: the aisles are merely passages, a rather extravagant arrangement, but generally effective. In the same street, and not far off at the corner of Newland, are two new factories by Messrs. Mosley & Anderson (see lithograph), which are good examples of the use that may be made of very simple elements of design, chiefly in these cases large wooden mullioned windows with elliptical relieving arches over them, slightly projecting piers, a broad band of white stone and a cornice introduced where most useful. They are evidently inspired by Dutch examples. In the same direction, but nearer the middle of the town in Wood-street are the offices of Messrs. Birdsall & Son, designed by Mr. Thomas Garratt, a little over full of features but exceedingly well grouped, in good taste and with excellent detail. Abington-street is fast becoming the most

important one in Northampton, owing to its being the main thoroughfare to the new quarter which has grouped itself about the Kettering and Wellingborough roads. In passing up it the first building to notice is the Masonic Hall, a structure of the heavy aggressively Gothic type of which the world has rather tired. No. 9, a little two-storied front in rubbed brick and stone, better suits the taste of the day, and is a very pretty, well-balanced production; it is a pity the end windows could not have been kept further from the corners. The Post Office is not an inspiring structure; but in Fish-street, which connects Abington-street with St. Giles's-street, are two recent buildings, the new front of the Working Men's Club, and the "Fish Inn" (Mr. Fred. Dorman), that are worthy of mention. The former is only a narrow strip that owes its success mainly to the artistic lengthening of the vertical lines of its first-floor windows to balance the strongly-marked horizontal band under them; but it is altogether very well arranged and detailed. The "Fish Inn" is similar in character to the "Admiral Rodney" in The Drapery, and not much less successful, but the windows take away too much of the wall surface, and the angle turret is tall and upsets the balance. Returning to Abington-street, the most important building in it, and one of the largest in Northampton, is the Convent of the Sisters of Notre Dame; an immense mass of white bricks, in the erection of which, unfortunately, the architecture seems to have been forgotten—unless the porch is meant

for a sort of aside to the effect—"This is a Gothic building." Goodyear Chambers, at the corner of Lower Mounts, by Mr. Edmund Law, has some architectural pretension, and the new porch and front of the grammar school is not wanting in merit. At the entrance to Abington-square (with the exception of the market all the squares in Northampton are triangles), on the north side, are two new office fronts, the first of which is a pleasing piece of work and, if compared with the other, is an object lesson in the aesthetic advantage obtained by dividing up window space. It is almost all window, the piers being of the smallest, but owing to the use of mullions and transoms the excess does not offend the eye as in the other. At the corner of Abington-avenue a very pleasing quietly-treated little house is to be noted (fig. 9), by Messrs. Mosley & Anderson. In Abington-square, where the roads to Wellingborough and Kettering part, is a terracotta statue of Mr. Bradlaugh, his coat-tails appropriately supported by a stump. On the Wellingborough-road the only architecturally interesting buildings are a charming little mission hall, attached to St. Edmund's Church (fig. 10), and Messrs. Mansfield's shoe factory. To the former Mr. Holding acted as honorary architect; it is built with the thin courses of rough stone used at St. Paul's and in his other churches, and has genuine half-timbered gables and richly traceried barge boards. Inside, the roof is carried on stone arches instead of principals, an arrangement which seems a rather useless affectation. The building altogether is an extremely satisfactory one but we do not know that the stone arches have much to do with this result. Messrs. Mansfield's factory (Mr. Chas. Dorman) is the most architectural in Northampton; in its external symmetrical grouping and details it rather recalls the Military-road Board school. The middle block is of two stories, however, with three broad gables. The style is quasi-Jacobean. Perhaps the best bits of design are the neat little detached lodges at the ends.

At the first corner in the Kettering-road, where it turns towards the north, Mr. Dorman is erecting a new Unitarian chapel. The scaffolding has just been taken down, and reveals a very good piece of design in the "flowing" Decorated style, the rich octagonal bell-turret being especially good. It will be the best piece of Nonconformist architecture in Northampton. A little off the road, just short of the racecourse, is St. Michael's Church, by Mr. George Vials, a low, short, broad-proportioned, aisleless edifice with double transepts, in the lancet style, cleverly planned for congregational purposes, and not ineffective internally. Opposite the racecourse are a number of new houses of the better class, similar in their character and variety to those now erected in the neighbourhood of all large towns. One or two of them are good of their kind, but hardly call for special notice. At the extreme end of this district is the largest and most important of the modern churches in Northampton, St. Matthew's, by Mr. M. H. Holding (see lithograph). It has the same aspiring lines and lofty character as St. Paul's, and is faced externally with the same pleasant rough material, but the detail is very much more elaborate and the window tracery more successful. Internally the facing throughout is of white Bath stone,

which has a somewhat cold effect; the nave and aisle roofs are carried on stone arches crossing the space from side to side, very light but still too massive-looking for what they have to support. The apsidal choir is vaulted in stone, and there is a vaulted baptistry under the west gallery. Though some of the architectural detail is rather wanting in interest and character the general effect is very good. The alabaster altar table and font are good and very elaborate pieces of work, and the wrought-iron screens are excellent. In St. Giles's-street there are some good "Queen Anne" houses by Mr. Holding; one of them, 71A, is especially quiet and pleasant looking. Along the Billing-road, beyond the bare uninteresting infirmary, is another modern residential quarter where there are a few houses of some architectural merit, the most interesting being a house by Mr. E. W. Godwin, a very clever attempt, perhaps the best ever made, to carry out the great idea of the Gothic revivalists; that is, to do as the builders of the thirteenth century might have been expected to do if faced by modern problems. It is notable that the windows are square-headed and without mullions, and that there is no gable to the front (though there is a very high-pitched one at the side); the main feature is a very high-pitched hipped roof, with a large chimney stalk crossing its ridge, and overhanging eaves cut through by a small dormer, which has also a hipped roof. Nestling up against this main block, and intended to balance the large dormer of the wing on the other side, is a circular turret, but a small and subordinated one—not the great aggressive mass which other architects have used with disastrous effect in similar cases. One must not omit to mention the Chapel of St. Andrew's Hospital in the extreme west, a small but very beautiful example of Sir Gilbert Scott's style.

The suburbs beyond the river have little of architectural interest in them beyond another good church, St. Mary's, by Mr. Holding. Northampton is extending mainly towards the north and east, over the hill, and the low land on the south and west is only coming into use very slowly and for poor districts.*

NOTES.

Vitruvius Disestablished. AFTER being taught to doubt the personal existence of Homer, and to question whether Shakespeare was the real author of the plays given under his name, one cannot be surprised to find that the sceptical criticism has extended to architectural works, and that the book ascribed to an architect of the Augustan era named Vitruvius is now stated to be a compilation of the third century fictitiously dedicated to Augustus. This is the view of a Danish critic, Professor Ussing, in reference to which Professor Aitchison contributes a comment to the *Journal* of the Institute, and another to the *Athenæum*, the latter with the object of inviting the opinion of learned Latinists as to the evidence of date afforded by the language and style of "Vitruvius." Professor Ussing's strongest point is his assertion that chapters 19 and 21 of "Vitruvius" are translations from Athenæus,

* The next of this series of articles, on the architecture of Leicester, will appear in our issue of June 5.

a writer of the third century; we have not yet had the proof of this; but if it is proved Professor Aitchison suggests the explanation that these chapters may have been subsequently added to or bound up with the original work. It will be interesting to see what Latin scholars have to say on the philological aspect of the question; but we are not inclined to feel very much faith in Professor Ussing's destructive criticism, regarding it rather as one more instance of the prevalent passion in the present day for reviewing old literary creeds of every kind coupled with the desire of scholars to have each a new theory of his own. In the meantime we may say that there appear to us to be two points of internal evidence decidedly in favour of Vitruvius. One is, the unaffected and genuine character of the reflections in the Introductory chapter which seem written far too much in earnest to be the writing of a literary forger acting in part. Another point is, why does Vitruvius in speaking of circular buildings in Rome omit all mention of so remarkable and prominent a building as the Pantheon? As we now know for certain that the Pantheon was not (as formerly supposed) the work of Agrippa, but of Hadrian, this omission of it is quite explained on the received theory of the date of "Vitruvius" as the Pantheon was not then in existence. An architectural writer in the third century, with his attention chiefly directed to Roman buildings, could hardly have ignored it.

German Post-Office Architecture.

By the death of Dr. Von Stephan, the popular Post-master of Berlin, who has been the supreme authority in all postal matters in the German Empire since 1870, Germany loses not only an energetic post-office manager, but also one who takes interest in the architectural treatment of the various buildings erected under his rule. It was part of Dr. Von Stephan's ambition to have his Department effectively represented by buildings of architectural pretensions. The Italian Renaissance style was advocated by him for all larger towns, whilst Pomeranian brickwork was used for the post-offices in all minor localities. Though much of the work was done by a special Office of Works, belonging to his Department, he was much in favour of placing commissions in the hands of local architects, sometimes arranging limited competitions. The result of his work is that Germany has the finest set of post-offices in the world, not only as regards practical planning, but also in respect to their architectural treatment. We may add that the new General Post Office building at Berlin, which will be ready in a few weeks, will contain an Architectural Museum, with drawings and models of nearly every post-office in Germany.

Mycenæan Remains.

THE Swedish archaeologist, Dr. S. Wide, has been conducting excavations at Aphidna, in North Attica, which promise to add an interesting chapter to the history of "Mycenæan" civilisation. The ancient Aphidna, which Demosthenes mentions ("De Corona," 238) as one of the five most important fortified places of Attica, is a rocky plateau, rising abruptly out of the surrounding plain to a height of 365 metres above the sea. It is known to the modern Greeks as Koroni.





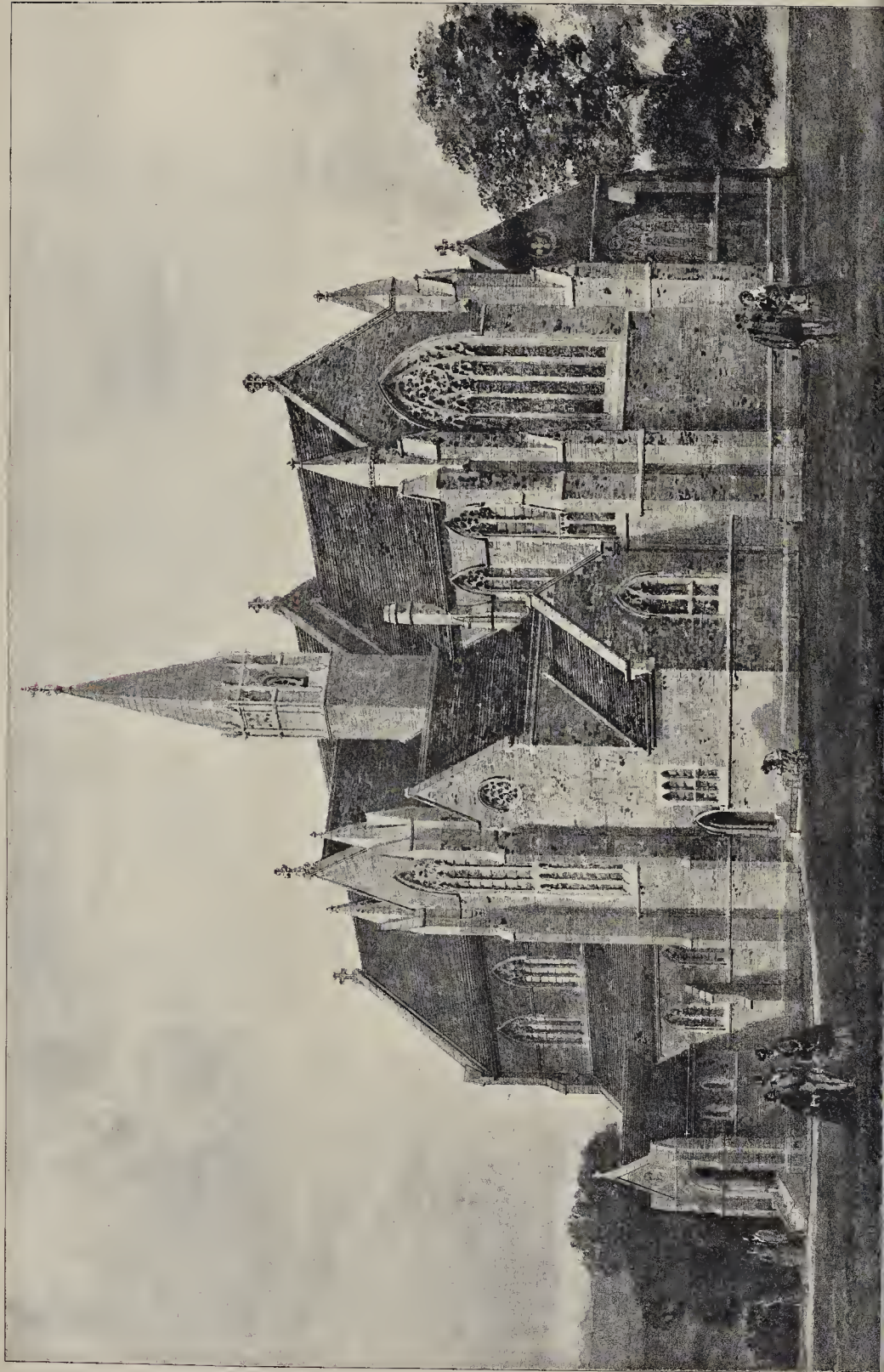
J. Newman, del. 1897.

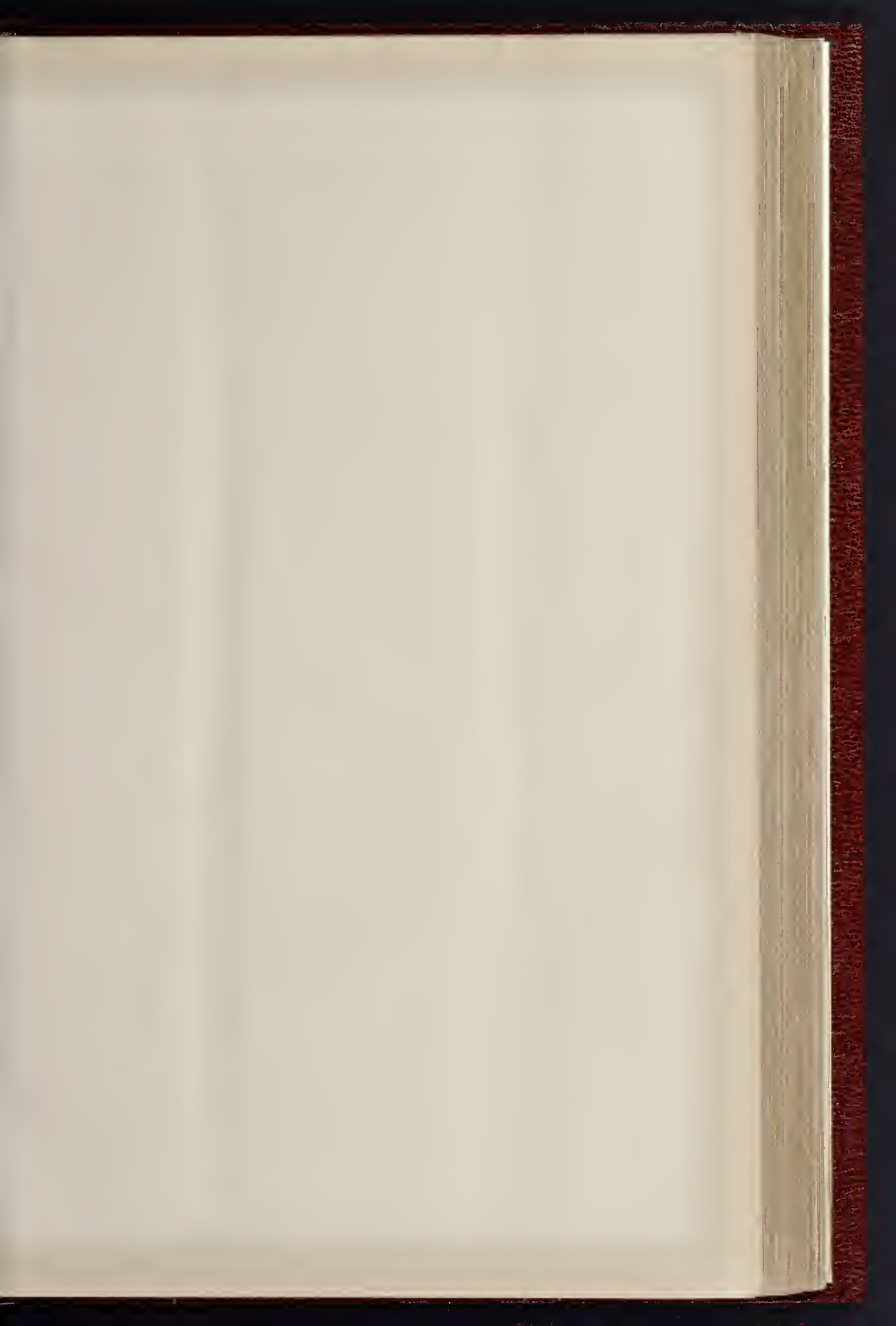
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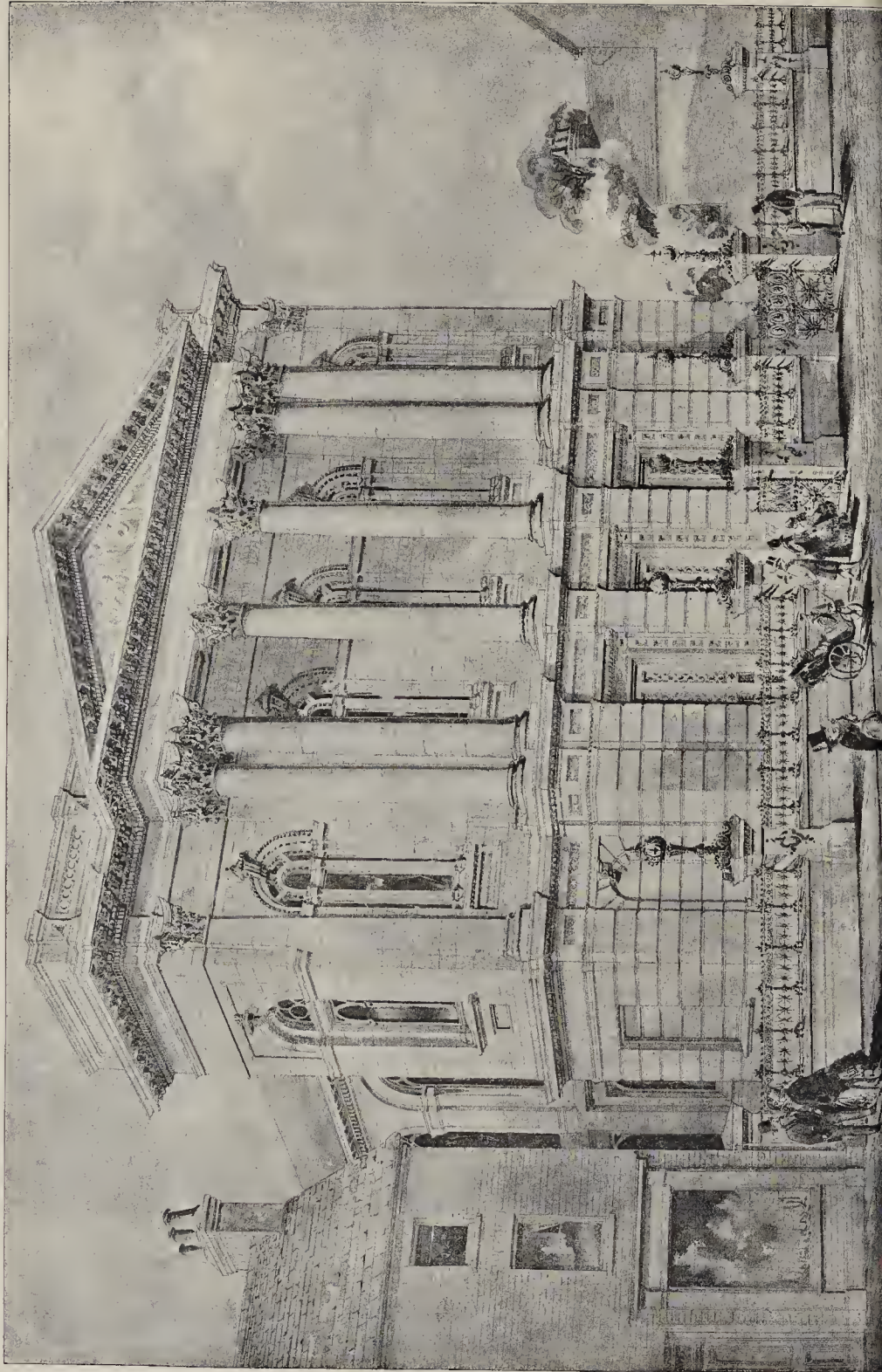


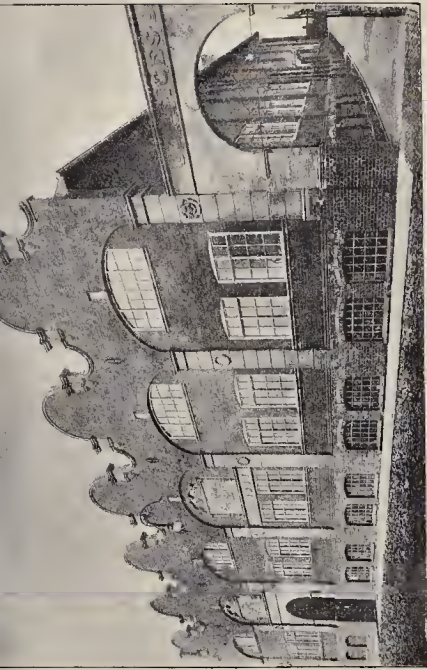
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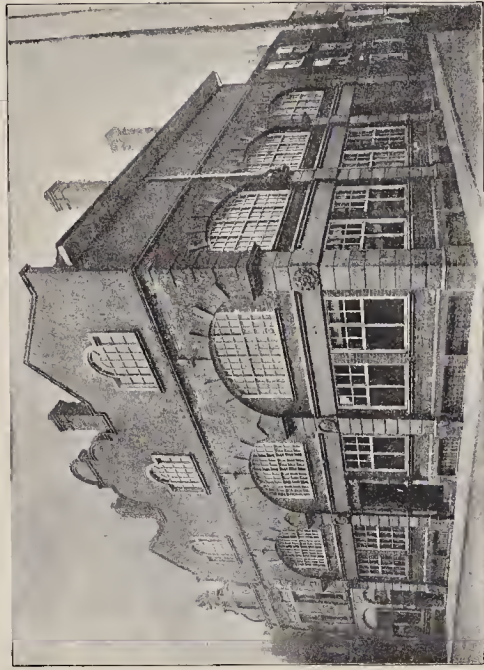


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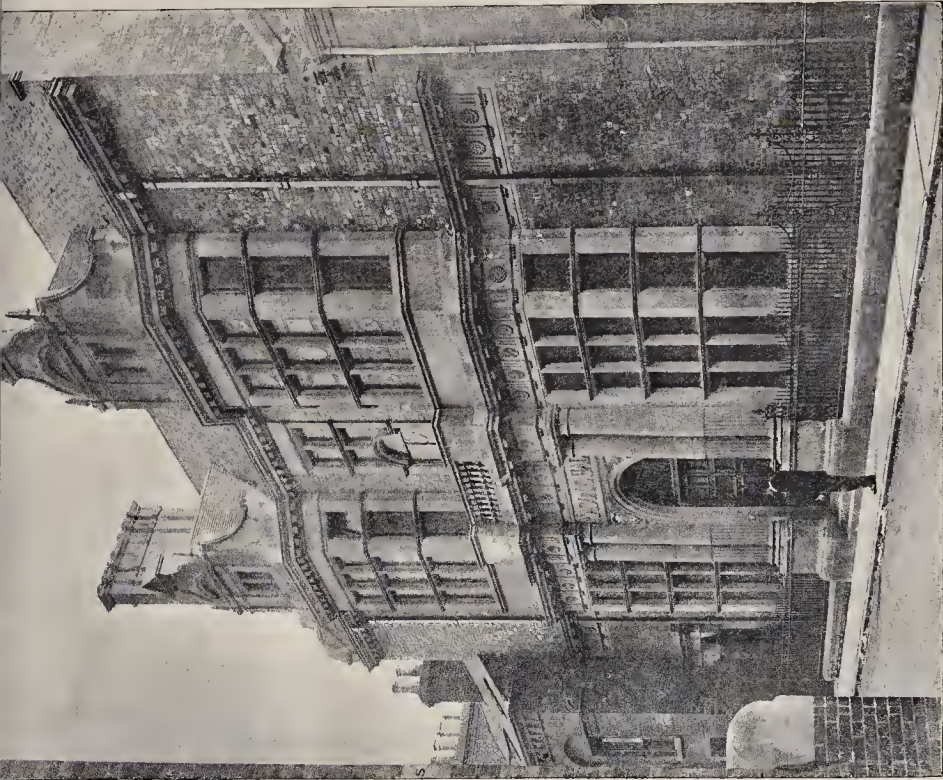




SHOE FACTORY.—MESSRS. MOSLEY & ANDERSON, ARCHITECTS.



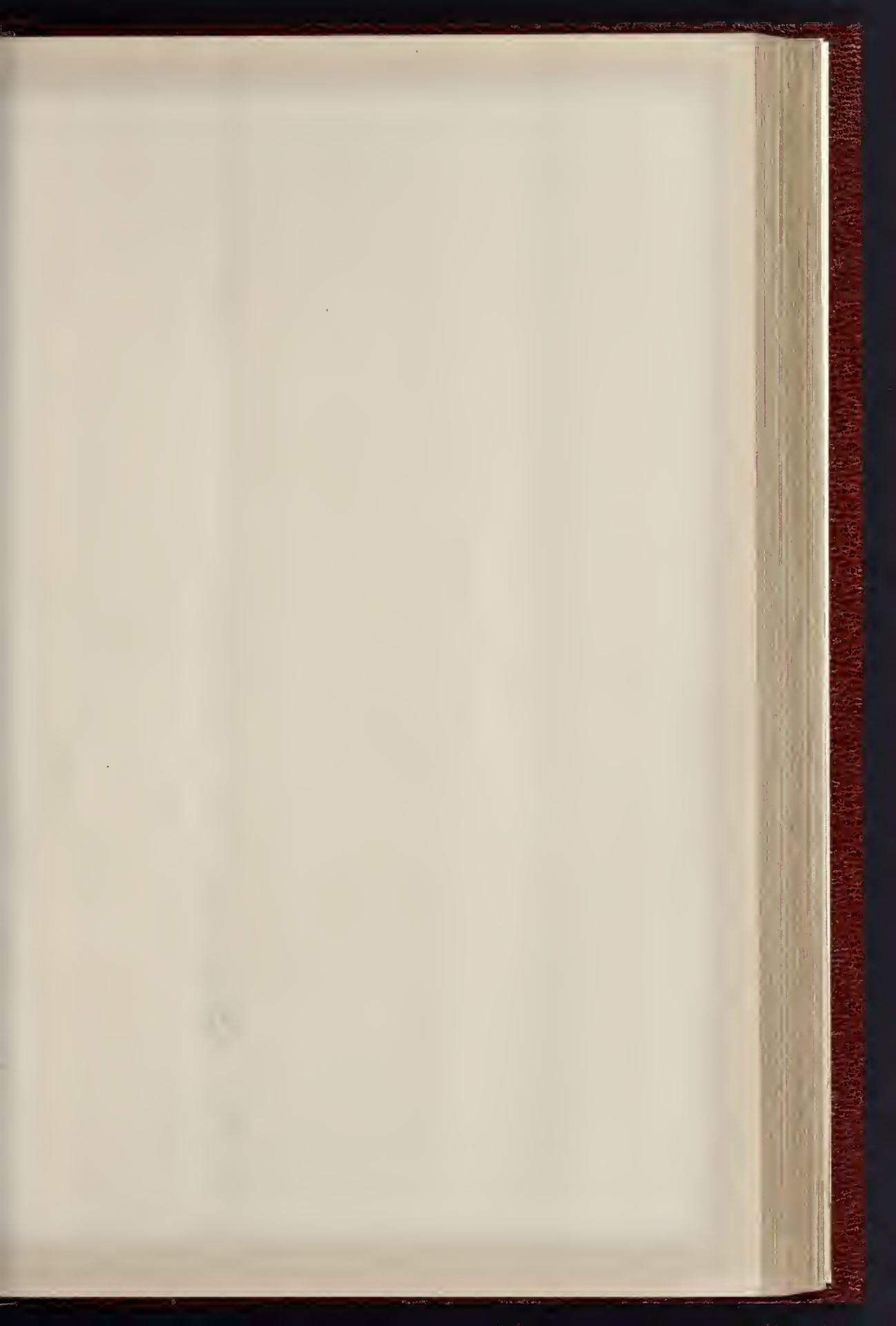
LEATHER WAREHOUSE.—MESSRS. MOSLEY & ANDERSON ARCHITECTS.



MASONIC BUILDINGS.—MESSRS. INGMAN & SHAW, ARCHITECTS

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NORTHAMPTON ARCHITECTURE.





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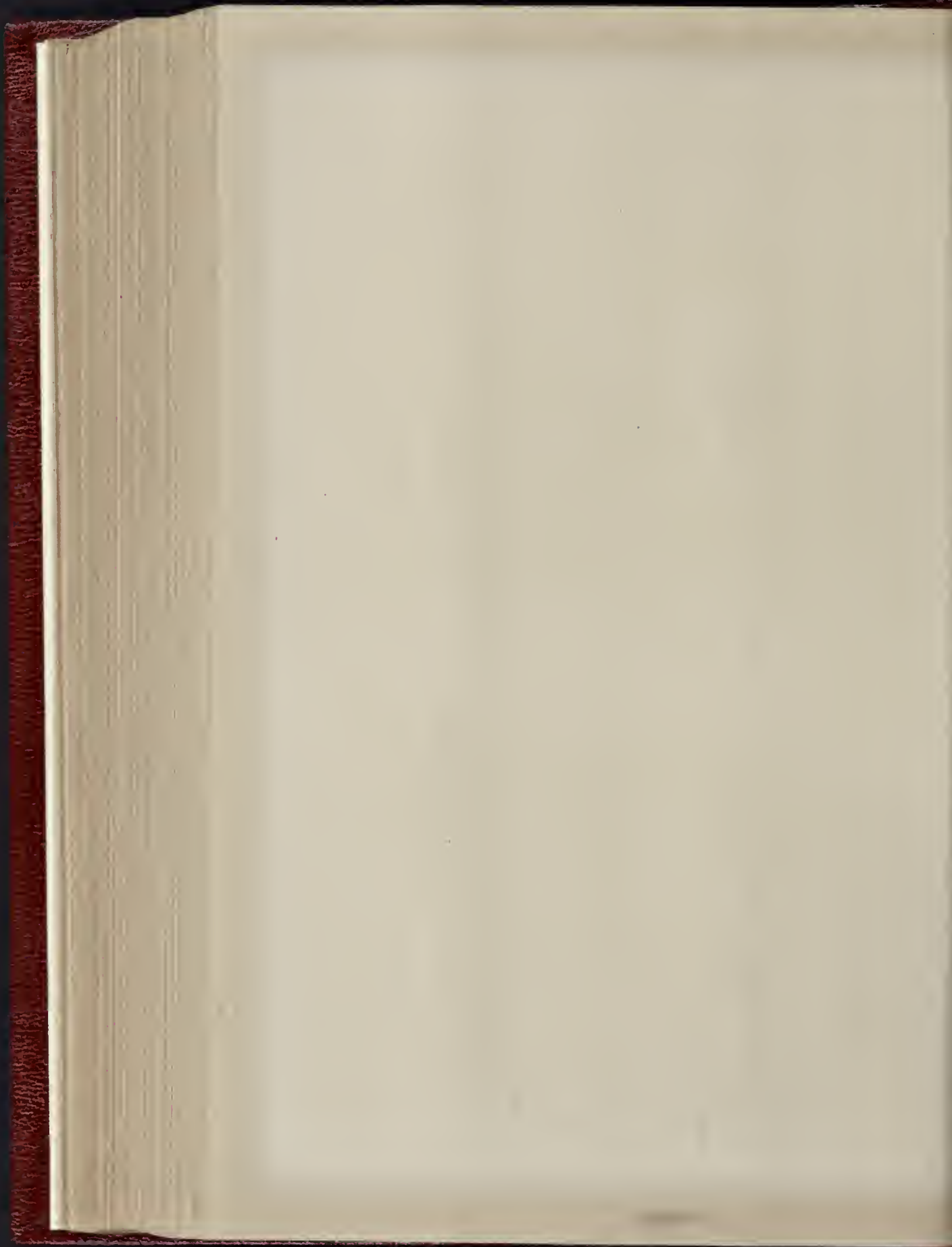
THE TOWN HALL
BUILDING, A.R.I.B.A., ARCHITECTS.



ST. MATTHEW'S (PHIPPS MEMORIAL) CHURCH.—MR. M. H. HOLDING, A.R.I.B.A., ARCHITECT.



NEW WING, ST. ANDREW'S HOSPITAL.—MR. CHARLES DORMAN, ARCHITECT.



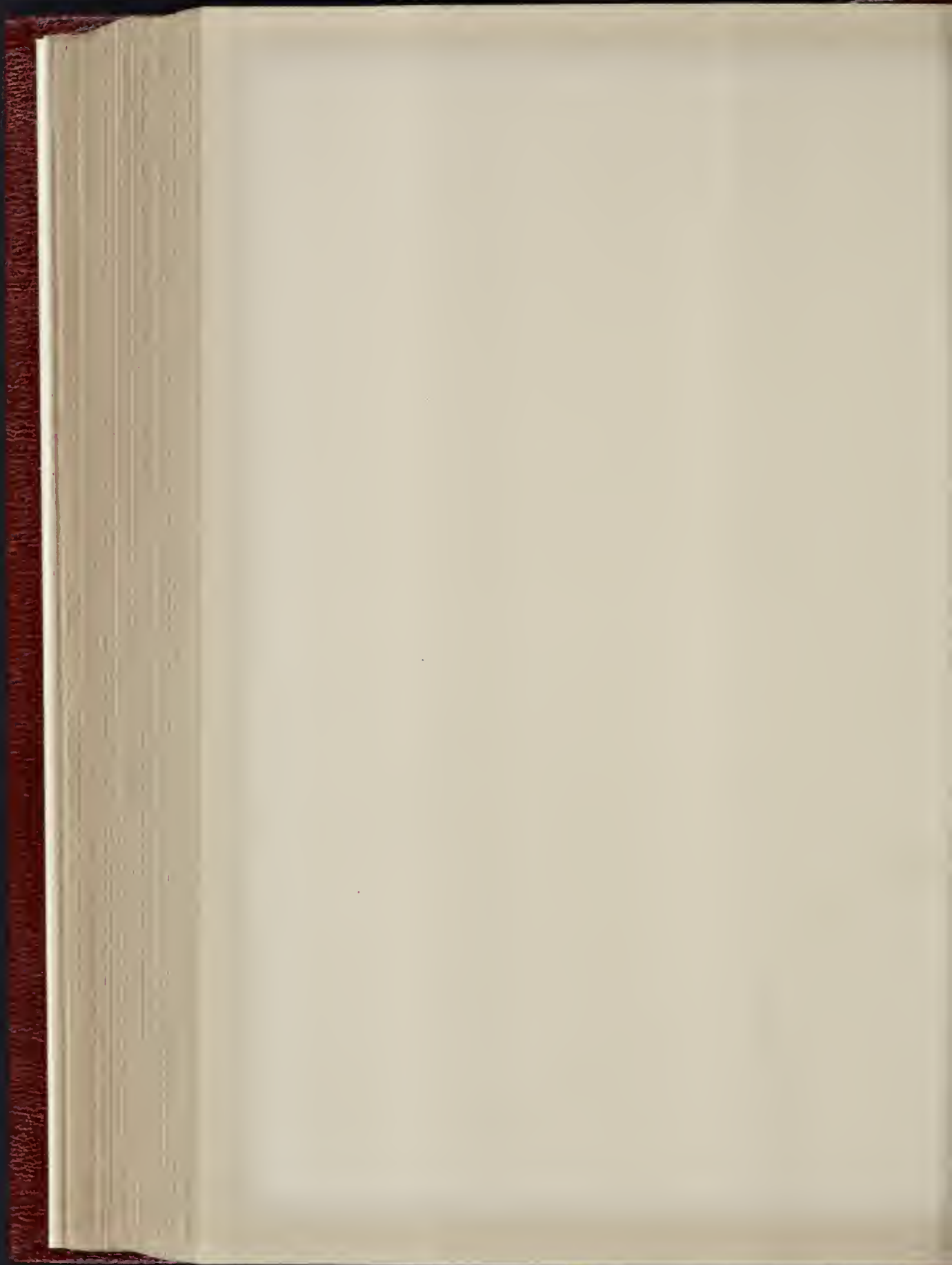
THE GRAND HOTEL
GLOBE STREET
NORTHAMPTON
CHAS. BORMAN ARCHT.
BY DORMAN



THE STAMFORD SPALDING
& BOSTON BANK & CO.
5 GILES SQ. NORTHAMPTON.
CHAS. BORMAN ARCHT.



PHOTOGRAPH SPRAGUE & CO. 485, EAST HARDING STREET, FETTER LANE, E.C.



On this acropolis itself are distinct traces—pottery and the like—of a "Mycenæan" settlement; but it is a large grave tumulus below the acropolis that Dr. Wide has specially investigated. A remarkable feature of this tumulus is the large number of graves beneath it which consisted simply of the huge vases known as "pithoi." The custom of burying in pithoi is of course known in Greece: isolated instances occur in the Dipylon graves in the Cerameicus, with vases of the geometric style, also at Thoricus and in Corfu; but here we have the prevailing custom, not the exception. The general conclusion as to the date of the tumulus drawn by Dr. Wide is that it is contemporary with the Mycænæan "culture" of the Aphidna acropolis, and that we have in the pithoi and geometric wares accompanying them the art and burial customs of the peasants who lived in the plains and were ruled over by the Mycænæan princes in the acropolis above.

Austrian Archaeological Institute. The Emperor has sanctioned the formation of an Austrian Archaeological Institute at Vienna, to date from January 1, 1898. The purpose of the new institution is primarily the supervision of all archaeological research work undertaken by the Government; further, the control of all Government archaeological collections, and the control of any subsidised excavations undertaken by Austrians outside of Government territory. The new institution is to undertake certain publications, and to arrange various private and official journeys, also some studentships, &c. The Emperor will nominate the President of the Institute, who will fulfil the functions of a managing director, and there will be four Government secretaries at his disposal, two of whom are to be stationed at Athens and in the East respectively. There will be a General Council, consisting of the University Professors of Archaeology, the custodians of the Government collections, and a number of experts and amateurs nominated annually by the Minister of Education. This seems to indicate an awakening on the part of the Austrian Government to a sense of the value of archaeological studies.

Delphi Sculptures. It has often happened that the design on a Greek vase has thrown light on the interpretation of a motive in Greek sculpture, but for the first time, we believe, an instance of the reverse process has occurred. A slab from the recently-discovered frieze of the Treasury of Siphnians, at Delphi, has thrown light on a black-figured vase found in the Acropolis at Athens, a portion of the design of which had hitherto defied all attempts at interpretation. The vase in question depicted what was obviously a gigantic machine, but standing near a figure with the name Epialtes were two large black objects something like the coils of much-inflated snakes, on the nature of which no archaeologist—French, German, American, or English—of the numbers who examined the vase could conjecture the meaning. This meaning, by comparison with the Delphi frieze becomes instantly clear. Æolus (inscribed) is on the Delphi frieze holding two great wind-bags or bellows, one of which he is in the act of opening, and it is these two great bellows that are

depicted on the vase; one is still inflated, the other deflated, hence the difference in size and appearance. The bellows are fastened by wooden pincers similar to those still in use in Germany for fastening the apertures of sacks. The interpretation is due to Dr. Hartwig, who publishes the vase in the last number of the *Bulletin de Correspondance Hellénique*.

Mycenæan Antiquities at Pylos. In the same number of the *Bulletin* appears a brief report of researches made at Pylos in the grotto variously called by the names grotto of Hermes or grotto of Nestor. M. Laurent, of the French School, has brought to light there a number of fragments of vase-painting of various epochs, which promise to be of considerable importance for the "Mycenæan" question. The fragments are pre-Mycenæan, late Mycænæan geometric and post geometric. The geometric vases are not without interest, as it is well known nothing of the sort was found at Olympia. The Western Peloponnesos has been, so far, found singularly poor in Mycænæan antiquities, and yet we should have expected that, at least in Triphylia, the Minyans from Iolcos would have left traces of their civilisation. Towards the west, the extreme points where Mycænæan civilisation has left traces, are, so far, the west slope of Taygetos and the islands of Ithaca and Cephalonia. It is interesting to note that these Pylos discoveries have been made incidentally on a journey, the main object of which was to investigate the condition of Byzantine antiquities in the Morea.

Sewage Irrigation. WHEN we find an author commencing a treatise in favour of sewage irrigation with the observation that "every community . . . is confronted with *practically the same difficulties*,"* and concluding it with the statement that "the question is not so much whether sewage-farming or chemical treatment is theoretically the right way to dispose of town-sewage, but rather whether in a particular case the one method is more likely than the other to give good results, *as every case requires to be dealt with on its particular merits*,"** we are led to think that the author is not very sure of his ground. The treatise from which we have quoted is, however, better as a whole than the quotations. It is a reprint of a paper on "The present status of sewage irrigation in Europe and America," read by Mr. H. Alfred Roehling before the Sanitary Congress at Newcastle in September last. The author quotes from various authorities statements in favour of sewage-farms, and gives plans showing the position of the sewage-farms in the neighbourhood of Berlin and Paris. One of his authorities is Mr. Allen Hazen, the Massachusetts investigator, but this is an unfortunate quotation for Mr. Roehling, for Mr. Hazen's testimony is in favour, not of sewage-farms, but of "intermittent filtration through sand," and this reveals Mr. Roehling's bias: he entirely ignores the question of purification by means of artificial filters, a method which—now that the principles of purification are more thoroughly understood—is coming more and more into successful operation. Still, every one will agree with

* The italics are ours.

the author's conclusion that "every case requires to be dealt with on its particular merits."

Continental Slaughter-houses. WE have frequently had occasion to refer to the erection of large central slaughter-houses, combined with meat markets, throughout Germany, and, to a certain extent, in Austria and Hungary; and it would appear that throughout those countries the authorities are fully alive to the advantages of centralisation outside their towns, whenever a good railway connexion is available, so as to allow for rapid transit to the retail tradesmen. We have previously remarked on the works of this class at Berlin and at Leipsig, and our German contemporary, the *Zeitschrift für Bauwesen* recently contained an interesting article on the new slaughter-houses at Cologne, from the pen of Herr Rudolf Schulze. It appears that the establishment includes thirty blocks of buildings, costing together nearly 300,000*l.*, and that in this case a building for the Central Meat Exchange has also been added, besides the usual market, the separate slaughter-houses for the different classes of animals, the cooling-rooms, tannery, lard manufactory, &c. A line of rails, with six sidings, has been taken right into the enclosure, and there is ample room for extensions. To those interested in the question of slaughter-houses, a visit to the more modern institutions of the Continent may be recommended, and they will find many examples both of good planning and satisfactory architectural treatment.

MR. W. WHITAKER, F.R.S., has done good service in publishing a supplementary account of Essex well-sections*, which is very superior to any that has preceded it. In addition to the usual information as to the nature and correlation of the geological deposits passed through, we find several interesting comments on the quantity of water obtained, together with several chemical analyses, and at least one result of bacteriological examination. But we are not satisfied. In the first place, sufficient attention is not always paid to locating the exact site of each well. Thus, "A little northward of the church," "Sir W. Gilbey's fruit farm," "Station-road," "Perry's farm," and the mere mention of the village in which the well occurs, is hardly enough. No doubt on visiting the different localities it would not be difficult to find each well; but it would be far more useful if each site could be referred to a particular plot of land as defined, and sometimes numbered, on the 6-in. maps of the Ordnance Survey. The term "farm" often applies to a large tract of country, and in view of the frequently undulating and hilly districts which might be comprised within it, the height of the orifice of the well above O.D. (an important matter in estimating the thickness of the uppermost beds to be passed through) should always be indicated. Then, again, the chemical analyses given might be interpolated more frequently even though the information was not supplied by the person who communicated the analysis to the author. Nevertheless, although the account might be improved upon in several ways, engineers

* *Essex Naturalist*, Vol. ix., pp. 12, 190.

are very much indebted to Mr. Whitaker for what he has done, and it is to be hoped, now that he has retired from the Geological Survey, that he will be able to find more time to collect and publish similar (if not improved) details concerning the water and well-sections of other counties; but we trust they will not be buried in the "transactions" of small local societies.

At the Society of Fine Arts are the new collections. The water colours and paintings of "Landscape and Lagoon" in England and in Italy, by Mr. Graham Petrie, show a fine sense of effects of colour and light expressed in a very broad free style of execution. Among the English scenes, "Showery Weather, Fittleworth" (13) is one of the best, remarkable especially for a very fine sky. Though there is no detail to speak of in any of them, architecture is well treated in several of the views, especially in "A November Morning, Venice" (50), a corner of the amphibious city, in which the various tones of the buildings are admirably real; and in "Rome from the Corsini Garden" (3) St. Peter's, yellow in the sunshine, sparkles in the distance between the dark stems of trees in the foreground. "Winter in Venice" (60) shows Venice in rather a new light, and looks cold and dreary enough. "The Euganean Hills from Venice" (68) is a fine bit of atmospheric effect of sea and sky. There is much to enjoy in the whole collection, which exhibits a great deal of original talent. Mr. C. H. Shannon's lithographs and drawings in red and black chalk are in some cases almost too slight for exhibition—only that it is becoming the fashion to exhibit mere scrawls of this kind. Some of the studies of nude figures, such as "Ministrants" and "Shell-gatherers," which are meant to be idealised and poetic, have a partially ludicrous effect owing to the starved and angular character of the figures. The most completely successful sketches are some of the more realistic and prosaic examples; "L'homme au manteau," for instance (why this affectation of French titles?), a half-length of a seated figure in a cloak, and "Le Fumeur," a figure of similar character; both these are admirable. The collection is a rather odd mixture of cleverness and eccentricity.

Illustrations.

NORTHAMPTON ARCHITECTURE.

THE lithograph plates this week illustrate various buildings in Northampton, and are nearly all referred to in the leading article in this number, on the architecture of Northampton.

We are indebted to Mr. Holding for the loan of an excellent drawing of the Town Hall, of the later portion of which he was architect, and also for his drawing of St. Paul's Church. The other illustrations include the same architect's St. Matthew's Church (from a photograph); Mr. Charles Dorman's very quiet and pleasing design of the new wing of St. Andrew's Hospital; Mr. W. Hull's classic design of College-street Chapel; two characteristic warehouses by Messrs. Mosley & Anderson; Masonic buildings, by Messrs. Ingman & Shaw; the Grand Hotel, and the Stamford, Spalding, and Boston Bank, by Mr. Charles Dorman, and some new premises in Gold-street by Mr. S. J. Newman; the latter the only entirely new building in the collection.

Some other buildings, old and new, are also illustrated by sketches printed along with the leading article.

COMPETITIONS.

TECHNICAL SCHOOL, BOOTLE.—At a recent meeting of Bootle Town Council, Alderman Johnson submitted the report of the Free Library and Museum Committee on the new technical school, and moved resolutions fixing the corner of Balliol-road and Pembroke-road as the site for the school, sanctioning 16,800*l.* as the expenditure to be incurred for building and furnishing, authorising the obtaining of competitive plans at premiums of 50, 30, and 20 guineas for the three best, and authorising the engagement of an architect to advise on the plans. Councillor J. J. Mack seconded, and the resolutions were carried.

THE ARCHITECTURAL ASSOCIATION SPRING VISITS:

THE ROYAL PALACE HOTEL EXTENSION, ETC., KENSINGTON.

The fifth visit of the session* was paid to the Royal Palace Hotel Extension, High-street, Kensington, by permission of the architects, Messrs. Legg & Son.

The new portion of the building visited comprises, chiefly, large ballroom and banqueting hall, the upper part being devoted to additional bedroom accommodation for the hotel. The ball room is situated on the ground floor, and is approached through a small entrance hall, the men's cloak room being in the basement and the ladies' on the first floor; the room measures 74 ft. long by 48 ft. wide, and will be one of the largest dancing-rooms in London. The lower part of the walls is panelled in light oak, and the upper part covered with modelled fibrous plaster, which will be decorated in white and gold. The chief point of interest is, perhaps, the floor, which is supported on steel springs to add to the spring of it for dancing; the floor is of wainscot oak laid on joists in the usual manner, and these rest on long beams, the ends of which are bolted into an iron crutch, which is supported on either side by a strong spiral spring 3 in. in diameter, and 6 in. long, fitting into a circular sinking in the crutch, and also into another iron casting resting on the concrete floor. There is sufficient space allowed for the bearer to spring an inch; an indiarubber stop is inserted to prevent any jar, and indiarubber stopping is also placed between the outer edge of the floor and the wall to make a tight joint. On the first floor is a lounge, and the banqueting hall is situated on the second floor; this is 60 ft. long by 34 ft. wide, and is placed over the exact centre of the hall room, the latter being lighted by curved skylights on either side; the whole of the weight of the banqueting hall being carried on steel girders 2 ft. 6 in. deep, which are curved to follow the line of the cove of the ceiling under a decidedly daring piece of construction, the dead weight on each girder being over 100 tons. The decoration of the hall is similar to the ball room. The walls of the main staircase and lounge and rooms adjoining are to be covered with Japanese paper of a very fine design. The building is warmed throughout with hot air, heated in the basement and carried by means of flues to gratings at sides of floors of rooms. Externally the building continues the treatment of the hotel, but the height of it has been considerably reduced, owing to rights of light of adjoining property.

A visit was afterwards paid to No. 27, High-street, Kensington, to inspect some shop premises and small flats being erected from the designs of Messrs. Banister Fletcher. The premises consist of a show room on the ground floor and basement, and residential flats above. The open timber roof to back of show room is executed in "Columbian Pine," being better adapted to carving; it can also be obtained of sufficient size for long columns. The floors, stairs, and partitions throughout are of breeze concrete, composed of pan breeze from electric works, and Portland cement, mixed in the proportion of three to one. The partitions are only three inches thick—a great economy of space. The staircase has tile risers, fixed to a mastic composition, and teak treads. The window openings are fitted with N.A.P. steel casements, and are arranged to open either in or out.

Externally the front has a large bay window resting on the architrave of the shop front, the main wall being kept back to allow for balconies on the upper floor, and also for tile

panels on the return walls. Lawrence's bricks have been used, with Kelson stone for the facings, which, although rather coarse in grain for carved work, will resist the effect of the London atmosphere. The visit, although not so well attended as on previous occasions, was of decidedly an interesting character.

ARCHITECTURAL SOCIETIES.

LIVERPOOL ARCHITECTURAL ASSOCIATION. At the seventh ordinary meeting of the present session of the Liverpool Architectural Society a paper was read by Mr. W. Henman, entitled "Hospital Construction," which was illustrated by working drawings, &c. Mr. Henman said that hospitals and infirmaries might be regarded as health manufactories, and the arrangement of their plan should, as in ordinary manufactories, be principally considered with a view to the perfection of the work carried on. The great disadvantage of the pavilion system was the distance of one portion of the buildings from the other, entailing exceptional labour in supervision and great cost in building. If thorough ventilation could be otherwise secured, then the buildings might be more massed together and the cost reduced.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE.—The annual spring visits in connexion with the Architectural and Building Construction Classes were made a few days ago, the places selected for special study this year being Edinburgh and Chester. The visit to the former city took place on the 19th inst., when a party of about thirty students was conducted by Professor Gourlay, who had made arrangements for studying the more important works of architectural interest—ancient and modern—in Edinburgh, including St. Giles's Cathedral, St. Mary's Cathedral, St. Margaret's Chapel in the Castle, and the McEwan Hall, while the Museum of Science and Art received much attention in respect of its interesting collection of architectural and other remains. The visit to Chester was made by a party of ten students under the guidance of Mr. James Lochhead, and extended over four days, which time was principally spent in studying by sketching, measuring, and photographing in and about the Cathedral, St. John's Church, and the numerous half-timber houses and fronts with which the city abounds, and of which the time at disposal only permitted too brief an examination.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—The annual general meeting of this Society was held on the 13th inst. in the Library at the School of Art, Mr. Charles Hadfield, the President, in the chair. Mr. C. J. Innocent (hon. secretary) read the tenth annual report of the Council, which stated that the membership had continued to increase. There are at present 34 Fellows, 37 Associates, 12 students, 5 honorary members, and 18 lay members, making the total number of members 108, as against 103 at the end of the previous year. The Council record with regret the death of Mr. James Hall, who has been a fellow of the Society from its commencement. The ordinary meetings have been exceptionally well attended throughout the session, and very able lectures have been delivered by Mr. J. D. Leader, F.S.A. (honorary member), on "A Study in Domesday;" by Dr. Sorby, F.R.S. (honorary member), on "The Structure and Durability of Building Stones and Bricks;" by Mr. Beresford Pitt, on "The Study of Architectural Design," by Mr. John Slater, on "The Buildings of the Ancients;" and by Mr. J. B. Mitchell-Withers, on "A Tour in Holland." Professor Ripper, principal of the Sheffield Technical School, has made a number of test of bricks at the request of the Council of the Society, and reported fully upon them. The Royal Institute of British Architects made number of elaborate experiments in brickwork to the expense of which the Sheffield Society contributed; and samples of the bricks used in those experiments were sent down, and they were carefully tested by Professor Ripper, in comparison with a number of local bricks of several makers. The report was read on the same evening as Dr. Sorby delivered his lecture. The members of the Society had very enjoyable excursion in June last to Wenworth Woodhouse, where, by the kindness of Earl Fitzwilliam, the family apartments and the kitchen offices, cellars, stables, gardens, &c. were all open to the visitors. The new church and the old church were inspected, also the mausoleum, with its sculpture by Nolcker

* The publication of this account has been unavoidably delayed.

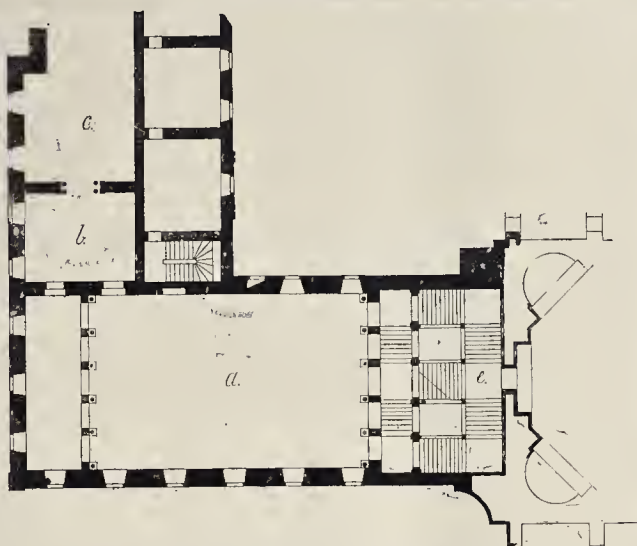
arrangements are in progress for an excursion to Chatsworth in June with special facilities. Another competition in school board work has produced some dissatisfaction, and the Council of the Society has presented some suggestions to the Sheffield School Board on the subject of competitions. A deputation, consisting of Messrs. C. Hadfield, E. M. Gibbs, and C. J. Innocent, was courteously received by the Chairman of the Board and the Chairman of the Buildings Committee, who promised that the suggestions should have consideration. It is not yet known to what extent they may be adopted. There has been a competition for a public building in the city in which members of the Society who are in practice were invited to compete. The subject was a fire brigade and police station in West Bar, and the Corporation appointed three assessors, viz., Mr. C. Hadfield (President), Mr. E. M. Gibbs (ex-president), and Mr. C. J. Innocent (hon. sec. and past president), who have prepared the instructions to the competitors, and who are now engaged on an examination of the designs submitted. A suggestion has been made that the Society should join other allied societies in the employment by the Institute of a lecturer to give a series of lectures to the students of each society in preparation for the examination, and the Council have expressed their willingness to join in the scheme. The question of the election of Fellows of the Royal Institute of British Architects has been very carefully and repeatedly considered by the Council, at the request of the Institute, and some of the recommendations have been incorporated in the scheme which has been adopted. It has been decided to join the Royal Institute of British Architects and its other allied societies in an address of congratulation to her most gracious Majesty the Queen on the attainment of the sixtieth year of her reign. The statement of accounts was read, and showed a balance in hand of 437.75. 6d. This statement and the annual report were unanimously adopted. Mr. Mitchell Withers and Mr. E. Winder, jun., were then elected scrutineers for the election of officers, which resulted in the following elections:—President, Mr. R. W. Fowler; vice-president, Mr. Joseph Smith; treasurer, Mr. F. Fowler; honorary secretary, Mr. C. J. Innocent; Council, Messrs. A. Smith Denton, H. W. Lockwood, W. F. Hemsoll, T. Winder, and W. C. Fenton. A vote of thanks was passed to the retiring officers for their services during the past year.

THE "WHITE HALL," BERLIN CASTLE.

The principal Court festivities in connection with the recent anniversary celebration at Berlin were held at the historical "White Hall" in the Royal castle. This hall, like many other parts of the castle, has been the subject of constant attention by the German Emperor, who is gradually remodelling that part of the block which is devoted to receptions and his private apartments. The alterations to the "White Hall" are those which are of the greatest architectural importance. It will be seen from the plans that the improvements on the old arrangements have been material, quite independent of any alteration in the architectural treatment of this part of the building. The old "White Hall" has practically been enlarged, its principal staircase altered, a large ante-room added, and a better communication obtained to the picture gallery; there have also been improvements in regard to the general service in this block.

The works were of a most difficult nature, entailing the breaking down of enormous masses of old brickwork, and the foundations gave a good deal of trouble. Altogether the various alterations may be considered to have spread over four years, and they are not yet complete, as much of the work that is intended to be in marble has for the present been done in plastering or woodwork, so that the hall can be used. As to the architectural treatment of the hall, it represents the taste of the "Berlin school" some ten years back, and is Academic and uninteresting. The Court Building Department practically acted as architects, but much of the work, particularly in respect to the decorations, was entrusted to the Court architect, Herr Ihne.

SCHOOL, DENNY, STIRLING.—Denny new public school, erected at a cost of about 7,000*l.*, to accommodate 226 scholars, was opened on the 13th inst. Mr. Mitchell, Coatbridge, was the architect of the school.



The "White Hall," Berlin Castle: original plan.

- a. The "White Hall."
- b. The Queen's Chamber.
- c. The Gallery.
- d. The Grand Staircase.



The "White Hall," Berlin Castle: as remodelled.

- A. The "White Hall."
- B. The new Ante-room.
- C. The Queen's Chamber.
- D. The Gallery.
- E. The Grand Staircase.

TRADE CATALOGUES.

MR. SIDNEY STRAKER, London, sends us his catalogue of oil motors for road vehicles. He has hit upon a good idea in proposing to supply coach-makers with motors, leaving them to supply the vehicles themselves. We have not seen any of the motors at work, but from the somewhat scanty details furnished, we gather that they possess the same disqualification which other motors of this class possess, viz., want of balance in the reciprocating parts. An oil engine, even when bolted to a solid bed, is not by any means free from vibration, and it is therefore a matter of wonder to us how, in a motor carriage, where the engine is mounted on springs, any degree of comfort can be

expected, and it is in this direction of balancing that the only hope of general utility lies in the future. As regards the noise of exhaust, Mr. Straker uses on the exhaust pipe what he terms "silencers," which consist of two small cylinders with partly-closed ends, connected by a short piece of tube, which are claimed to reduce "the shock of explosive engines to a noiseless state without creating back pressure." The motors are made either to work with light or heavy oils. In the latter case we presume the question of smell would not be so obtrusive. A four-horse power double cylinder engine works at 400 revolutions per minute, with a variation of 30 per cent. Its weight is 200 lbs., and that of the circulating water from 100 to

180 lbs. The ignition is by means of electricity. Mr. Straker states that the engines now put forward are the result of over two years' experimenting, and that they have been proved "to be entirely suited for road traction." If this is so, we congratulate him, as they must be very much in advance of anything we have yet seen in the streets of London.—Messrs. Kirchner & Co., London, send us their December catalogue of builder's, joiner's, and cabinetmaker's wood-working machines. Apparently these are of German make though the name of the place of manufacture does not appear anywhere. The machines described are of considerable variety, but we do not notice any very great novelty or superiority as compared with machines made in this country for similar purposes. Of the tools illustrated, perhaps the best are the molders for panels and spiral work. No prices are given, so that we cannot compare them with those of our best English makers.—In a recent notice (March 6) of trade catalogues we observed that Messrs. Line & Son did not appear to employ known decorative artists to design their papers. They draw our attention to the fact that on a separate page they state that the catalogue includes designs by Messrs. Voysey, Furniss, Brophy, Batley, Willcox, the late Arthur Silver, and other eminent designers. We had not noticed that, but our point was that the designer's name was not given in connexion with the separate designs, as we think it should be.—Messrs. Hayward Bros. & Eckstein send us their new catalogue of various forms of prism lights for basements, which are well known; the catalogue also includes illustrations of mixed tile and lens lights, arranged so as to present a decorative appearance; concrete face pavement lights; stall-board lights, patent cellar flaps, self-locking coal plates, &c.

Correspondence.

To the Editor of THE BUILDER.

THE R.I.B.A. ELECTIONS.

SIR.—The list of members officially nominated to serve upon the Council and Standing Committees of the Institute has just been issued.

On the four committees there are sixty-four positions to be filled up, and for these no less than sixty existing committee-men are self-nominated. This is unfair to those who wish to take their turn, and contrary to the best interests of the Institute.

There is, unfortunately, a tendency causing members of the Institute to vote for those candidates who have asterisks before their names in the balloting lists, these indicating existing members. Still more unfortunately, not one-fourth of the members trouble to vote at all, probably on account of those repeated self-nominations which tend to keep out a reasonably fair proportion of new men and fresh ideas. Surely it should be compulsory that a few, each year, of office holders should not be eligible for re-election, that others may have a chance.

With regard to the Council, matters are even worse—the President, Vice-Presidents, Secretary, and Members of Council number twenty-four persons, and no less than twenty-three of these gentlemen have (officially) re-nominated themselves for election; therefore, having in view the manifest advantages of the asterisk prefix, there is but little prospect that the new names will appear in the new Council.

If all the members throughout the country would take the trouble to vote, the result of the elections might tend to bring new men in, who would restore the Institute to its former condition of prosperity.

Although the income of the Institute is vastly greater than when I joined it, more than twenty years ago, yet its publications are now not to be compared with what were given in the past; we used to have a yearly, handsome, and large volume, beautifully illustrated; but now merely a fortnightly journal, with a higher price marked on its outside cover than its contents usually warrant.

AN ARCHITECT FROM YORK.

London.

THE LATE MR. C. CHALONER OGLE, ARCHITECT.

SIR.—The correspondent of the *Daily News* in Thessaly, in a letter from Volo, states that "a pro-

minent street in that town bears to-day the name of Charles Ogle, in grateful memory of the heroic death of an English war correspondent, who was killed with the insurgents."

This statement is erroneous so far as Charles Ogle is concerned, and does his memory an injustice. Charles Chaloner Ogle was a young architect of great promise, who, while travelling in Greece for the purposes of study, was appointed special correspondent of the *Times*, and while acting in that capacity was murdered by the emissaries of Amouss Aga, a major in the Turkish Army, and Chief of the Police in Thessaly (which was at that time under Turkish rule), between Volo and Macrinizta, at the latter end of March, 1878.

It is true that the Turkish authorities, before they were taxed with the murder, endeavoured to show that Mr. Ogle had taken part in the insurrection, and even went to the length of placing a musket in his dead hands to encourage this belief; but it was conclusively proved at the time that Mr. Ogle left Volo for Macrinizta with no other arms than a light switch, and that he was alone. Mr. Delayanni, in a letter to Mr. Gennadius, printed in the *Times* of April 4, 1878, writes:—"Le correspondant du *Times*, Mr. Ogle, était parti sans armes de Volo jeudi soir pour Macrinizta. Trois jours après les chefs ottomans envoyèrent à Hobart Paacha son passeport, en lui notifiant que son cadavre avait été trouvé à Macrinizta avec un fusil entre les bras; mais on a tout lieu de croire que Mr. Ogle a été assassiné par les irréguliers d'Amouss Aga, auquel quelques jours auparavant Mr. Ogle avait adressé des vives remontrances pour les massacres de Boulgréni. Il est certain que Macrinizta était occupé par les Turcs lorsque Mr. Ogle s'y rendit."

Amouss Aga treacherously lured ten of the headmen of Macrinizta into his camp by a promise of protection, and basely murdered them. Mr. Ogle describes in one of his letters to the *Times* that he had seen the half-burned bodies of the murdered men and had told Amouss Aga to his face what he had seen. This imprudence, there seems to be little doubt, cost Mr. Ogle his life.

I have no wish to detract from Mr. Ogle's merit, who fell as heroically as if he had died on the battlefield; but it is due to his memory that he was murdered by the Turks, and that he was not killed, as stated by the *Daily News* correspondent, with the insurgents.

JOHN HEBB.

* * * The above was written for insertion in our columns last week, but arrived too late.

The Student's Column.

SPECIFICATIONS.—XVII.

PLASTERER.

MATERIALS.—All laths to be of the thickness known as "lath and half," rent out of sound Baltic fir, batted at joints, with joints frequently broken, and well nailed with galvanised iron nails. (If any special patent lathing is to be used, specify this).—Lathing throughout to be "Jintin" patent metal lathing to be obtained from Hayward Bros. & Eckstein, and nailed in accordance with the instructions of the patentees with wire nails not more than 3 in. apart.

The lime to be fresh well burnt stone lime (or chalk lime if allowed), free from clinders, and to be run into putty at least one month before being used.

The sand to be clean and sharp and to be washed if required. Hair to be sound, long, black, ox hair, well beaten up when dry and thoroughly incorporated with the mortar.

Coarse Stuff.—Coarse stuff to be composed of three parts by measure of sand to one part of lime, and 9 lbs. of hair to be added to every yard cube.

Floating and Setting Coats.—The floating coat to be two-thirds fine stuff and one-third sand. Setting coat to be of fine stuff. The prick-up coat is to be carefully tested with plumb-line and straight-edge, and all depressions properly brought up to level of the surface before the floating coat is laid on. The floating coat is to be laid and worked from carefully-prepared screeds.

Ceilings.—The ceiling of the room to be lath, plaster, and set, all the remaining ceilings to be lath, plaster, float, and set.

Walls.—All inner faces of walls and half-brick partitions to be render float and set, and all quarter partitions lath, plaster, float, and set. The plaster to be continued behind skirtings. Walls of the room to be finished with dingd surface.

Angles.—Put rounded angles in Keene's cement to all salient angles internally.

Cornices and Mouldings.—The cornices and mouldings to be run in gauged stuff, composed of four parts putty to one part plaster of Paris. The cornices in the room to be in girth. (Give a list of all the cornices for the various rooms,

specifying the girth of each. If any are to have enrichments, particularise them, and give p.c. price per foot run for the enrichments.) All moulded plaster-work to be executed in accordance with the architects' full size details, and the mouldings are to be run from sharp cut zinc templates. Wherever required by the mouldings, the plastering is to be dibbled out, or angles roughly cut off brickwork as may be necessary.

Portland Cement.—Run the skirtings Portland cement, finished with bold trowelling. (Specify any further work there may be internally in Portland cement, as, for example, apron round the sinks.)

External Plastering.—External plastering may be carried out in Portland cement, limo stucco, or in rough cast. For external plastering a quick setting Portland cement is desirable, weighing between 90 lb. and 100 lb. per struck bushel, as quickness of setting is usually more desirable than great ultimate strength. It is generally advisable that Portland cement work should be completed at one operation rather than in successive coats. Specify the situation where Portland cement work is to be used and the surface with which each is to be finished. When Portland cement is laid in number of coats it is absolutely necessary that each successive coat should be laid on before the previous coat is dry, and this must be well scratched to form the key. The brickwork should be well wetted before the first coat is applied.

Trowelled Stucco.—This is intended to produce surfaces which can be subsequently painted and a smoother face is therefore required. It should be specified thus:—Walls of the room to be rendered and set in trowelled stucco composed of two parts of fine stuff to one part of very fine clean sand and finished with a wet trowel to a perfectly smooth face.

Rough Cast.—Walls of the room to be rendered in Portland cement, finished with rough cast coat of lime and small pebbles or fine gravel mixed together in a pail with a small quantity of Russian tallow and yellow ochre coloring. (This is one method of executing rough cast, but there is also another which should be more properly called pebble dash, and specify this).—Walls of the room to be rendered in

Portland cement and floated with lime stucco after which clean pebbles well washed in painful of water, and taken out wet are to be thrown on the surface of the wet stucco, and lightly beaten in with a wet trowel. (The stucco may be tinted, or the pebble dash may be applied direct to the cement rendering, in such an effect be desired.)

Sgraffito Work.—The Sgraffito work on the walls of the room is to be executed in the following manner:—First a coat of rendering in Portland cement in the proportion of two parts of sand to one of cement. Then a second coat floated in the room tinted plaster stucco, and when this is nearly dry a third setting coat of lime putty is to be laid on, not to exceed ½ in. thick, and whilst this is wet and soft the cartoon previously perforated is to be applied, and the design pounced through, and the necessary parts cut away, revealing the tinted stucco coat beneath. (If a variety of tints are to be used in the floating coat, this should be specified, but when the work is of this nature it is generally a little beyond the province of the ordinary plasterer, as considerable care is required in laying the tinted coat.)

Cut or Stamped Plaster Work.—This, although called stamped plaster, is really or properly described as cut plaster work, as stamps are ordinarily not employed. The work is generally done in a somewhat similar manner to Sgraffito, save that it is not necessary for the plaster to be floated coat to be tinted, and the work is frequently carried out without a setting coat of lime putty. It may also be carried out in Portland cement work if in small pieces.

Distemping.—The walls of the room to be twice distempored to an approved tint. (If particularly delicate colours are to be used, or very bright white, it is advisable to specify that starch should be employed for making the distemper instead of size.) All walls and ceilings before being distempored, are to be carefully stopped, rubbed down, and sized. The ceilings are to be distempored white, broken with a small amount of yellow ochre, instead of black.

Twice Lime White.—The walls of the room to be pointed with a neat flush joint, and twice lime whitened.

Pugging to Floors.—Lay on sound boarding

specified in "Joiner," under the whole of first and second floors with pugging composed of equal parts of lime, sand, and chopped hay laid dry, 2 in. thick.

Keene's and other Cements.—Specify the walls and ceilings, if any, which are to be in Keene's cement, distinguishing those which are to be first of all rendered in Portland cement if this is to be done. Keene's and Parian cement may be used as a finishing coat on ordinary lime plaster, but adamant, granite, and some other patent cements it is inadvisable to do in this way. Therefore when the specification says that a particular piece of work is to be finished in Keene's cement, it may be taken to imply that ordinary lime plastering forms the ground for the Keene's. In specifying adamant plaster, &c., it is advisable not to use the word finished, but to specify the number of coats, and say that the work is to be plastered in adamant (or other plaster), particularising the brands which the manufacturers recommend for particular work. So also if the Keene's cement finished coat is to be laid on coarser Keene's beneath.

Modelling and Casting.—Provide the p.c. sum of for modelling and casting ornamental work in . This price is to include delivery on the premises, but the contractor is to allow for fixing in addition.

The Paving.—This is very often included under the heading of the plasterer's trade, and should be specified thus:—The entrance hall and approach are to be paved with Messrs. files, p.c. 12s. per yard super, delivered at the works, and the tiling is to be laid by the contractor on 6-in. bed of concrete floated in cement; and the tiling is to be laid and jointed in cement. (If the tiling is to be laid in anything of an elaborate pattern, it is generally preferable to let the p.c. price include the cost of laying, this being done by the manufacturer's workmen.)

Wall Tiling and Mosaic Work.—This may be dealt with in a similar manner to the floor tiling. That is, if quite plain and straightforward, the p.c. price to be for the material only, which will be fixed by the contractor, but if elaborate let the p.c. price include the fixing.

Glass Linings to Walls.—The various forms of opaque glass which are now being introduced for wall linings are generally best fixed by the manufacturer's workmen, as they require care, and it is not every contractor who has men capable of doing the work.

Making Good.—The contractor is to cut out defective plaster work, whether from blowing or other causes, and to make good such defects in Keene's cement.

GENERAL BUILDING NEWS.

NEW GENERAL INFIRMARY BUILDINGS, STAFFORD.—A block of new buildings in connexion with the Staffordshire General Infirmary has been erected at Stafford. The cost of the enlargement has been about 20,000. Mr. Aston Webb, of London, is the architect. It was decided to pull down all the old buildings with the exception of the central portion, and to devote this to administrative purposes, and nurses' and servants' accommodation. The provision for patients has been entirely rebuilt, and is disconnected by open corridors from the central or administrative block, and in two pavilions to the north and south, making an elevation towards the high road of 370 ft. in length. The patients are provided for in four large wards, facing east and west, and containing fourteen beds each, a children's ward of twelve beds, three isolation wards of two beds each, three isolation wards of one bed, and two day-rooms, making a total of eighty beds. Detached sanitary blocks are provided at the ends of the large wards, and the whole are built on arches. Attached to the north block is a new operating theatre, served with a patients' lift, and with a preparation room adjoining. Each block is reached by a stone staircase, and at the further end is an external escape in case of fire. The out-patients' department, with its dispensary, consultation, and examination rooms, is placed under a portion of the south block, and a mortuary and post-mortem room have been arranged in the grounds. In the centre block are the kitchens, doctors', nurses', and servants' dining-rooms. On the ground floor are situate entrance and board room, receiving-room for patients, doctors' and matrons' rooms, while on the first floor are nurses' cubicles and sisters' and nurses' sitting-rooms, and on the floor over servants' bedrooms. The sitting-rooms are fitted with hot-water radiators, the large wards having a combination of an open stove and hot water. The air is extracted by means of flues in the walls, collected in flues in the roof, and finished with Kite's extract ventilators. The walls of the wards have all their corners rounded and finished in Keene's cement and

painted. The floors are laid in polished oak. Externally the walls generally have been faced with rough-cast, red brick facings being employed round the window and door openings. A new central porch has also been erected, and a new boundary wall and entrance gate to the road. The work has been carried out in two contracts, the first being the north wing, which was built by Mr. Epley, of Stafford; the second, including the south wing, the isolation and children's wards, and the remodeling of the central block, being carried out by Mr. J. Getting, of Shrewsbury. Mr. Peabworth and Mr. Tanner have acted as clerks of works. An illustration of the infirmary, as remodelled, appeared in our issue of July 27, 1895.

Y.M.C.A. BUILDING, HAMILTON, N.B.—On the 10th inst. the memorial stone of the Hamilton Young Men's Christian Association Institute was laid by Bailie Dreghorn, Glasgow. The building has been designed by Mr. Alexander Gillen, architect. It is situated in Gateside-street, and will consist of a structure three stories high, the first two floors being devoted to the uses of the Association, while the upper flat will be let for residential purposes.

DRILL HALL, RADCLIFFE, BURY, LANCASHIRE.—A new drill hall has been erected in Crow-lane, Ramsbottom, for the K Company of the 2nd V.B. the East Lancashire Regiment, at a cost of 2,000. The plans for the new hall were prepared by Mr. T. Nuttall, of Bury, and Mr. C. Brierley is the builder.

SCHOOL, KITTYBREWSTER, ABERDEEN.—A new school is to be built for the Aberdeen School Board in the Kittybrewster district. The school building will have a frontage of 108 ft. 6 in. to Great Northern-road, and will consist of three floors. It will accommodate about 1,100 children, exclusive of the extra apartments for cookery, scientific gymnastics, &c., and is expected to cost about 10,000. The plans have been prepared by Messrs. Brown & Watt. The school will be built of granite.

SUNDAY SCHOOLS, PENRITH.—New Wesleyan Sunday schools were opened at Penrith recently. The large central hall of the school is 58 ft. by 32 ft. to the north of the large hall are six small class-rooms, and to the west of the second entrance is an infant school room 52 ft. by 16 ft., with a gallery at one end. Over this is the ladies' sewing-room, of the same dimensions. The contractors are:—Masonry, Messrs. T. & W. Forester; joiner's work, Mr. J. Brown; slating, Mr. J. Bailey; plumbing, plastering, &c., Messrs. J. & W. Scott; hot-water heating apparatus, Messrs. Dinning & Cook, Newcastle-on-Tyne. The architects are Messrs. G. Watson & Son.

FREE CHURCH, KYLEKIN, INVERNESS.—This church was opened by the Earl of Moray recently. The building is constructed with Whinstone and faced with Appleross freestone. The contractors were:—Mason, Malcolm McIntosh, Portree; carpenters, Mackenzie & McLean, Portree; painters, Fraser & Gillis, Portree; slaters, Fraser & Co., Inverness; plumbers, McIntosh & Co., Inverness; and the architect was Mr. Wm. McDonald.

BREWERY, BLACKFORD, PERTHSHIRE.—A new brewery has been erected at Blackford for Mr. W. B. Thomson. A siding is to be brought from Blackford Station into the brewery. The malt and hop store, combined, is a building 50 ft. long by 30 ft. wide, and four stories high, and is fitted with elevators and all the necessary machinery for lifting grain from the railway to the respective floors above. The ground floor of this building is used as a cooperage, mill-house, and engine-room. The brewing house adjoins this building, and is 30 ft. long by 20 ft. wide and five stories high. The copper house adjoining the brewing house and is three stories high. The cooler house stretches west from this building. It is 70 ft. long by 28 ft. wide and two stories high. The tun room at the west end of the cooler house is a building 72 ft. long by 42 ft. wide and two stories high. Large maltings are to be erected to the north of the present buildings and will adjoin the malt store. To the east of the brewery has been erected an aerated water manufactory. The building is 104 ft. long by 60 ft. wide and two stories high. The whole of the buildings are to be lighted by electricity. The brewery was designed by Messrs. Russel & Spence, architects and engineers, Glasgow; and the contractors were:—Mason work, Messrs. Taylor Macgregor, Blackford; joiners, Messrs. Taylor & Scotch, Blackford; plasterer, Mr. Grant, Alloa; slater, Mr. Ramsay, Perth; iron work, beams, and columns, Mr. Mather, Edinburgh; iron tanks, reservoirs, &c., Mr. Davie, Stirling; copper work, Mr. Willison, Alloa; tuns, Mr. Clark, Clackmannan; engine, Mr. Cochrane, Barrhead; and boiler, Mr. Sinclair, Perth.

Y.M.C.A. BUILDINGS, BELFAST.—New buildings have just been erected at Belfast for the Young Men's Christian Association. The site extends along Wellington-place, a distance of 86 ft., and more than 230 ft. from front to rear in Wellington-street. The main entrance vestibule is 10 ft. wide by 170 ft. long, and extends along one side of the block from Wellington-place to the ground hall. Halfway from the vestibule is an entrance to the gymnasium, which is also approached by another separate passage leading from Wellington-place. A feature in the principal frontage is formed by the ground floor entrance and shops. Over the doorway rises the octagonal tower to

a height of 100 ft. A large acutely pointed gable adjacent to the tower rises to a similar height. Octagonal turrets placed between the gables have conical roofs of copper. The great hall, 82 ft. by 60 ft., seating about 1,700 people, with galleries round three sides, has a platform at one end. The gymnasium is 90 ft. by 50 ft., a gallery extends round all the sides. The minor hall, 76 ft. by 30 ft., is placed on the first floor. The general secretary's office is located between the principal corridor and the gymnasium, adjoining the central staircase, which lends right up to the top of the building. On the first floor is situated the reading-room. On the ground floor are reception rooms, 42 ft. by 20 ft., and 36 ft. by 20 ft., in addition to a number of offices to be let. These latter are continued on the two next floors. The third floor contains a series of class-rooms. On the upper floor are the culinary apartments. A special photographic gallery is provided on this floor. On the ground floor is a café, which extends from Wellington-place backwards 70 ft. Adjacent to the restaurant are two shops. Messrs. Misgrave & Co., Limited, have erected the heating apparatus and the special iron roofs and gate at main porch. The plumbing and gasfitting contract has been carried out by Mr. John Dowling, Messrs. W. T. Coates & Son have done the electric lighting work, under the direction of Mr. J. H. Greenhall as consulting engineer. The electric supply is obtained from the City Corporation works. Messrs. Ebner & Co., London, have laid the marble mosaic flooring. The marble of porch has been executed by Messrs. Purdy & Millard. Messrs. Robert Patterson and Sons have supplied the locks and fastenings; Messrs. Riddle & Co. and Messrs. Reed & Kyle the grates and chimneys. The electrical contractors for the works were Messrs. W. Macdonald & Son. Messrs. Young & Mackenzie are the architects.

PREMISES FOR THE SCOTTISH PROVIDENT INSTITUTION, BELFAST.—New buildings are to be erected in Donegall-square, Belfast, for the directors of the Scottish Provident Institution. The new buildings will occupy a space of about 100 ft. square, leaving the remainder for future development. They will be in the Palladian style of Italian architecture, executed in white stone, with a lofty columnar order, resting on a rusticated stylobate, and crowned with moulded cornice and balustrade above 80 ft. in height. An octagonal dome placed at the angle will rise 120 ft. Below it will be placed the separate entrance to the insurance office, another porch, with electric lift and stone staircase, accommodating the various suites of offices on the upper floors. The plans of the entire block have been prepared by the architects, Messrs. Young & Mackenzie, of Belfast.

SHOOTING LODGE, PITCARNIC, N.B.—A new shooting lodge is being erected at Pitcarnic. The lodge is being built at an elevation of 750 ft. above the sea level. The building will be two stories in height. The accommodation will consist of three public rooms, with ten bedrooms, four servants' bedrooms, and other offices. Stables with four stalls and two loose boxes are also to be erected, together with coachman's house, gamekeeper's cottage, and kennels. The total cost will be about 3,000. Plans, &c., were prepared by Mr. John Leonard, architect, Edinburgh, under whose personal superintendence the work is being carried out.

SCHOOL BUILDINGS, SHEFFIELD.—At the last meeting of the Sheffield School Board, the minutes of the Buildings Committee contained the following items, which were passed:—Tenders have been obtained for additions and alterations to Gleadless-road School, in accordance with plans and specifications prepared by Mr. Innocent, and the Committee recommended that the tender of Mr. J. Lister, for the sum of 6,291, be accepted, subject to the architect being satisfied as to his sub-contractors, and also subject to the approval of the Education Department. Tenders have been obtained for alterations to Crookesmoor School, for the purpose of improving the lighting of the manual instruction workshop, and the Committee recommended that the tender of Messrs. Ash, Son, & Biggin be accepted.

SANITARY AND ENGINEERING NEWS.

DRY DOCK, FRASERBURGH, N.B.—A dry dock has just been opened in Balalava Harbour, Fraserburgh. The harbour as now formed will have an area of 12½ acres. Up to three years ago fishing boats were not able to gain access to either the north or south harbours of Fraserburgh unless the state of the tide was favourable, and at half tide the Balalava Harbour was practically inaccessible. The works under the contract consisted of the deepening of Balalava Harbour, so that there would be in 17 ft. of water in ordinary spring tides, and from 6 to 18—on an average 7½ ft.—at low water. In addition to the deepening works had to be carried out in the way of construction of jetties, &c. A new jetty had to be built from the steamboat quay, opposite the lifeboat jetty, which was lengthened, as was also the new guard jetty, and between these there was an opening of 90 ft. Further to the Balalava Harbour is a jetty which leaves the entrance to the new dry dock 45 ft. wide. The new dry dock has an area of 3½ acres. Messrs. Abernethy & Son, London, were the engineers, and Messrs. Price and Wills, London, were the contractors, and Mr. Fitzgibbon was the resident engineer.

SEWAGE OF SALFORD.—On the 14th inst., at the twelfth meeting of the current session of the Liverpool Engineering Society, over which Mr. S. B. Cottrell presided, Mr. Joseph Corbett, Borough Engineer of Salford, read a paper, the subject of which was "Sewage Sludge Removal and Shipment." Dealing first with the removal of the sewer silt, he said they had in Salford, as in most old towns, a great number of ancient, badly-constructed sewers, with deficient falls, where silt accumulated continually under ordinary conditions, and where the scouring effects of storm water were insufficient to clear away the aggregations of silt. The sumps they had in use must be condemned on sanitary grounds, as being a kind of cesspool, where foul gases were evolved; but at any rate they were not so bad as sewers choked with silt, and, if frequently emptied, were not seriously objectionable. After some six hours in sewage tanks, the tank effluent was run out to the Ship Canal, almost perfectly clear and colourless, but still containing 110 tons of solid matter. Of this only four tons were then in suspension, and much that was formerly in suspension was then in solution, and thus invisible; 81 tons of mineral matter in solution, chiefly salts, and almost perfectly harmless; and 25 tons of organic matter—that was, animal or vegetable matter, more or less putrescible, but rendered quiescent for the time by the 20 tons of chemicals used. After describing the work done by the sludge steamer *Salford*, he said the Salford boat had now run the two years, and he found that in fine weather she could make five trips per week (her record trip was 10½ hours from wharf to wharf again), and, allowing for the necessary time for repairs, &c., and for delays by fog and rough weather, she would run about forty-two weeks each year, averaging more than four trips per week, say 180 trips per year; thus disposing of 108,000 tons of sludge at a cost of about a cool, a year. The cost was thus about 9d. per ton, and this covered a journey about thirty-four miles along the Ship Canal, and thirty miles along the Mersey and to the North-West Lightship, where her cargo was discharged in eighteen fathoms depth of water in a strong tide-way, where it was quickly dispersed and rendered practically imperceptible within a few hours. So cheap and effective was this process, as compared with any alternative available in their inland towns, that he felt sure we should see within a few years many sludge steamers passing out from the various ports throughout the country; and probably also hopper steamers carrying excavated earth and other inoffensive refuse, for which it was now difficult in many places to find "tips." As the system increased in extent it might be requisite to order the steamers to proceed to deeper water than at present, but that would not greatly enhance the cost. He therefore came to the conclusion that, whatever future improvements might be made in the modes of removing sewer silt and tank sludge, we had now in all probability reached the best and most economical means for its final disposal by shipping it to the deep sea.

SEWERAGE WORKS, &c., ECCLES.—Mr. R. Walton, inspector to the Local Government Board, held an inquiry on the 14th inst. at the Eccles Town Hall, with reference to an application of the Town Council to borrow \$159l. for works of sewerage, 900l. for the construction of underground conveniences at Eccles and Barton, 739l. for repairing Barton Lane—the main thoroughfare to the Ship Canal—275l. for the laying-out of a bowling green on the Recreation Ground, and 217l. for works of private street improvement in Vernon Avenue. The Surveyor (Mr. A. C. Turley) explained the nature of the works to be carried out, and said that the sewage farm at Saltee, to which the sewage would be diverted, was 72 acres in extent, and the working of the farm had hitherto been successful. The inspector afterwards visited the site of the proposed works.

SEWERAGE SCHEMES, HARTBURN AND FAIRFIELD, STOCKTON.—The Stockton Rural District Council at their last meeting had under consideration a report from Mr. D. Ballour, of Newcastle-on-Tyne and Edinburgh, of alternate schemes for the efficient sewerage of Hartburn and Fairfield in their district. The scheme comprises the necessary main sewers in conjunction with an outfall sewer delivering to the nearest point of the River Tees, where sufficiently tidal, after passing through subsiding tanks.

STAINED GLASS AND DECORATION.

WINDOW, ST. GILES'S CHURCH, NEWCASTLE.—The large east window in the chancel of St. Giles's Parish Church has been filled with stained glass as a memorial to the late Alderman W. Mellard, Mayor of Newcastle in 1856 and 1877. The principal subject of the window is the Crucifixion, and the work has been executed by Messrs. Hardman & Co., of Birmingham.

WINDOW, PULHAM ST. MARY CHURCH.—The only remaining plain window in the chancel of St. Mary's Church, on the south side, has just been filled in with stained glass. The representation was designed by Messrs. Burlison & Grylls, of London, and inserted by Mr. A. Palmer, builder.

WINDOWS, CANTERBURY CATHEDRAL.—Two new stained-glass windows have just been inserted in the north transept of Canterbury Cathedral. The windows have been executed by Messrs. Powell, of Whitefriars.

WINDOW, LLANGELYN CHURCH.—The three-light window at the east end of Llangelynn Church, Llywngwrl, has recently been filled with stained glass. The work has been carried out by Messrs. Hardman & Co., of Birmingham, under the direction of Messrs. R. Gillart & Sons, architects, Machynlleth.

DECORATION OF THE NATIONAL PORTRAIT GALLERY, EDINBURGH.—For some time past the Board of Trustees for Manufactures have been engaged in maturing a scheme for the decoration of the National Portrait Gallery. Several additional statues for the niches in the façade were commissioned, and those of Dunbar, David Hume, and James Watt are now in the hands of the sculptors. An anonymous friend has just handed to the Board a sum of 300l. for a statue of Henry Raeburn, the portrait painter, the execution of which has been entrusted to Mr. Fitzcarrick Macgillivray, A.R.S.A. The architect, Dr. Rowand Anderson, has been occupied in arranging for the ornamentation of the capitals of the pillars in the central hall, some of them after designs of selected pupils in the School of Applied Art, and these are now being proceeded with. The lighting of the hall having been found somewhat defective, a wall which separated three small rooms in front of the building from the ambulatory is in course of being taken down and open archways substituted. For the mural decoration of the central hall and ambulatory with this addition, the Board have decided upon a scheme illustrative of Scottish history, the commission for which they have entrusted to Mr. William Hole, R.S.A., the fee to be carried out by Mr. Hole, who has already been paid him for the work shall, if possible, be completed under the superintendence of the Board in the course of three years from this time, Mr. Hole being entitled to employ such competent assistants as he may find necessary to ensure the work being carried out with efficiency and dispatch. Mr. Hole has executed a remarkable series of paintings of this class in St. James Episcopal Church, Inverleith-row.—*Scotsman.*

FOREIGN.

FRANCE.—The "Académie des Inscriptions et Belles Lettres" has passed a resolution to demand from the Department of Fine Art the entire preservation of the church of St. Pierre at Montmartre.

—At the Ecole des Beaux Arts, in the architectural competition among the First Class, medals have been awarded to M. Carlier (pupil of M. Ginain) and M. Blot and M. Saint-Ginest, pupils of M. Laloux.—M. Fontaine, the sculptor, has completed a bust of the Art critic H. de Lamoignon, intended for his tomb in Père Lachaise.—M. Georges Cain, the painter, has been appointed joint curator of the Carnaval Museum.—The Gobelin's manufactory has just completed a tapestry after a cartoon by M. Jean Paul Laurens, representing a scene at Tournai in the fifteenth century. The tapestry is intended for the National Library.—There is talk of raising a monument in Paris to the memory of Vieuxtemps, the celebrated violin player.

—M. Rodin, the sculptor, has at last completed his model for the monument to be erected to Balzac on the Place du Palais Royal. Balzac is represented standing, his arms crossed, looking at the "Comédie Humaine," the principal personages of which pass before him.—As the result of a competition, M. Auguste Maillart, the sculptor, has been commissioned to execute a monument to Captain Méraud, who was killed in the Soudan. It is to be erected at Lunel.—The railway company at present is about to commence the works for the establishment of a line to form a direct communication between Versailles and Rouen.—The Municipality of Paris it about to take in hand a series of excavations to determine the true line of the ancient Roman road which connected Lutetia with the towns in the centre of Gaul.

—Five new lines of railway are to be shortly constructed by the Paris, Lyons, and Mediterranean railway company in the Saône-et-Loire department. These lines will connect Bourbon-Lancy with Toulon, by Arroux; Autun with Corcelles; Macon with Fleuryville; Saint Bonnet with Montcau-lès-Mines; and Saint-Marcel with Martin-en-Bresse.

—The "Ouest" railway company on its part is making a new line in Brittany, between Carnaix and Chateaulin, and another between Renneville and Coutances.—A rope railway, which will be a great convenience to tourists, is to be made at the Baths station of Mont Dore, between the Meynardier bridge and the high plateau known under the name of the "Salon du Capucin."—The death is announced of M. Veron, a landscape painter who enjoyed some reputation in his day.—The Municipality of Corbeil has resolved to preserve and restore, at its own cost, the curious "Saint-Spire" gateway dating from the thirteenth century, which the engineers of the "Ponts et Chaussées" wish to destroy for the purpose of widening a street.

TRADE SUBSCRIPTIONS TO THE JUBILEE CELEBRATION.—Mr. A. Kellett (Willesden) has invited subscriptions among the workmen employed on his various contracts towards the Prince of Wales's Hospital Fund, promising an addition of a shilling on his own part to each individual subscription. The proposal has been well responded to, 67l. having been collected from the workmen on five jobs.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Messrs. Jackson & Tillie, of Belfast, whose design was selected in the competition for the Purdysham Lunatic Asylum, Belfast, have taken into partnership Mr. Godfrey W. Ferguson, of the firm of above-named work.

MESSRS. DOULTON'S SHOW-ROOMS.—Messrs. Doulton have enlarged their show-room space at the Lambeth Potteries, by the arrangement of one or two new rooms for this purpose. Among the more recent additions to their productions is the formation of a semi-glazed stoneware, called by them "Carrara" enamelled stoneware, which allows of the use of this class of exceedingly hard and weather-proof material for exterior work, without the drawback of the highly glazed and polished effect of the ordinary glazed stoneware. This material is being extensively used at the new building for the Birbeck Bank now being erected at Southampton-buildings, Chancery-lane, of which we shall give a further description shortly.

The show-room for glazed ware mantelpieces and fire-places has been rearranged, and a new show-room has been added for the illustration of their more recent introductions in sanitary wares and fittings. Among these may be mentioned the "Silent Arrangement" for cisterns, in which the audible suction at the end of the syphon limb at the close of the discharge is successfully masked by a very simple arrangement; and a new form of the "Simplicious" valve, a combination of the pedestal and valve principle, combining the advantages of both classes. The basin and trap being entirely of ware, a large body of water is retained in the basin, and, owing to the depth of water in the trap, even should the valve be left open the pan itself can never be dry, the flushing being done by a simple waste preventer.

The Patent Bath has an arrangement for a quick waste to the bath, and instead of the old-fashioned standing waste being encased and almost impossible to get at for cleansing, it is in this case exposed, being fitted in a recess at the end of the bath; it is glass enamelled inside, in order to as far as possible prevent fouling, and can be easily removed and cleaned. This form of waste is also applicable to lavatory basins. Another improvement is the application of vitreous and white porcelain enamels to iron baths, so as to obtain the advantages of an earthenware bath at a considerably lower cost. First-class metallic enamel can be had in either French grey or light green colours. Glass enamelled iron pipes.—The adoption of this improvement gives a very smooth surface to the interior of the pipe. Waverley Basin.—This is a large recessed lavatory basin with removable standing waste and a quick discharge.

A new sink, the "No. 515 Sink," is also to be noticed, in which all parts are exposed, so that no obnoxious matter can remain unseen, as is often the case when an enclosure is used. Several of these sanitary improvements, and also the "Carrara" stoneware, are worth the attention of architects.

MONUMENT TO CABOT, BRISTOL.—The design accepted for the Cabot monument to be erected in Bristol is by Mr. W. V. Gough, of Bristol. It provides for a square structure divided into two stages, each being relieved by an ornamental balustrade. The floor of the upper balcony is 75 ft. from the base, and above this is an octagonal spire of 30 ft., surmounted by a globe and a figure of Peace. There is a circular staircase to the first stage, and a spiral staircase has been designed for the second stage. The spire will be a bare white cone, and it is proposed that there shall be four panels, with bronze bas-reliefs filled with suitable inscriptions.

NATIONAL FREE LABOUR ASSOCIATION.—A special general conference of Metropolitan and provincial delegates of the National Free Labour Association was held on Wednesday last week in the Memorial Hall, Farringdon-street, to protest against picketing and industrial intimidation, and to urge upon Parliament the necessity for amending the Conspiracy and Protection of Property Act, 1875. Mr. John Chandler, President of the Association, occupied the chair. The Secretary (Mr. W. Collinson) having given a résumé of the work of the Association during the last four years in regard to picketing, the Chairman, in opening the proceedings, admitted the just right of combination, but he said they did complain when the liberty they claimed for themselves and others degenerated into licence. They intended to agitate persistently for the abolition of the clause in the Act which permitted picketing. Mr. J. G. Ritson (Hill) then moved a resolution urging that an amendment of the "Conspiracy and Protection of Property Act, 1875," was imperative, and that the necessary relief would follow the repeal of Clause 2, Section 7 of that Act. Mr. James Francis (St. George's-in-the-East) seconded the motion, giving various instances of acts of violence during the London dock strike in 1886. Mr. J. Simpson (Peterborough) and Mr. W. Ellis (Newcastle-on-Tyne) supported the resolution, which was adopted. On the motion of Mr. A. Smith (Manchester), seconded by Mr. P. McAuliffe (Dublin), it was decided to request the Secretary of State for the Home Department to receive a deputation from the National Free Labour Association on the subject of the suggested amendment.

PRESTON MASTER BUILDERS' ASSOCIATION.—The fourteenth half-yearly general meeting of this Association

ation was held at the Castle Hotel, Market-place, on the 7th inst. The President, Mr. J. G. Christian, occupied the chair. After the minutes were read and confirmed, Mr. John Tomlinson, the secretary, read the report, which stated that during the past months seventeen new members had joined, making the total number on the books thirty-six. Discussions with the operatives had been cordial during that period, and there had been very few disputes, even of a minor nature. Two of the anomalies, the bricklayers and flaggers and slaters, are asking for advances of wages from May 1st, but nothing definite had yet been decided. In the case of the flaggers and slaters, the employers had previously asked for a change to payment by the hour instead of the day, with a fixed rate for starting and leaving off work in the winter months. The report then reviewed at some length the work of the Lancashire Federation and National Association, to which the local society is affiliated, and also referred to negotiations with the Corporation with respect to their works department, which it was hoped would have a satisfactory ending. On the motion of Mr. J. Swarbrick, seconded by Mr. T. Park, the report was adopted. Mr. John Christian was nominated for the vacancy on the Council of the National Association caused by the death of the late Mr. Walmsley, and Messrs. Christian and T. H. Kellert were elected to represent the Association on the Executive Committee of the Lancashire Federation. It was decided to nominate Mr. James Stows, of Stalbridge, for the presidency of the Lancashire Federation, and to nominate Mr. John Tomlinson for re-election as the secretary. A resolution from the National Association regarding the desirableness of County Councils encouraging the teaching of plastering, &c., in their schools was considered, and on the motion of the Chairman, the members of the Association, with Mr. W. H. Hetherington, were elected a consultative committee to consider the matter and place themselves in communication with the governing body of the Preston Technical School, if considered advisable, with a view to engrafting technical instruction for building trade apprentices.

W. H. HETHERINGTON, HATFIELD CHURCH, YORKSHIRE.—A new oak pulpit has been placed in Hatfield Church. The designs were by Mr. T. S. Broadrick, of Hull, and the work has been executed by Messrs. Hewitt & Son, of Beverley. The oak screen has been restored, and the work has been done by the firm.

APPOINTMENT OF OLDHAM WATERWORKS MANAGER.—A special meeting of the Waterworks Committee of the Oldham Corporation was held recently at the Town Hall, for the purpose of appointing a successor to Mr. Wm. Watts, F.G.S., as Assistant Engineer and Manager of the Oldham Waterworks. Mr. Henszell, a Newcastle engineer, was elected a short time since to the position, but he subsequently refused the appointment. The Committee now interviewed the following four selected candidates: Messrs. J. C. Varley, Oldham; G. J. Varley, Resident Waterworks Engineer to the Batley Corporation; Charles James Batley, Assistant Waterworks Engineer, Bury; and Wm. Ingham, Waterworks Engineer to the Torquay Corporation. Mr. Batley was subsequently appointed.

ELECTRIC LIGHT WORKS, HARRINGTON.—On the 15th inst. the new electric light works were opened at Harrogate. The works are placed on the Corporation irrigation farm, on the Ripon-road. The total power represented in the plant is some fifty horse-power. The Borough lighting is effected through two trunk mains, each capable of transmitting a 250-horse-power current; but, to reduce the working pressure for domestic lighting, five underground chambers have been provided, located at convenient parts of the town, and in these transformers have been placed which convert the 2,000 volt pressure current into one of 200 volts. About three miles of low-pressure cable has been laid down, and it is laid from 15 in. to 18 in. under pavement. It is estimated that some 6,400 eight-horse-power lamps will be required for the use of private consumers, and facilities have been made at electric-light stations for considerable extensions in this direction. The public places lighted are Lion-square, the New Baths, the Victoria Baths, Market Hall, the Corporation Offices, and the Free Library. The whole of the works in connexion with the installation of electric light have been carried out under the supervision of Mr. G. W. Wilby, Borough Electrical Engineer. The price to be charged for the light is 6d. per unit. Messrs. S. Z. Martini, Limited, of Hollinswood, near Manchester, the contractors for the engine, and the same firm also fixed the dynamo and switch gear. The lamps and boilers have been supplied by Messrs. J. H. B. & Co., of Bradford, and the transformers by the British Electrical Company, Prescott; and the transformers by the Brush Company. The total cost of the works has been about 25,000l.

ENCROACHMENTS ON OPEN SPACES ABOUT BEDFORD.—At a meeting of the St. Pancras Vestry on the 14th inst., Dr. J. F. Sykes, D.Sc., in the chair, reported on the encroachments upon open spaces about buildings. He pointed out that in the London Building Act, 1894, although by Section 40 it was provided that a new domestic building, with a habitable basement, should have an open space of less than 100 square feet, old houses possessing

yards, areas, or open spaces at the back or front, or both, were being rebuilt in such a manner as to entirely cover the whole ground area two or three stories up, leaving not a particle of open space, not even a shaft for the purpose of allowing the drainage to discharge in the open. Hence the health conditions of domestic buildings in London would rapidly become worse, and the by-laws, regulations, and directions of the County Council and the sanitary authorities, which were all devised so as to cause drainage to be excluded from or to be placed outside of domestic buildings, were rendered useless by a Building Act which enabled a domestic building to embrace the whole of the drainage of the premises within its external walls. The matter wore an even more serious aspect when considered on a wider basis. The words "open space" originally bore the common meaning of ground space; to most persons they still bore that common-sense meaning, and Parliament had attached that meaning to the words in the Open Spaces Acts. But in the later Buildings Acts the provision of open spaces had successively been lifted from the basement to the ground floor, thence over the ground floor to sixteen feet above the ground level, and in due time might be made by future acts of Parliament to ascend higher, so that eventually a house might be held to have supplied the necessary open space on the roof top instead of at the ground level. Dr. Sykes finally submitted that it was only by tracing the result to its logical conclusion that the past, present, and prospective perversion in the Building Acts of the meaning of "open space" could be fully understood, and the seriousness of the position realised. On the motion of Mr. F. Durant, it was ordered that a copy of Dr. Sykes's report should be sent to all the other London Vestries and District Boards and their observations invited.

EXHIBITION OF ARTS AND CRAFTS AT WOLVERHAMPTON.—An exhibition of arts and crafts, including furniture, tapestry, book-binding and illustrations, jewellery, pottery, glass, &c., in the North and East lower rooms of the Art Gallery, Wolverhampton, was opened recently. The exhibition comprises original drawings by Burne Jones, artistic metal work, a complete set of William Morris's books, and also some tapestry. Among the exhibits is a sundial, which has been designed by Mr. Ashbee, and is to be placed in the grounds of Colonel Shaw-Hellier at Wombourne.

GLASGOW ARCHEOLOGICAL SOCIETY.—The last meeting for the session of this Society was held in the Philosophical Institution, Bath-street, on the 15th inst. Dr. David Murray presiding. Mr. John Orr exhibited the upper stone of a quern found near Glasgow Green, and perforated stones found in the Clyde near Rutherglen Bridge. Mr. Macgregor Chalmers read a paper on the "Vaulting of the Lower Church of Glasgow Cathedral," in which he criticised the theory promulgated recently by Mr. T. L. Watson. A careful examination of the building showed that there was no evidence that there had been any intention to carry out any design other than that existing in the centre aisle. It was found that mouldings which were described as late insertions and of late date were actually wrought on the same stone as mouldings described as of early workmanship, and it was found that the early thirteenth century walls were designed to carry thirteenth century ribs, which were now claimed as alterations of 200 years later. The new plan proposed and described as the plan originally designed was very commonplace, and was quite unworthy of the great artist to whom we owed our cathedral. The fact that this structure was a church and not a crypt had been overlooked, as well as the significant character of the shrine of St. Mungo. The evidence of the building left no room for doubt that whilst some part of the work betrayed want of skill, the present design was as originally projected.—*Glasgow Herald.*

PORTSMOUTH MASTER BUILDERS' ASSOCIATION.—The Borough of Portsmouth Master Builders' Association held a special meeting at the "Sussex Hotel," Landport, on the 14th inst., for the purpose of presenting a testimonial to Mr. J. H. Corke, J.P., ex-President of the Association. In making the presentation, the President, Mr. C. Dye, remarked that the members had met to officially recognise the services of their esteemed ex-President, Mr. Councilor J. H. Corke. Mr. Corke commenced business in Portsmouth as a contractor twenty years ago, and had carried on an extensive business in the borough ever since. Mr. Corke entered the Town Council fifteen years ago as a member for St. Bartholomew's Ward, and he had been returned unopposed ever since. He was Vice-President of the Town Hall Building Committee, and was one of nine appointed to visit the Town Halls in other places to make a selection for Portsmouth. Mr. Corke ever since the Builders' Association fifteen years ago, and had occupied the Presidential chair eight times. In conclusion, Mr. Dye asked Mr. Corke to accept from the Association a silver bowl and centre piece. The inscription on the bowl was as follows:—"Presented to J. H. Corke, Esq., J.P., by the employers of labour in connexion with the building trade in Portsmouth, as a token of their esteem, and in recognition of his valuable services rendered to the Master Builders' Association, April 14th, 1897." In returning thanks, Mr. Corke alluded to the presentation of a silver tea and coffee service to him by the Association seven years

ago. He retired from the chairmanship, not from any desire to shirk his responsibility, but simply owing to ill-health. He promised to continue to do all he could to promote its interest. It was most gratifying to him to see so many old friends present, and he especially thanked the Mayor for coming among them. "The Health of the Mayor" was drunk, and his Worship briefly replied.

CAPITAL AND LABOUR.

THE PLASTERERS' AND BRICKLAYERS' DISPUTE IN LEICESTER.—The conference held between representatives of the local Plasterers' and Bricklayers' Societies, under the presidency of Councillor T. Smith, has resulted in an amicable settlement of the dispute between the parties. Meetings of the two societies were held, and at both the terms of settlement drawn up at the conference referred to were adopted in their entirety, viz., that all *in situ* work and rendering of all rain-water eissons and flats to water closets be done by bricklayers; (2) that all screeding and hearths be done by plasterers; and (3) that wherever a plasterer is engaged on any job the bricklayer shall not do any kind of plastering.—*Leicester Post.*

MEETINGS.

SATURDAY, APRIL 24.
Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at Beddington Swange Farm, Crystal Palace.
Sanitary Inspectors' Association (Western Branch).—Meeting at Weston-super-Mare.
Incorporated Association of Municipal and County Engineers.—Home Counties' District Meeting, to be held at Dover.
Northern Architectural Association.—Excursion meeting at Messrs. W. Harriman & Co.'s works, Blydenham, Mr. W. H. Allen to read a paper on "Fireclay Manufactures."
Edinburgh Architectural Association.—Visit (1) to Baveland Castle, Balerno; (2) Lennox Tower.

MONDAY, APRIL 26.
Surveyors' Institution.—Mr. W. H. Payne (Barrister-at-Law), L.C.C., on "Local Authorities and the Building Laws," 8 p.m.
Sanitary Institute (Lectures for Sanitary Officers).—Professor Henry Robinson on "Sewerage and Sewage Disposal," 8 p.m.

TUESDAY, APRIL 27.
Society of Arts (Applied Art Section).—Dr. J. W. L. Glaisher on "Deli Ware," 8 p.m.
Institution of Civil Engineers.—Annual general meeting, of corporate members only, to receive the report of the Council, and to elect the Council and auditors for the ensuing year, 8 p.m.
The Auctioneers' Institute.—Mr. H. Bushell on "The Practical Application of the Principles and Law of Dilapidations," 8 p.m.

WEDNESDAY, APRIL 28.
Society of Arts.—Mr. R. H. Jones on "Asbestos and Asbestic," with some Account of the Recent Discovery of the latter at Danville, in Lower Canada," 8 p.m.
Institution of Mechanical Engineers.—Ordinary General Meeting, Mr. Leslie S. Robinson on "Mechanical Propulsion on Canals," 7.30 p.m.
Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at the East London Waterworks, Lea Bridge, 3 p.m.
Liverpool Engineering Society.—Annual General Meeting, Mr. E. A. H. Shaw on "Portland Cement," 8 p.m.

THURSDAY, APRIL 29.
Sanitary Institute (Lectures for Sanitary Officers).—Mr. Charles Mason on "Scavenging; Disposal of House Refuse," 8 p.m.
Society of Antiquaries. 8.30 p.m.

FRIDAY, APRIL 30.
The Architectural Association.—Mr. Hugh Stannus on "The Classic Cornice," 7.30 p.m.
Royal Institution.—Professor J. J. Thomson on "Cathode Rays," 9 p.m.
Institution of Mechanical Engineers.—Ordinary General Meeting (continued). Paper by Mr. W. G. Walker, entitled "Experiments on Propeller Ventilating Fans, and on the electric motor driving them," 7.30 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.
6,613.—T-SQUARE: J. Graus.—This invention consists in a T-square with adjustable head, for the purpose of rapidly setting and automatically retaining it in any desired angular position. The square consists of a head and blade, having attached, by means of a segmental rack, an auxiliary head, the main head capable of being locked at any desired angle to the auxiliary one by means of pawls under the influence of springs. Microscopic adjusting the pawls afford the means of the most delicate adjustment.
7,770.—KILNS FOR BURNING BRICK, TILES, POTTERY, &c.: J. West and Another.—The subject of this invention is a kiln for burning bricks, tiles, and such like with gasolene gas, in which various kilns of a set are worked in rotation so that the air for combustion is heated by mixing with the gas and unburnt goods is heated before the products of combustion from another kiln. The inventor claims the peculiar arrangement of flues and dampers whereby fires are maintained and regulated along both sides of the kiln as delineated in his drawings. Also a method of conveying the gases from the top of the chambers to the chimney.
8,823.—PANS OF WASTE OR SLOP WATER TANKS: J. E. Place and Another. The basin or pan is constructed with curved inlet (with baffle), dished bottom, broad top, and outlet terminating immediately under the edge of the pan (so that the trap is close under the edge of the outlet), and a central foot.
26,335.—CONCRETE BRIDGES: G. A. Geisel.—The inventor claims his bridge entirely of concrete, the arch thereof con-

COMPETITION, CONTRACTS, AND PUBLIC APPOINTMENTS.

Table with columns: COMPETITION (Nature of Work, By whom Advertised, Premiums, Designs to be delivered) and CONTRACTS (Nature of Work or Material, By whom Required, Forms of Tender, Ac. Supplied, Tenders to be delivered). Includes various construction projects like bridges, schools, and houses.

PUBLIC APPOINTMENTS.

Table with columns: Nature of Appointment, By whom Advertised, Salary, Applications to be in. Lists various public roles and their associated salaries.

Those marked with an asterisk (*) are advertised in this number. Competitions, iv. Contract, pp. iv, vi, viii, & xxi. Public Appointments, pp. xviii, & xxi.

sisting of three pieces and four joints. The bridge consists of abutments, haunches (comprising voussoirs of concrete, bonded together and with cushions of asphalt, or with lead inserted between the adjacent faces of haunches and skew-backs of the abutments).

NEW APPLICATIONS FOR LETTERS PATENT. APRIL 5.—8,668, G. Biny and H. Hill, Wood Screws, Casing Screws, &c.—8,651, T. Woodhouse, Syphon Flushing Cisterns, &c.—8,652, J. Cooper and F. Bensly, Step and other Treads, &c.—8,657, J. Shanks, Water-closets, &c.—8,656, P. Phillips, Fillings for Coating Wood Before Painting Same.—8,668, F. Haidick, Platforms or Balconies for Use on Houses and other Buildings.

F. Crosland, Lime or Cement Kilns.—6,569, H. Scoweroll, Saw Blades used for Sowing Stone.—6,522, E. Woodland, Ventilating Gear for Greenhouses, &c.—6,524, F. Dew, Casement Fastenings.—7,115, S. Pugs, Cows for Chimneys, &c.—7,160, J. Shanks, Trough Closets or Latrines.—7,268, H. Clay, Water-closets, and Flushing Apparatus therefor.—7,445, W. Farleigh, Fire-grates.—7,657, J. Shepperson and F. Duxwood, Wall Fastenings, &c. and Bricks or Tiles for same.—7,694, R. Cuthbert, Window Sash Fasteners.

SOME RECENT SALES OF PROPERTY: ESTATE EXCHANGE REPORT. APRIL 5.—By REBBECK BROS. (at Bournemouth). Bournemouth, Haunts.—Bathurst, 'Burley Lodge,' and half an acre, u.t. 66 yrs., g.t. 81. 10s. £3,000 Cambridge-rd., 'The Holme,' t. 120f. 3,605 Surrey-rd., 'Mentone,' t. 1, 90f. 1,440 Current-rd., 'Glenbrook,' and half an acre, t. 1, 80f. 1,600 APRIL 7.—By W. J. PIERCE & THORPE (at Foster's Booth). Eastcote, Northants.—Freehold farmhouse, and 33a. or. 39 p. f. 715 Enclosures of land, 2a. 1. 31 p. f. 445 By W. R. NICHOLS & Co. (at Chessham). Chessham, Bucks.—'Cherry Trees Farm,' and a building site adjoining, 20a. 37. 1 p. f. 1,225 Five freehold building sites, 26a. 27. 2 p. f. 600 APRIL 8.—By CALVERT & BRIGGS (at Briggs). Scawby, Lincs.—'Lincoln Hill Farm,' 52a. 31. f. 1,850 Two freehold cottages 'at Acton' 775 By Messrs. SUGDEN & Co. (at Acton). Acton, Norfolk.—A freehold house and warehouse. 220 By N. EASTON & SON (at Goolle). Swinestick, Ect., Yorks.—A freehold farm, 125a. 11. 22 p. 7,000 Enclosures of land, 20a. 0. 12 p. f. 1,055 By W. DEW & SONS (at Bettws-y-Coed). Snowdon, Carnarvon.—'The Pen-y-Gwryd Hotel' and 8 a. u.t. 24 yrs., g.t. 150. 1,625 By THOMPSON & Co. (at Amxminster). Wootton Fitzpaine, Dorset.—'Forset Farm,' 31a. 27. 26 p. f. 560 APRIL 9.—By WHITTINDALE, DUNN & WATSON (at Coventry). Coventry, Warwick.—Moor-st., three freehold messuages, 1, 46f. 800 Upper Well-st.—'The Old Tan Yard,' u.t. 24 yrs., g.t. 50f., t. 216f. 860

Arley, Warwick.—'Ballard's Green Farm,' 1ra. 11. 22 p. f. 1,200 Stokel, Warwick.—Shakespear-st., two freehold messuages, and a building plot adjoining 25 A freehold residence, r. 14f. 45 April 12.—By C. H. BROWN. Pimlico.—24, Rutland-st., u.t. 99 yrs., g.t. 81, r. 45f. 31 By ALFRED RICHARDS. Loughton.—High Beech, 'Dick Turpin's Cave' E. 100 f. 1,600 Camden Town.—175 and 380, York-rd., u.t. 514 yrs., g.t. 44, 1. 175f. 1,770 Houghton.—1 to 16, Bankstock-bldgs., u.t. 27 yrs., g.t. 26f. 751 Hoxton.—'Chase Side,' 'Mornington House,' u.t. 863 yrs., g.t. 14f. 800 Chase Side, l.g.r. 14f. 108, u.t. 863 yrs. 77 1 and 2, Mornington-chill-rd., u.t. 863 yrs., g.t. 14f. 800 Canning Town.—Stephenson-rd.—'The Britannia' p.h., an improved rental of 30f. for 68 yrs., with reversion 8 Enfield Lock—1 and 2, Hanby-cottages, u.t. 83 yrs., g.t. 4f. 38 By FRANCIS & Co. Stockwell.—21, Love-lane, u.t. 457 yrs., g.t. 102. 6d. Shadwell.—3 and 4, Albert-st., u.t. 66 yrs., g.t. 14f. 108. 5 and 7, Lampton-rd., u.t. 78 yrs., g.t. 12f. 24f., t. 1, 108f. 1,100 By T. J. BARNETT & SON (at Dudley). Rowley Regis, Staffs.—101, 104, and 105, Congreaves-rd., f. 2,000 Overend-rd., enclosures of land, with various buildings thereon, 24 a. 2. 20 p. 2,800 Overend-rd., 'Congreaves Hall,' and 14 a. 2, 2, 20 p. 2,800 Cradley, Worcester.—Banner-lane, enclosures of land, 27 a. 2. 20 p. 1,770 By DYER, SON, & HILTON (at Lewisham). Catford.—58, 58, and 60, Rushey Green, and 4 to 9, Patrol-pl., f. 1, 108f. 1,100 Lewisham.—Clarence-lodge, f. 1, 40f. 600 35, Mount Pleasant-rd., f. 1, 32f. 800 APRIL 13.—By ASBEN, RUTTER & FRAGHOE. Mayfair.—24, Berkeley-sq., u.t. 50 yrs., g.t. 110f. 5,800 By DEBERHAM, TEWSON, & Co. City of London.—11, 11a, and 12, Workwood-st., f. 1, 92f., and 1, 2, and 3, Belmont-st., u.t. 57 and 37 yrs., g.t. 205f., t. 545f. 15,500 Baywater.—118, Westbourne-grove, f. 1, 40f. 450 Chalk Farm.—51, Regent's Pk.-rd., f. 1, 40f. 450 Regent's Pk.—61, a freehold rental of 50f. for 96 yrs. 1,700 By E. & H. LUMLEY. Regent's Pk.—31, Chester-st., u.t. 181 yrs., g.t. 52f. 108f. 1,200 By J. A. LUMLEY & Co. Chelsea.—Sloane-st., a profit rental of 160f. for 191 yrs. 1,650 By W. D. DAVIS. King's Cross.—21 and 21a, Argyl-st., u.t. 45 yrs., g.t. 10f. 1,650

WALSALL.—Accepted for the erection of foreman's house, Sec. Brick Gateworks, for the Corporation. Quantities by Mr. F. G. Hughes, Birmingham.— Thomas Tildesley, Walsall. £1,479 (Five tenders received).

WEST HAM.—For the erection of sewage pumping engine and boiler houses, and electric lighting buildings, Abbey Wood, Stratford, for the Town Council. Mr. Lewis Angell, Engineer, 1 Own Hall, Stratford, E.— Portland Artificial stone. £3,599 47-13-0

Table with 2 columns: Contractor Name and Amount. Includes J. Jackson, Shillito & Son, Munday & Son, H. Cooke & Co., Chessum & Sons, G. Sharpe, C. Gray Hill, Gregar & Son.

WINDSOR.—Accepted for making-up, &c., Bolton-road, for the Town Council. T. Kelly, Windsor. £230 (Borough Surveyor's estimate, £255).

WINDSOR.—For new mission hall, Old Windsor, Berks. Mr. J. W. Oakes, architect, Epsom.— G. Gray, C. Buckeridge, Cooper & Son, W. Beauchamp.

LONDON SCHOOL BOARD TENDERS. At a recent meeting of the London School Board, the Works Committee submitted the following lists of tenders:—

Painting the Exteriors of the following Schools, between April 24 and May 31, 1897.

BRUNSWICK ROAD.— T. H. Jackson, D. Gibb & Co., J. Kybett.

BUCKINGHAM STREET.— F. Britton, Stevens Bros., W. Hornett.

DARBY STREET.—Painting and repairs:— W. J. Hack, J. F. Holliday, W. Hornett.

FAST LANE.— W. Hornett, H. Ling, H. J. Williams, W. & H. Castle, B. E. Nightingale.

GOODSON ROAD.— C. Barker, W. & H. Castle, H. J. Williams, F. Holliday & Greenwood, T. Crews.

GRAFTON ROAD.— F. Britton, F. T. Chisholm, C. Barker, T. Crews.

MACLEAY CRESCENT.— McCormick & Son, S. H. Cornfield, W. Chappell, W. Hornett.

"HIGHWAY" SCHOOL.— J. T. Robey, J. F. Holliday, D. Gibb & Co., A. W. Derby.

C. B. N. SNEWIN MAHOGANY, WAINSCOT, WALNUT, TEAK, VENEER, and TIMBER MERCHANT, Nos. 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, & 17, RACK HILL, HATTON GARDEN, and 29, RAY STREET, FARRINGTON ROAD, E.C.

LATIMER ROAD.— G. H. Sealey, H. C. Clifton, W. Brown, G. Foxley, H. Somerset & Son.

OLDRIDGE ROAD.— A. J. Acworth, H. Brown, Rice & Son, E. Flood, E. T. Page.

PRIORY GROVE.— G. Gurling, T. Hooper, Star & Son, H. Mallett, K. E. Williams & Sons.

WALLER ROAD.— J. & A. Oldman, W. Banks, C. Gurling.

WILTON ROAD.— W. Lawrence, W. & C. Bonyer, T. Nicholson, W. Silk & Son.

SOUTHAMPTON STREET.—Rebuilding offices and providing drainage:— Lathley Bros., J. Garrett & Son, G. Parker, Johnson & Co.

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Architecture at the Academy and the Salon.



THE French Salon, the Old Salon at the Palais de l'Industrie, has opened its doors earlier than usual this year, earlier even than was at first announced, for the two

Salons each endeavour to forestall the other, and the previously-announced date of April 25 for the opening of the old Salon was subsequently altered to the 20th. Consequently we can compare the architectural exhibits there and at the Royal Academy in the same article; but as we must conclude our remarks on the French drawings in this article, it will be more convenient to give them the precedence.

The architectural drawings at the Old Salon at Paris consist of much the usual assortment; a great set of classical restoration drawings on a very large scale; a certain number of large and finely executed drawings which for the most part are obviously either designs submitted in competitions for buildings or academical studies; a number of drawings and sketches of ancient work, including some exceedingly fine and highly-finished examples of architectural illustration; and here and there a few drawings of buildings which appear to be *bona fide* commissions, either executed or about to be executed. Owing to the preponderance of the academical element, and the extent to which exhibits of this class seem to be confined to certain school forms of design, one receives the impression that each year's exhibition is almost the same as the last. It is true that last year there was an exception in the fact that the leading set of drawings of the year represented a large practical structure, the Post and Telegraph Dépôt;* but this was a very occasional feature. The great defect of the Salon architectural department is that in spite of the beauty of many of the drawings, which in this respect are far beyond what is generally seen at the Academy, the collection is hardly at all representative of the current architectural work of the day, and there seems to be no attempt to render it so.

The leading set of drawings this year is M. Pontremoli's series representing the remains at Pergamos and their restoration; an "envoi de Rome" which has before been mentioned in our columns. The principal drawing is a geometrical elevation of the whole collection of temples, altars, &c., a huge drawing about fourteen feet long, the whole beautifully executed, but when compared with the equally careful drawing of the actual remains it must be admitted that the faculty of imagination plays a large part in the restorations carried out by the students of the Villa Medici. A large detail drawing shows the Altis with its now celebrated alto-relief sculpture restored—and here there is room for other faculties than those of imagination—and an Ionic colonnade over it with wall-paintings in the rear of the columns. Over the central altar rises a slab carved with interlaced serpents; what is the meaning of the black pyramidal shaped mass on each side of this, looking like a hipped roof butting against the central block, is not very apparent. However, the drawings are a very fine set, and M. Pontremoli has no doubt made his mark with them as a French architectural student of the first rank.

Two models appear in the architectural room, which appear to represent work that is really in contemplation. One is a plaster sketch of a design by M. Deperties (architect) and M. d'Ilzsch (sculptor) for a monument to Puget, and is a clever and spirited piece of work of Louis Quatorze detail, forming an oblong mass, flat in the rear and semicircular at the front, the general shape being apparently suggested by that of the ship or ship's prow which forms the crown of the design. In front, under the said prow, is the figure of Puget in an energetic attitude, mallet in hand; at the back is a panel for inscriptions, partly protected by a semi-dome carried out on consoles. The details generally are bold and effective in character. The other model represents a design for a fountain by M. Bartholdi, with a memorial portrait figure at the top; the whole design is also represented by a full-size model in the sculpture court. The design is original; the centre portion is supported by four flying buttresses of elliptical line springing from pedestals on the outer rim of the main basin; the defect of the design is that the Classic tabernacle or shrine in the centre, on the top of which the

figure stands, is insufficient in scale for the figure; the arches in it, which are designed as arches for entrance, are only three-fourths the height of the figure above, so that figure and architecture belong to entirely different scales. We should say that M. Bartholdi, who is professedly a sculptor, has not had the assistance of an architect in this design.

Among the large competition designs already referred to, the only one that is worth special remark is that by MM. L. P. Blanc and A. Marcel, described in the catalogue as "Gare Centrale de Bucarest," but which is obviously only a competition scheme, as it is one that unfortunately no railway company would carry out; unfortunately, for it is a very fine and remarkable design of its class. The elevation, on a large scale and drawn and tinted in the usual complete and effective French manner, shows an immense rusticated stone front, with three great arches divided by massive plaster-like piers, and corresponding to the three parallel semi-circular iron roofs of the interior. At the base of each pier is a buttress semi-circular on plan, carrying a globe which forms a pedestal for a sculptured figure. The whole composition is crowned with a large cantilever cornice with a frieze of Classic ornament interspersed with shields. The perspective view of the interior of the station shows an effective treatment with a series of iron and glass domes and pendentives. There are of course complete plans and sections, and the whole forms not only a splendid set of drawings but a really fine conception for the architectural treatment of a terminal railway station. M. Blanc also exhibits an equally large elevation for the University of Jassy (Roumania), but this is a cold and heavy Classic composition, looking like anything rather than a university.

Among the drawings in the large architectural room is another remarkable set by M. A. Auguste Marcel, called in the catalogue "Salle de Fêtes à Paris," but on the drawings "Galerie Japonaise." "Japanesque" would perhaps be the more fitting adjective, although the exterior does seem to be a treatment in Japanese timber construction carefully imitated. Internally the sections show a perfect riot of detail and colour which may be called a French version of Japanese detail. It is a *tour de force* of coloured architectural drawing; every detail,

* Illustrated in *The Builder* for April 10, 1897.

down to the elaborately carved cabinets and their contents, being minutely made out.

As usual, the less important architectural contributions are ranged along one of the galleries adjoining the central one of the exhibition. M. Mesnager's "Rendezvous de Chasse," a hunting pavilion in classic style, very much resembles other designs for the same kind of building which we have seen in former exhibitions; but it is worth attention as showing a power of adapting French Renaissance details to a design which exactly expresses what it is intended for—a kind of state hunting-box for a nobleman's domain; it cannot be taken for anything but what it is, though it is far removed from the style in which a building of this description would be treated in England. M. Jasson's "Hospice de Vieillards, à Saint-Julien," appears to be one of the few sets of drawings representing actual commissions; this is in the very plain architectural style which the French architects of to-day affect for hospitals, schools, asylums, &c., all which are treated pretty much alike; plain brick or stone buildings with no ornament except perhaps, as here, a coloured frieze in tiles or terra-cotta. The plan, forming three sides of a quadrangle, is worth note in regard to the fact that the side wings are not joined on to the cross one, but an opening is left between the buildings at the angle, showing a perception of the principal sanitary objection to the complete quadrangle form of plan. M. Legresle's "Un Sanatorium pour des Enfants" shows the same kind of architectural character; a sanatorium for children, in the French idea, being properly treated so as to look as like a mill or factory as possible. M. Rigault's "Propriété de M. D—, à Saint-Etienne" is another of the practicable designs, and consists of two or three apartment houses adjoining each other, which show a little variation from the usual French type of town house of this class: two of the houses, forming one design, have a classic stone front, the remaining portion of the block is Gothic in type and executed in brick with stone dressings, and with a very large corbelled-out turret running up the front; there is nothing remarkable in the design except in the fact of the architect having ventured to depart from the usual *maison-à-loyer* type of French front. The French *maison de campagne* appears in all its horrors in M. Hervey-Picard's design under that title. M. Vernon's "Villa à Saint-Priest" is a more pleasing example, which is to say that it varies from the usual type of French villa, and has less gimcrack about it. A small perspective interior of the new Salon at the Casino at Monte Carlo, by M. Henri Schmit, which might easily pass unnoticed among the large drawings by which it is surrounded, shows a pleasing and bold treatment of a large room with an elliptical arch on each face, carrying an iron and glass dome of very low section; considering that this is for a casino it shows an unusual and praiseworthy absence of fussiness or pretence in detail, and is a good bit of design of its kind. The competition design for a "Caserné des Sapeurs-Pompiers" at Montmartre, by MM. Lecamp & Robert, is worth attention as an attempt, in a solid and monumental-looking design, to adapt classic architectural features to a barrack, while preserving a suitable simplicity and ruggedness of general character. M. Lafon's "Maison de Cam-

pagne à Alais" is refreshing from its simplicity of style, and rather amusing to the English eye from its *maître* of plan, with the little kitchen and the water-closet next to it and opening out of the same lobby, &c. As we have mentioned the realistic and prosaic treatment common in designs for asylums and other such institutions, we may mention by contrast M. Tony Garnier's design for a "Sanatorium pour les officiers et soldats convalescents des armées de terre et de mer," a wild dream of terraces and pavilions extended in long perspective by the borders of the sea.

The addition to the "Crédit Lyonnais," by M. Bouwens-van-der-boeyen, is a good piece of practical business architecture, the flank elevation consisting of massive stone piers the whole space between which is filled in by an iron construction of floors and windows; it does not make so effective an exterior as the Americans produce with their stone casings to steel constructions, but it has at least the merit of being a genuine construction, the stone piers being an actual support to the work and not a casing. The "Banque Russe, pour le commerce étranger, Paris," by M. Brincourt, is another practical building, with a large iron roof of which both a model and section are shown; the triangular space between tie-rods and rafters is apparently intended to be hermetically sealed and is marked on the section "espace d'air confiné." Is this supposed to be a defence against variations of temperature?

Of the modern churches, of which there are two or three examples, the less said the better. The church at Etang-Vergy, by M. Saint-Père, is a design which to English eyes is almost shocking in its bare cast-iron hardness of style and detail and the feeble manner in which the buttresses are planted on anyhow; the only bit with any character is the much-entassid spire with large moulded ribs and alternate bands of brick and stone; this feature is ugly enough too, but not quite commonplace. M. Woog's church at Cesson, St. Brieuc, is a little better, but the quasi-Gothic of the modern French country church is as repellent to English taste as the quasi-picturesque of the *maison de campagne*. Among the restoration drawings of churches are one or two interesting exhibits, among them the set of drawings of the restoration of the Byzantine church of Mervaka, near Argos, by M. Léon Chesnay. These show a church with a centre cupola of the usual late Byzantine type, the body of the church being apparently built of a warm yellowish stone on an irregularly coursed base of large blocks of grey marble, the colour and effect of the materials being very well shown in the drawings, which show also on each face the restoration of a square arched porch, of which only the wall-corbels of the arches actually remain. M. Mandin exhibits the drawings for the restoration and enlargement of the little French Byzantine church at Issac, a small domed church without aisles, as usual in that type of early French architecture, in which it is proposed to reface the jambs of all the openings, to add apses forming transepts to the third bay, and to add a new west porch and façade of a simple kind. No realistic perspective view is shown, the drawings are all geometrical, and form an interesting little set, but it is to be feared that not much of

the interest of the actual building will be left when the work is done.

Of decorative design there is never much to be seen at the Salon, and that little seldom good; this year however there is one fine piece of work, the "Projet de Salon de réception dans un palais princier," by M. Carré, a longitudinal section of a classic *salon* with coupled columns at intervals, differing from the ordinary French classic design in the amount of rich colour introduced into it in marbles and inlays, the effect of which is beautifully shown on the drawing. Besides this, the best bit of decorative work is a design for the treatment of the wooden ceiling of the hall at the Château de Plessis-Barbe, by M. Bodin, which is quiet and in good taste. A curious example of French taste is seen in the design for a sepulchral monument, "Monument funéraire de famille," a little marble chapel with large bronze crucifix affixed to the wall over the doorway; the general design is of a type which is familiar to us in modern French works of this kind, and which has the merit of monumental solidity and a certain solemnity of expression, but in this case all marred by the unlucky treatment of the sides of the monument in imitation of the folds of a hearse-cloth which at once vulgarises the whole design. In England we should only expect to find this kind of thing among the marble-mason of Euston-road.

It is when we come to the illustrative drawings that we have to bow our diminished heads before the excellence of the French work. This use of the art of architectural drawing the French architects have certainly brought to perfection. To look at the set of drawings of Château Goulaine by M. Chaussepied seems almost as good as having seen the building itself; colour and texture of walling, and every little detail of the work are shown in such realistic perfection. It is to be wished that the English architectural students who compete for "measured drawings" prizes could see some of these French illustrative drawings, and realise how far they go beyond anything for which prizes are given at the Institute. Among other drawings of the same class may be mentioned the beautiful studies of antique fragments by M. Eustache, the series of copies of the mural paintings of the churches of Peribleptos and Pantanassa, at Mistra, by M. Yperman, the large water-colours of the mural paintings of the Sybils at Amiens, by M. Guédy; and the splendid highly finished perspective drawing of the cathedral of Rodez, by M. Pailhès. On the contrary it must be admitted that in small and more rapid sketches and studies of buildings of the spot the French exhibits are hardly up to our level; they do not show the same feeling for touch and effect as we find in the work of English architectural sketchers. The best are the collection of sketches in the Ile-de-France, Picardie, and Champagne, by M. Grellet.

At the New Salon there are no architectural drawings worth speaking of, but a good deal of furniture and of the class of things called generally "objets d'art," the New Salon making a feature of representing decorative arts and crafts, which the Old Salon (like the Royal Academy) seems to make a point of ignoring. There is little, however, among the furniture and room decoration which would appeal to English sym-

pathies. The fault of the French in these things is that they are too clever; they cannot be content with simplicity of line and structure, everything is restless and condecorated. There is a large and much gilded Gothic high altar erected by M. Paul Gout, which however is more striking from its size and splendour of gilding than from any higher quality. M. Roche makes a new suggestion in his model of a cupola formed of translucent faience through which the light passes, the lower portion forming a series of translucent figures: but it is one thing to do this in a model, another thing to carry it out on a large scale. For a small space—the skylight to a vestibule for instance, something might be done with it. Among the stained glass exhibited is a brilliant and effective window by M. Carot, intended for the staircase of the Mairie at Verreux, and consisting almost entirely of a mass of flowers grouped naturally, only treated in a flat manner; the design, which shows a glimpse of a landscape between the flowers, is entitled "Le Printemps à Verreux." Among the objects in cases placed in the central gallery are many clever things and much beautiful workmanship, happily marred by the trail of the article de Paris" almost everywhere. Among the exceptions are M. Brateau's exhibits of pewter goblets, &c.; a very pretty ring in gold, silver, and iron by M. Arabin, the gold portion being a minute female figure—there is a "Renaissance" brook about this little bit of work; a case of pottery by M. Dammouse, of fine form and colour; a very fine cloisonné enamel vase by Mr. Heaton; some good stoneware by M. Hanneney; some very pretty and delicate blown glass by M. Koepping; various small objects in enamel by M. Thesmar, of most delicate workmanship but spoiled by bad colour; and a case of goldsmith's work and jewellery by M. Nocq, including a hand mirror of which the handle is formed by a nude figure of Narcissus placed as if looking into the mirror; a pretty fancy.

It is an extraordinary change from the large spaces and vast drawings at the Salon to the one little architectural room at the Royal Academy, with its pretty collection of cabinet pictures of architecture. There is nothing of plan or construction of buildings to be learned here; none of that learned and complete setting forth of a building in all its parts and details which we find at the Salon. Such sets of drawings, for instance, as that of the Bucharest railway station design above referred to; and the illustrations of ancient work are little more than sketches compared with the monumental drawings of the French architects. On the other hand there is this to be said for our collection, that it is far less academical; it shows, within its limits, greater variety of aim and style; and moreover it does represent, as far as it goes, the architectural work of the day, it gives some indication of what kind of buildings are being carried out. In general sense the collection is equal to the average in regard to drawing and design, though few important buildings are illustrated, the drawings mostly representing rather small works. The central place is occupied by a fine line drawing bearing the names of Mr. Norman Shaw and Mr. J. F. Boyle, in which we should think the former is the larger collaborator, for the design looks like another edition of new Scotland

Yard, even down to the detail of changing suddenly from stone to brick walling without the intervention of a moulding. It is called simply "New Buildings, Liverpool," and we are left to imagine the purpose of the block, though it has a very police-like or prison-like appearance, emphasised by the plain massive cantilevers carrying an iron gallery which runs round the building and abuts against the corbelled-out angle turrets, where doors communicate with it. Without knowing what the building is intended for, it is impossible to form any judgment as to the propriety of its architectural expression. On either side of this are two large water-colour drawings exhibited in the names respectively of Mr. C. W. Whall and Mr. H. Wilson, but which are both Mr. Wilson's drawing. The former represents the east end of the private chapel at Lanark, of which we published some illustrations last year, and which represents the work of Mr. Wilson and Mr. Whall in collaboration. The drawing is of course a fine and bold one in general effect, though it does not show the detail very well. The drawing bearing Mr. Wilson's name is a representation of the new staircase at Welbeck Abbey, and is a splendid piece of colour effect, but it does not convey to us very well what is the actual nature of the work; it is not very easy to tell, for instance, whether the figure work and ornament shown in balustrades and other portions is carving in relief in coloured marbles, or painted or inlaid colour decoration. A French drawing would leave us in no doubt as to this, though it might not have the vigour and freedom of Mr. Wilson's water-colour work. The general style of the work seems to arise from an aim at novelty of effect by using some accepted features of architecture without their usual adjuncts; a row of colonnettes carrying nothing, and square angle newels cut off short at the top with no moulding or finish, but with a statuette perched on them. The kind of effect produced is certainly novel, but we think it wants architectural refinement, and that it is a kind of novelty people may presently tire of. However, it is at all events a splendid drawing.

The two special characteristics of this year's architectural show are that plans are even more rare than ever, things in this respect getting worse instead of better; and that there is an unusual proportion of church architecture, so much so that one is inclined to think that the hanging committee (if there is one for architecture, which we have always doubted), finding a good many church designs sent in, determined to hang as many of them as possible, by way of giving a certain special character to this year's exhibition. This being so, we may devote the short remainder of this article to a few words on the churches, reserving other subjects for a future number. The most prominent church drawing is the exterior perspective of St. George's, Stockport, by Messrs. Austin & Paley (1790), a fine solid pyramidal group with a large centre tower and spire; the tower, though broken up a good deal with buttresses and panelling, shows a great proportion of solid wall which gives it a very monumental appearance, and the considerable falling in of the angle lines adds to the effect of solidity while leading the composition up to the spire. The general style is perpendicular Gothic but with some special treatment, as seen in the square-

headed windows with labels over them in the transept. The authors have fully realised the value of masses of solid wall here and there in the design. It is noticeable, by the way, that the lights in the spire are not carried up vertically in the usual "lucarne" form, but open flush with the raking surface of the spire, and this contributes very much to the solid effect of the design. The interior, shown in a large drawing at the other end of the room, represents the usual orthodox modern Gothic.

In other church designs we see evidence of a desire after originality and novelty. Mr. Matar's large drawing of the west front of Holy Trinity Church, Southport, (1796), shows a design evidently somewhat influenced by the late Mr. Sedding. The front is flanked by octagonal turrets, panelled above and finishing in little cupolas. There is a large west window between, the centre mullion of which is too heavy and out of scale with the other detail. The church shows a very plainly treated north tower in the rear, with the clock face formed of open metal framing placed like a spider's web over one of the windows. There is a variety in this, and it gets rid of the sometimes too prominent feature of the round clock-face forming a spot on the design; but it is not convenient to read the time by. Beneath this Mr. Mountford's "St. Michael, Southfields" (1795) has been intentionally placed, as an example of a different manner of treating the west front with angle turrets, which have here a less Gothic and a more "campanile" appearance. The large arch overhanging the west window abuts on each side against one face of the octagon turret. There is no tower. Mr. Brooks's "St. Peter, Hornsey" (1766), which was published in the *Builder* of August 15, 1896, shows another form of the west turret church without tower; here the turrets are square with an octagon stage at the top, out of which rises a leaded spirelet or spike, after a fashion now prevalent, but which looks a little too much like an architectural afterthought.

There is an evidently growing taste for simplicity in church design, as compared with the day when every church was an assemblage of crockets and finials. We see this in Mr. Spooner's quiet drawing of the "West Front of St. Michael and All Angels, Little Ilford" (1,788), with its narthex forming a lean-to stopped by the two deep buttresses, and the seven-light west window in the middle of a plain wall, with no tracery, the lights carried straight up to the window arch and merely cusped at the head. (To this church there is actually a plan). Other demonstrations in favour of simplicity we see in such designs as Mr. Temple Moore's "St. Peter's, Barnsley" (1,744), with its tracery windows of Decorated style inserted in plain walls between flat buttresses of Norman make; and in Mr. Shackle's design for a church at Exeter, (1,820), where the windows end right up against a single moulding which is all that separates them from the roof. This is carrying naïveté rather too far. In a "Proposed Memorial Church" (1,745) Messrs. Clark & Hutchinson have made a spirited attempt at a new style, with square blind masses of wall at angles of tower and transept, campanile-like battering turrets flanking the west end, and other peculiar features, not without considerable effect; but the centre feature at the crossing, looking like a

joss-house with a pole stuck on it, had better be revised if the building is to be carried out.

Of other church designs we may mention Mr. Prynne's church at Elland (1,741), a very satisfactory piece of modern Early English in orthodox style; Messrs. Murray & Mallows's "Granard Presbyterian Church, Putney" (1,752), with a battering tower and a brick spire, the nave being under one roof but clearstory windows formed by large low dormers rising from the middle of the roof slope (not a very good effect); Mr. Nicholson's "Proposed new Nave and Chancel, Yiewsley Church," an exterior view showing some picturesque treatment of the tower; Mr. Walters's "St. Peter's, East Grinstead" (1,783), which may be called an orthodox modern Norman church; Mr. Goldie's interior of St. Alban's, Blackburn (1,803), a "passage-aisle" church with a very plain arcade with flat soffits, and a lofty clearstory which forms in fact the main lighting of the interior; the same architect's "Hawkesyard Priory" and Church (1,842), illustrated not long since in the *Builder*; Mr. Skipworth's very pretty competitive design for the new church at Cockington (1,871); and Mr. Crawford Hick's interior of St. Aidan's, Leeds (1,903), a modern basilica with a round-arched arcade carried on short columns with Corinthian capitals—a kind of rather too palpable imitation of early Romanesque combinations.

We may observe that the business of making show drawings for the Academy seems as active as ever, and is especially noticeable in some of the church designs. There are several which at first glance impress one as being the work of the same architect, the fact being merely that they are all got up in the same manner by the same draughtsman. It is rather amusing, and rather a satire on the whole method pursued in connexion with the architectural room at the Royal Academy, to reflect that if the architects of these churches had each sent in *his own* drawing, showing the building sufficiently but without the practised *ad captandum* manner of the professional draughtsman, they would probably not have been hung the selection depending, as it obviously does, on drawing in the first instance and design only in the second place.

NOTES.

THE Berlin Building Regulations, which have been so unpopular, are under revision, and we have had an opportunity of seeing a draft of the new Code. Perhaps the most important feature for the Berlin freeholder will be the modified requirements in respect to the covering of the area of any given plot. According to the new arrangement a division of the site into zones is allowed for, and the depth of each zone is measured from the frontage line. On the first zone, the whole of the area may be covered; in the second zone a large proportion may be covered according to circumstances, and in the third only a smaller portion; but in the actual execution of the building, a calculation will be made of how much of the area may be covered according to the zone system, whilst the actual position of any structure will not be restricted to any particular position on the site; that is to say, subject to certain conditions, a specific super-

ficial area may not be exceeded, but the actual laying out of the site remains with the owner. Formerly this was not the case. At Berlin the building regulations are practically subject to the police initiative and control, and from an English point of view it appears amusing that the police authorities should draft their regulations and publish them without taking the views of the freeholders, their representatives, architects, or any others concerned in building matters. If we understand rightly, the Municipality has scarcely had a voice in the matter, and has only obtained the right of framing resolutions on the draft regulations after very considerable trouble. This explains much in respect to the frequent change in the regulations at Berlin, and the constant friction caused both by the wording of the code and its administration.

WE have referred from time to time to the custom of the German Government of attaching architects and engineers to their foreign Embassies, and we observe from the *Centralblatt der Bauverwaltung* that a further series of their reports is now available. The list which has now been issued includes reports from America, France, Russia, Austria, and the Netherlands, but most of them are chiefly of interest to engineers. Great Britain is not represented on this list, as the post at the German Embassy in London was long vacant, and has only lately been filled. Of some eighty reports specified, those that would appear to interest architects most this time happen to be from Russia. They are records of the Arts and Crafts movement in that country, on archaeological research in South Russia, on the development of the City of Odessa, its harbour, and other similar subjects. We also find that the Exhibition at Nischni-Novgorod has been treated of, and lastly, the anniversary of the Architectural Society of St. Petersburg. In regard to Austria, some of the most interesting reports appear to be in connexion with the Exhibition that was held at Buda-Pesth last year. It is to be regretted that architecture is not better represented in these valuable records, though we are at least glad to know that the German Government has sent an architect representative to their London Embassy.

Is the temporary removal of a protection to persons against injury by a dangerous machine a defect within the meaning of the Employers' Liability Act? This was practically the question which had to be decided by the Queen's Bench Division and by the Court of Appeal in *Tate v. Latham & Son*. At the defendant's saw mills was a circular saw, part of the disc of it was below and part above the table. The bench was fitted with a shutter to protect persons from injury by the lower part of the saw and when this shutter was in its place the machinery was complete. But it was removed from time to time, not only for the necessary purpose of taking away the sawdust from under the bench, but apparently also out of mere carelessness, merely because it was in the sawyer's way. The consequence was that the plaintiff—a boy—slipped under the bench and injured his foot. Both Courts came to the conclusion that there was a defect within the meaning of the Act. They were unable to draw a distinction

between a case in which a guard was never fixed in position, which would clearly have been a defect, and one in which it was sometimes not fixed. In each instance, there was "a defect in the condition of the machinery or plant." It may seem hard that employers should suffer for the negligence of their work-people, but it is obvious that were the law not so, those who, like the boy who was injured in the present case, would have to work under much more dangerous conditions than they do at present.

Art Education for Women.

AS the result of a decree of the French Government under date of April 3, in regard to the admission of women to the classes at the *Ecole des Beaux-Arts*, it is now arranged that sixty female students, between the ages of eighteen and twenty-five, may enter; their names for admission to the school on giving the requisite proofs of artistic acquirement. Those who are passed by the examiners will be placed on the same footing as the male students and will follow the same course of study, theoretical and practical. For the present, and until it is seen whether the number of female students is sufficient to warrant the erection of special rooms for them, they will work with the men, except in the anatomical lectures, which will be given for women in the mornings and for men in the evenings.

Mycenaean Architecture.

IN the current number of the *Jahrbuch* of the German Archaeological Society (xi. 4), Dr. Ferdinand Noack begins a series of "Studies in Greek Architecture," which promise to be of considerable importance. The first instalment of these studies deals entirely with architecture of the "Mycenaean" period in its relation to the development of later styles. It is impossible in the space of a brief note to do more than call attention to the interest of the questions discussed and note one or two salient points. Since the excavations of 1893-94 at Hissarlik, all questions of Trojan, and with it of Mycenaean chronology, have necessarily entered on a new phase, and from a consideration of these excavations, Dr. Noack draws a conclusion that, if it be correct, is of the first importance. He believes that the city known as Troja VI., in its thorough-going use of stone, shows a break in the development of the technique of the older cities, whereas at Tiryns, Argos, and Mycenae, we have the consistent development of the wood and clay technique shown in the primitive city known as Troja II. Starting from this principle, he proceeds to demonstrate his theory that the features of Ionic architecture arise, like those of the Doric style, from "Mycenaean" structural conditions, and are not due, as has often been supposed, to any external Oriental impulse. The Ionic style branched out, he believes, from a common root with the Doric, but its main peculiarities are due to the introduction of stone as a building material. Another point of interest he raises is this. It has been usual to regard the peripteral colonnade of a Greek temple as a later additional ornament. Dr. Noack believes it to have been the primary and only distinction between the house of a god and an ordinary dwelling-house. Later when this distinction was clearly fixed, it

could safely be omitted. The house for the image of the god became, of course, a necessity only in days when the conception of the god was anthropomorphic. A temple was superfluous for the semi-animal worship we know to have prevailed in early "Mycenaean" times. The paper is at least well worth attention.

Hospital Improvements at Berlin.
 IN connexion with the proposed extensions and alterations of the State Hospital at Berlin, the Botanical Gardens, which are Government property and are on a valuable site in the Potsdam suburb, will be sold, and though much of the ground is to be kept as an open space, the authorities expect to make a profit of 300,000*l.* by the sale, after providing new gardens outside the town. This money will be at once utilised for the hospital improvements, whilst another 500,000*l.* which is considered necessary will be spread over five years, it not being possible to take the whole of the work in hand simultaneously. The hospital "improvements" (curious to observe) will involve a considerable reduction of the number of wards and beds, for, whilst there are 1,824 cases under treatment at present, the improvements and the great outlay will only allow henceforward for 1,247 beds to be in use. This reduction is considerable, and it is sure to make itself felt at Berlin; but in that case it will not be the State that has to provide for the larger accommodation, but the Municipality. It is also noticeable that, though there will be greater facilities for the students, the number of cases in the instruction wards will have to be reduced; for this section, which now holds 445 beds, is only to have 360. To outsiders, it would appear that the ambition of the Prussian Government is to provide modern accommodation for a smaller number of patients, and improved facilities for study to a lesser number of students, rather than to allow the present overcrowded state that exists at the National Hospital. This seems to be a step in the right direction, though the Municipality may grumble at having to build further hospitals, and some medical students may have to go elsewhere to learn their profession.

Niagara Falls.
 A GREAT deal has been written lately about the two immense Power Companies, one on the Canadian and the other on the American side of the Niagara Falls, but the most of what has been written has been based on the sanguine hopes of excitable electricians. In view, therefore, of the newspaper comments on other power companies, such as those projected for the Nile Rapids and the Zambesi Falls, a little survey of what has actually been done at Niagara is instructive. On the American side the Niagara Falls Power Company is working at a loss, although over a million pounds has been spent and no rental has been paid to the State. On the Canadian side, the Canadian Niagara Power Company have been paying a rental of 5,000*l.* per annum for the last five years for the privilege of having a lease of the Falls subject to the obligation that they will have made water connections for the development of 25,000 horse-power on or before November 1, 1898, and yet they have petitioned for an extension of time of eighteen months. The reason

given is that the transmission of electricity to great distances is still in the experimental stage, and that there is no immediate prospect of a market for a large supply near the Falls. Their petition will probably be granted, but as the total cost will come to nearly a million pounds, there is no chance of it paying its way—at least not for many years. Those English lawyers and electricians who got the concession from the Canadian Government were lucky to find capitalists to take it off their hands.

Institution of Electrical Engineers.
 MR. BAYLOR'S paper on "Electric Traction" gave rise to an animated discussion recently, at the Institution of Electrical Engineers, showing that electricians are keenly alive to the importance of this new branch of their industry. Several of the speakers thought that in this country sufficient attention was not paid to the most important point in every electric traction scheme, namely, the "bonding" of the rails. A lack of attention to this point might lead to most disastrous results as to the future of the industry. In the United States, where vested interests were not nearly so important, leakage and the consequent electrolysis had made great havoc with the gas and water-pipes. Mr. Preece stated that quite recently a Post Office cable containing thirty telegraph wires had suddenly broken down, and on investigation it was found that part of the lead sheathing had been completely eaten away by a leakage of current from the City and South London Railway. A striking divergence of opinion was shown as to the merits of the three-wire system, but nothing that was said altered our opinion as to the real advantages offered by this method. Mr. Ravorth read a paper on "The Generation of Electrical Energy for Tramways," in which he raised many debatable questions. He stated that it would pay an electric light central station to supply the power for a small electric tramway at a penny per unit.

"Asbestic" plaster.
 THE paper read by Mr. R. H. Jones at a meeting of the Society of Arts, held on Wednesday last, entitled "Asbestos and Asbestic: with some account of the recent discovery of the latter at Danville, in Lower Canada," was a curious mixture of pseudo-scientific statements and advertisement, interspersed with some really valuable observations on the uses of the two materials mentioned. With asbestos every one is familiar, and it is unnecessary to describe it, but "asbestic" is not so well known. The term is applied to that part of the serpentine rock which remains after the richer veins of asbestos have been extracted from it. This remainder is purely a fibrous material of altered serpentine. It has many uses in the building trades, and is extensively employed in America. It may be pulverised and converted into a cement or plaster; being composed exclusively of asbestos, the plaster is both fireproof and a non-conductor of heat and of sound. Amongst other attributes it is also elastic, and is said not to chip; it will adhere to metal or glass. In plastering, a coating of rough asbestic is first applied with a trowel, and when dry this is surfaced over with a superior quality of the same substance, which has a polished appearance when finished. The cost of the asbestic is

given as about the same as that of good lime and sand plaster. Asbestic paper, used more particularly for building purposes, is another manufactured product of this fibrous serpentine; it is intended to compete with wood and straw pulp paper as now used in the building trades. The principal qualities of this variety of asbestos are its being fireproof and its insulating properties; it is said to possess the same attributes as asbestos in these respects.

Delft Ware.
 IN the lecture by Dr. Glaisher on Tuesday evening, at the Society of Arts, on "Delft Ware," the lecturer (as usual) used the term in a generic sense and did not confine it to ware manufactured at Delft only. Mentioning that it was in the first instance derived from Italian Majolica, Dr. Glaisher remarked on its absorbent and spongy surface and the rapid painting consequently required on it. The best Delft ware was in blue and white only, and the coloured specimens could not be compared to the blue and white. The white was formed by oxide of tin. The manufacture of Delft ware was then traced historically, from its commencement in 1600 at the town itself, whence it was carried to Rouen, where in 1673 there were eleven factories, employing 2,000 workmen. Nevers was also an important centre from about 1618 to well into the nineteenth century. It was partly in consequence of the French clay not being so absorbent that over-elaboration was the result, the painting not having to be done so quickly—an important instance of the influence of material on art. The ware also formed a ready means of storiation, and the history of the French Revolution, it was pointed out, was in this manner told by French potters; but the subjects treated show a great variety, and the surface was as freely used for pictorial work as canvas, and the work, though seeming coarse on a close inspection, has a very good decorative effect at a proper distance. The manufacture of genuine Delft seems to have stopped about 1850. The lecture was made very interesting by the fact that Dr. Glaisher exhibited some rather remarkable specimens from his own private collection, as also some fine examples from South Kensington.

Scotland-yard.
 THIS name recalls a time when the land of the Strathclyde Welsh formed a territorial fief, and Lothian an English earldom, in respect whereof the King of Scotland owed allegiance to the English king. The spot itself was formerly known as "Scotland." It is said that Eadgar bestowed it upon Kenneth III. for a palace for the King of Scots when he came southwards to render homage, as vassal, to the Crown. William the Lion (ob. 1214) is believed to be the last Scottish sovereign who lived there; but in the palace on that site Henry VIII. entertained his sister Margaret after her first husband's death on Flodden Field. In later years it became the home of Milton, Vanbrugh, Beau Peilding, Inigo Jones, Sir John Denham, and Wren, for there was the official residence of his Majesty's Surveyor of the Works. The Palace Court, constituted by letters patent of 1664, was removed thither from Southwark in 1801, to the place where—we gather—was then the headquarters of the Metropolitan Police (1829). The Court, abolished in 1849, was served by judges and officers

of the ancient Marshalsea Court of the Queen's House, being one of record for causes arising within twelve miles, the City excepted, around the sovereign's palace at Whitehall.

It is stated that the inhabitants of Stoke Pogis have decided to commemorate the Queen's reign by "renovating their parish church" of Stoke Pogis, and that they propose to "shingle the tower with oak shingles, and generally to improve the interior of the edifice." We quote these details from the *Times*. If the church requires repair, by all means let any necessary work be done, but all lovers of English literature may fairly dread the work of "renovating" a parish church around which are gathered more poetic associations than about any other country church in England. "The ivy-mantled tower," the quiet graveyard, are familiar to all to whom English poetry is a living and perpetual treasure. A restored church would take away from Stoke Pogis its greatest charm. If work is necessary for the preservation of the building, it must be done, but it would be pure vandalism to alter the character of an edifice which, as it stands, is a monument of one of the greatest of English writers.

THE NEW GALLERY.

THE NEW Gallery Exhibition, regarded as a whole, will hardly, we fear, arouse much enthusiasm; there are few notable pictures by leading artists, and a good many mediocre and uninteresting works bearing unknown or little-known names.

Among the important works the finest is Mr. Watts's "Paris on Ida" (106), a quite new treatment of the ancient legend, representing not the three goddesses but Paris alone, and the effect which the vision had on him. He kneels in wonder and rapture; the presence of the goddess is only indicated by a golden haze behind the tree on the right, the picture evidently being suggested by the passage in Tennyson's "Gnone":—

"On the tree tops a crested peacock lit,
And o'er him flowed a golden cloud, and leant
Upon him, slowly dropping fragrant dew,
Then first I heard the voice of her, to whom
Coming thro' Heaven, like a light that grows
Larger and clearer, with one mind the Gods
Rise up for reverence."

The figure of Paris is of antique and ideal type, both in drawing and colour: a treatment quite in place in an illustration of a purely ideal legend. It is a work in Mr. Watts's finest style, besides embodying a very original ideal. The other important work is Sir E. Burne-Jones's "The Pilgrim of Love" (134), one of the best pictures he has painted lately, and one in which the figures, or the principal one at any rate, have a little more action and energy than we are accustomed to see in the works of this artist. As far as subject and meaning go the picture is very much a counterpart of Mr. Watts's "Love and Life," only that the figures are draped and mediævalised. Love, in light-coloured garments, and a large dart in his hand, steps forward planting one foot on the base of a ruined Gothic pier (what symbolism there may be in this escapes us), and, half turning, gives his hand to a figure in dark drapery just emerging from a thicket of thorns. Here, of course, the allegorical meaning is plain enough, and the painting in other respects shows the well-known style of its author, the usual delicate and placid heads with long narrow chins, and the usual dreamy atmosphere pervading it.

Beyond these two works there is not a single figure subject of the first rank. Mr. Philip Burne-Jones's large and rather ghastly picture "The Vampire" (15), has a certain power, especially in the look of the opened lips and teeth of the pretty spectre; but those who remember the description of the Vampire in "The Giaour" will hardly get much of a shudder out of Mr. Burne-Jones's explication of the superstition. Mr. Waterhouse's "Mariana in the South" is an interesting addition to the

list of Tennysonian subjects which this artist has painted; Mariana kneels before a circular mirror in a gray wooden frame, in the midst of a large bare hall paved with black and white slabs; at the back a gleam of light comes through the partly opened door and through its bottle-glass panes; but the desolation of the poem is hardly realised in the picture except in the one point of the reflection of the face of the figure in the mirror, where we are shown the expression of hopelessness which could not be fully realised in the profile face of the figure itself. This reflected unhappiness is no doubt a powerful incident in the picture, which in other respects is finely and carefully painted. The same may be said emphatically of Mr. Collier's "Queen Guenevere's Maying" (202), a large picture with half a white horse in it and half of Guenevere and of some other figures, Guenevere seated astride on her horse, as no doubt the author of the Legend of King Arthur imagined her, though the attitude rather shocks the associations of the modern reader of Idylls of the King; but the picture does not interest one, it is altogether too artificial, smooth, and conventional, nor does one discern the joy of May in the Queen's face. Mr. Ollivier's life size allegorical picture of "Thoughtless Chance and Thoughtful Destiny" (232) will do very well as a moral allegory, and has the merit of good colour, but one cannot call it a very striking work. The "Expulsion from Eden," a large work at the end of the north room, is merely a piece of commonplace.

Among works which are a combination of landscape and figures the most noticeable is Mr. Wetherbee's "Dawn the Rosy Fingered" (201), a seaside pastoral at the first light of dawn, with sheep and sleeping shepherd, "Dawn" being represented by a nude female figure with a profusion of light golden hair, stepping over the grass towards the flock. Her head is backed by the light of the dawn over the cold dark sea, but the dawn and the figure seem hardly sufficiently connected, and the figure is somewhat too real for an allegorical apparition. The real strength of the picture lies in the landscape effect. Mr. Arthur Lemon's "Strange Sails" (53) is an original little work, a coast scene where three savage-looking men on barebacked horses contemplate the approach of some distant boats with evidently unfriendly intentions; the bleak coast and the uncouth figures blend into an effective composition.

Among portraits the finest is perhaps Mr. Shannon's "Lord Ross" (240), a young lad of very strongly-marked and characteristic physiognomy, grouped with a fine black hound. Mr. Tule's "Miss Ritson" (107) is a fine and bold executed life-size portrait of a young lady, and Mr. Tadema sends a small very refined whole length portrait of Mr. Maurice Sons playing the violin. Mr. Sargent has a large full-length portrait (245) of a lady who ought to be known by some such name as "Blowsabella" out of an Elizabethan pastoral, though not in pastoral costume; it is not a work that one would imagine gave very much satisfaction to the sitter. Mr. Shannon's portrait of the "Marchioness of Granby" (33) suggests a St. Veronica, for her head seems to belong to and to be painted upon the oval panel in the rear, and seems somehow unconnected with the body.

There are some good landscapes, some of the best of which, however, rather tend towards experiments in special effects than to the representation of nature as she exists. Mr. East's "Idyll of Spring" (239), for instance, is a brilliant effect of bright light and colour and blossoms, but rather an ideal than an actual or possible scene; and Mr. Fred Hall's "The Drinking Pool" (10), a work painted evidently under French influence, is admirable as far as the cattle are concerned, but as far as the landscape goes it is an experiment towards producing an effect of light and colour to which truth of actual fact and colour is sacrificed. A far more pleasing and successful "landscape and cattle" picture is Mr. Arnesby Brown's "Above the Bay" (177), a very beautiful and delicate pastoral. Mr. Adrian Stokes's "Untrodden Peaks" (28), an Alpine snow scene, is interesting and quite removed from commonplace, as one might expect, and perhaps the colour and apparently woolly texture of the snow is true under a certain condition of light and atmosphere, but it hardly convinces one of its truth. Mr. Parsons's "Allotments" (210) is a flat landscape with a large expanse of sky, pretty but rather weak and sentimental in style, a defect which appears the more marked by con-

trast with Mr. Thorne Waite's fine bold landscape "Would-be Trespassers" (220), which hangs as a pendant to it on the walls, and rather kills it. Among smaller landscapes which are powerful and effective are Mr. Wimperis's "A Rough Heath" (54), with a very fine sky; Mr. Padgett's "A Village in Holland" (62) which might almost pass not only for a Dutch scene but a Dutch painting; and the same artist's "On the Dunes, Pas de Calais" (88), a very complete little work in which the solitary figure and the scene seem entirely to go together, and which shows a fine drifting stormy sky.

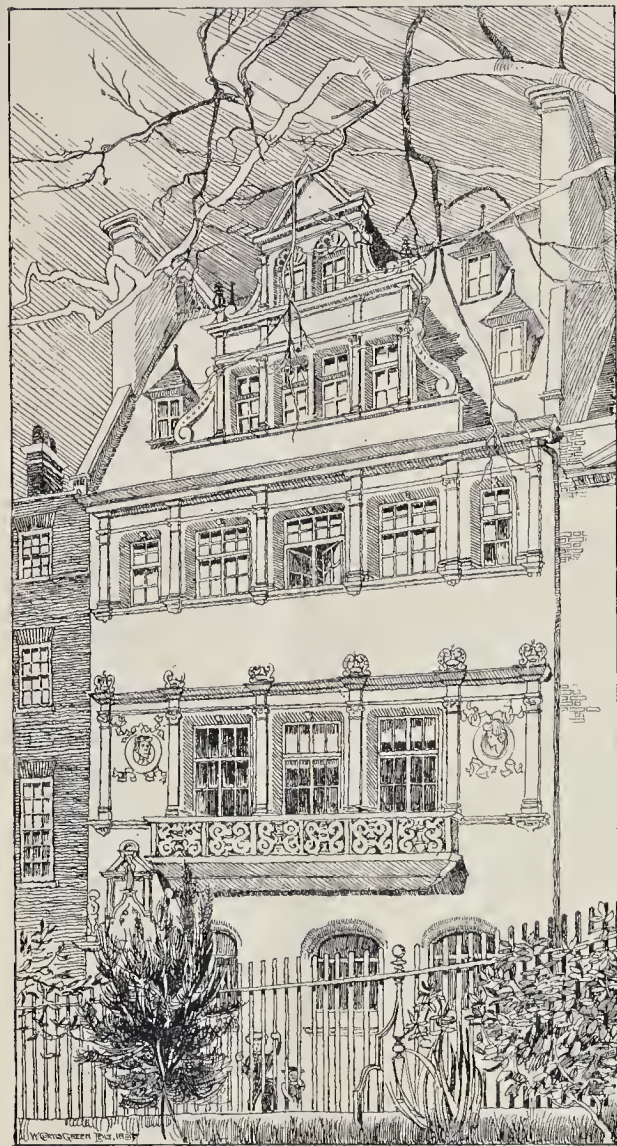
Architectural design is represented (as it was last year) by one drawing exhibited by Mr. Robson; but the pictorial treatment of architectural subjects is represented by a small fine painting of part of the front of a Renaissance church by Mr. Logsdail (206), and by a good watercolour drawing of Canterbury Cathedral by Mr. Newton Benet, hung in the balcony.

Sculpture can hardly be said to be well represented. The largest work, a seated statue of the Queen grouped with two small children, by the Countess Feodora Gleichen, is dignified in effect, and among the smaller exhibits are two very graceful bronze figures, "Evening" by Mr. Toit, and "Pensée" by Mr. Pomeroy.

THE WESTMINSTER COCKPITS.

ON obtaining possession of Wolsey's palace Henry VIII. made many additions to what had been York Place. The enlargement comprised sundry "lodgings," a tennis-court, bowling-alley, and a cockpit—all on the Park or west side of the main street. For access to these he built across the road two gate-houses, King-street Gate at the south-west corner of the Privy Garden and a little south from the tennis-court, and Whitehall Gate, designed by Holbein (at a spot in alignment with the south return of the later Banqueting House, which was known also as the Cockpit Gate). The Cockpit gave a name, too, to the apartments occupied by Philip Herbert, fourth Earl of Pembroke, who saw from his window Charles I. pass along St. James's Park to the scaffold, and died there on January 23, 1649-50. On February 25, that same year (see the Commons' Journal *passim*), it was "resolved that the Lord Lieutenant of Ireland have the use of the lodgings called the Cockpit." Cromwell's letter to his wife, announcing his victory at Dunbar, is addressed to her at the Cockpit. Then, shortly before the Restoration, the lodging is given to General Monk, and Charles II. confirms his occupation therein. The *London Gazette*, Nos. 432-4, 1670, records:—"Dyed at his apartment in the Cockpit, his Grace, George, Duke of Albemarle." To Monk succeeded Villiers, Duke of Buckingham. The situation of the rooms, pleasantly placed, overlooking the Park and the old Tilt-yard, is clearly defined in Fisher's plan of Whitehall Palace, surveyed before Monk's death, and afterwards published by Vertue. According to that plan the Duke of Albemarle's rooms covered the ground now occupied by the houses in Downing-street, the private garden, and the Treasury buildings, which have a frontage to the Horse Guards parade-ground, once the Tilt-yard. The plan plots "The Cockpit"—a large square room within which is an eight-sided pit or amphitheatre. Moreover, in Newcourt's map, engraved by Faithorne (1658), is depicted, by the south-west corner of the Cockpit Gate, a detached building, octagonal on plan, of two floors, with pointed roof. The two sites of the plan and map are identical. We may safely say, then, in response to Lord Rosebery's recent appeal, that the Whitehall Cockpit is now covered by that block, erected circa 1740, of the Treasury buildings, by Kent, which stands northwards of the First Lord's official residence, and overlooks the Horse Guards Parade-ground; and wherein, we believe, the Cabinet still usually assembles for council. The Cockpit lodgings were entered from the street by a passage which corresponds with the existing main entry to the Treasury Chambers, and from the Park by another corresponding with the present passage from the Parade-ground into Downing-street. Next north to the passage into the main street, is marked on the plan "The Tennis Court," where is now the south portion of the old

* Site cleared in 1723. Kent's full design was for a central portion with two wings, the entire front to have fifteen windows in a row. Only the central portion, and part of each wing, were built.



Sketches of London Street Architecture—XIII. No. 40, Berkeley-square. Messrs. Ernest George & Peto, Architects.

the Council in the Cockpit, March, 1711. In their "New Remarks," 1728, the parish clerks cite "the Royal Tennis Court," together with "the Cockpit, in which is the Treasury and the Offices of the Secretaries of State, the Wardrobe, and the Plantation Office," also the adjacent "Cockpit-street, by Whitehall," as lying within the verge of the King's Court, for which the Marshalsea Court, latterly removed to Scotland-yard, exercised jurisdiction. Reports of the Historical MSS. Commissioners contain numerous references for a survival of the name of "Cockpit" on the site we indicate above; the Privy Council minutes upon the duel between Lord Mohun and the Duke of Hamilton are written "at the Cockpit," November 18-23, 1712; a letter of Secretary Craggs is dated January 9, 1720-1, "at the Cockpit;" Walpole writes letters there in 1752. The name remained, indeed, within the memory of living persons. We have found mention of a "Cockpit-court" in the rate-books for 1707 of St. Anne's, Soho, Leicester Fields division; the name occurs often in maps and surveys of the last two centuries; the "Cockpit Theatre," near Great Wild-street, St. Giles-in-the-Fields, was converted into a playhouse, the Phoenix, temp. James I., and so became the precursor of Killigrew's Theatre, opened April, 1663, in Drury-lane.

SKETCHES OF LONDON STREET ARCHITECTURE:

NO. XLII.—40, BERKELEY-SQUARE, W.

THIS town house was built for Mr. W. S. Salting in 1891, by Messrs. Ernest George & Peto. The front, with its large gable, is of brown Portland stone; the stone balcony comes well outside the drawing-room windows, and a feature of this front is the space between the drawing-room windows and the windows above, and this is accounted for by the treatment of the drawing-rooms, the front one having a large coved or wagon ceiling, while the back portion of the same room is kept square with pilasters and cornices. These rooms are treated in a later manner than the rest of the house, following the Louis Quatorze period.

For the size of the house the hall has considerable dignity, with its marble walls, columns, and staircase, the latter leading straight up in the centre of the hall.

The dining-room and library have Italian walnut panelling chimneys, &c., the latter room having a ceiling of small coffering.

In the marble walls of the hall the doors are of walnut inlaid.

The iron grilles about the entrance door, as also the other metal work in the house, including interesting locks, were executed by Messrs. Starkie, Gardner & Co.; Messrs. Melhier & Co. executed most of the decorative work.

ENGINEERING SOCIETIES.

THE INSTITUTION OF CIVIL ENGINEERS.—The annual general meeting of this Institution was held on the 27th ult., Mr. J. Wolfe Barry, C.B., President, in the chair. The report of the Council on the proceedings of the Institution during the past year was read by the Secretary. The most important matter which had occupied attention was the alteration of the by-laws so as to supplement the existing regulations by the introduction of a test, by examination, of the general and scientific knowledge of candidates for election into the class of associate members. The proposals of the Council having been sanctioned by the general meeting held on March 30, arrangements for giving effect to the new rules were under consideration, and would, it was expected, be settled shortly. Other minor alterations had been made, and a copy of the by-laws thus amended and revised would be placed in the hands of all belonging to the Institution. With a view to promote the interests of many of the country members who were unable to attend the weekly meetings, arrangements had been made to hold a general conference of the Institution in London on May 25, 26, and 27, which it was hoped would satisfy a need that had been felt in an increasing degree with the expansion of the Institution. Since the last annual general meeting, Mr. James Forrest had retired from the post of secretary, which he had held for forty years, and had been appointed Honorary Secretary. An appreciation of Mr. Forrest's services extracted from the President's inaugural address was inserted in the report. Mr. Forrest

buildings (facing Whitehall) altered by Soane, and after him by Sir Charles Barry. Soane proposed to carry his design further southwards by a similar block or wing, with a triumphal arch between the two at the Park end of Downing-street. Soane's model may be seen in his Museum; the north block encases Wolsey's Great Hall; his plans show the Cockpit as we see it in Fisher's.

Charles II assigned the Cockpit rooms to the Treasury Commissioners, and from "the Cockpit" many of their earlier minutes are dated; yet they seem to have served for residence as late as 1691, in which year, we read, "the Princess Anne has left the Cockpit . . . and gone out to live at Sion House." Cromwell issued his edict against cock-fighting in 1654; the sport was soon revived, for in or about 1660 the State Cockpit was in James-street, Bedford-row, where mains were fought until 1752; the name has been preserved there

in Cockpit-yard. The King built another cockpit in Birdcage-walk, near the old Cockpit-steps leading from Dartmouth-street into the Park. The site will be seen in Rocque's map (and it seems to be marked in Horwood's of 1799) close by the present Irish Office. The county and other mains were fought there until 1816, when the Governors of Christ's Hospital, with a then rare humanity, refused to renew the lease for that purpose. So another cockpit was established in Tuiton-street, Westminster (latterly the St. John's Institute), which was abandoned some eleven or twelve years afterwards for one by name of the New Cockpit Royal, in Little Grosvenor-street, Millbank. Eventually the Act 5 and 6, William IV., c. 59, declared the sport to be illegal. Hatton's "New View," 1708, describes the Treasury Office as kept at the Cockpit; the Wentworth Papers refer to Guiscard's attempt upon Harley's life at a meeting of



The "Meadow-Flowers" Wall Paper. Designed by Mr. Walter Crane for Messrs. Jeffrey & Co. (see next page).

had been succeeded in the secretaryship by Dr. J. H. T. Tudsbury, who had for several years acted as his principal assistant. During the past year, two honorary members, thirty-seven members, 279 associate members, and 14 associates had been elected into the Institution, being a total of 332; while by death, resignation, and erasure, 158 names had disappeared from the register. The roll now numbered 6,204, as against 6,030 at the corresponding date last year. There were also 886 students attached to the Institution, so that the total number borne on the books on March 31, 1897, was 7,090. The income was 22,285*l.* 8*s.* 10*d.*, and 15,417*l.* 10*s.* had been received on capital account to meet the expenditure on the new building. The trust funds had realised 466*l.* The expenditure had been 40,394*l.* 8*s.* 9*d.* of which about one-half represented the normal expenses of the year, the balance being incurred principally

in connexion with the new building, while the expenditure on Trust Funds account had absorbed 468*l.* 11*s.* 11*d.* The liability of the Institution to various taxes having been repeatedly questioned, the Council had taken legal advice upon the matter and proposed to act thereon. The effect of the alteration initiated last year in the period of the session had been to make the meetings cover exactly six months, from November to April both inclusive. During the past session twenty-two ordinary meetings were held, at which fifteen papers were read and discussed, the opening night being, as usual, devoted to the delivery of the President's address, and to the presentation of the medals and premiums. The fifth "James Forrest" lecture was given on March 18 by Dr. G. Sims Woodhead, the subject being "Bacteriology," and aroused such interest that it was repeated on March 25.

Nine supplemental meetings for students had been held during the session, and six visits to engineering works had been made. The local Associations of Students at Manchester, Glasgow, Birmingham, Newcastle-on-Tyne, and Leeds, continued to do good work. The Engineering Conference, in which the students would be permitted to take part, would afford an opportunity for members of that class to assemble as usual in London in the month of May. The collection of paintings had been augmented by the presentation, by his son, Mr. Henry Vignoles, of a portrait of the late Mr. Charles Blacker Vignoles, Past-President. Since the date of the last report the rooms had been completed and decorated, and the final stage of the operations contingent upon the rebuilding of the premises would be reached during the recess, when the arrangement of the large and ever-increasing stock of publica-



Corstorphine Church. (From a sketch by Mr. J. Watson.)

tions and documents would be completed. It was announced that the following gentlemen had been elected to form the Council for 1897-98.—President, J. Wolfe Barry, C.B.; Vice-Presidents, W. H. Preece, C.B., Sir Douglas Fox, James Mansergh and Sir William Anderson, K.C.B.; Other Members of Council.—Alex. R. Binnie, Henry Deane, W. R. Galbraith, George Graham, J. C. Hawkshaw, Charles Hawksley, John Hopkinson, Jun., Alex. B. W. Kennedy, John Kennedy, George Fosbery Lyster, Sir Guildford L. Molesworth, K.C.I.E., Captain Sir Andrew Noble, K.C.B., B. B. Stoney, F. W. Webb, Sir William H. White, K.C.B., Sir E. Leader Williams, Horace Bell, T. Forster Brown, G. H. Hill, J. C. Inglis, and William Matthews.

SOME NEW WALL PAPERS.

The improvement in design and colouring which has been taking place in English wall papers of recent years is one of the most satisfactory points in considering modern decoration. While so many branches of the art have deteriorated or been allowed to pander to meretricious taste, the best designers and manufacturers of wall papers have steadily set before themselves an ideal of better design and

more harmonious colouring. We are reminded of this by some new designs and methods lately introduced by Messrs. Jeffrey & Co., of Essex-road, Islington.

One of these is the new washable sanitary paper which, made by a new process, is not to be distinguished in appearance from an ordinary paper. The best hand-printed papers by the same firm are mostly excellent. The "meadow-flowers" paper designed by Mr. Walter Crane to be used with the "may-tree" frieze, is a successful example, and, as executed in deep blues and greens, has a sober and quiet effect which is pleasing (see p. 398).

For a design of a totally different kind, the "Falcon" paper and "Diana" frieze, by Mr. Ingram Taylor, is very decorative in effect. The falcons are worked into an all-over conventional pattern in the filling, while in the frieze the running figure of the huntress in flowing robes, chasing the stag, is almost Greek in feeling. Messrs. Jeffrey have also introduced what is known as an "extension," so that the procession is not spoiled by having the figures bent round the angles of a room, but can be properly ended by the insertion of a filling suitably treated.

Mr. Heywood Sumner's floral trellis design, in which greens, blues, and pink predominate,

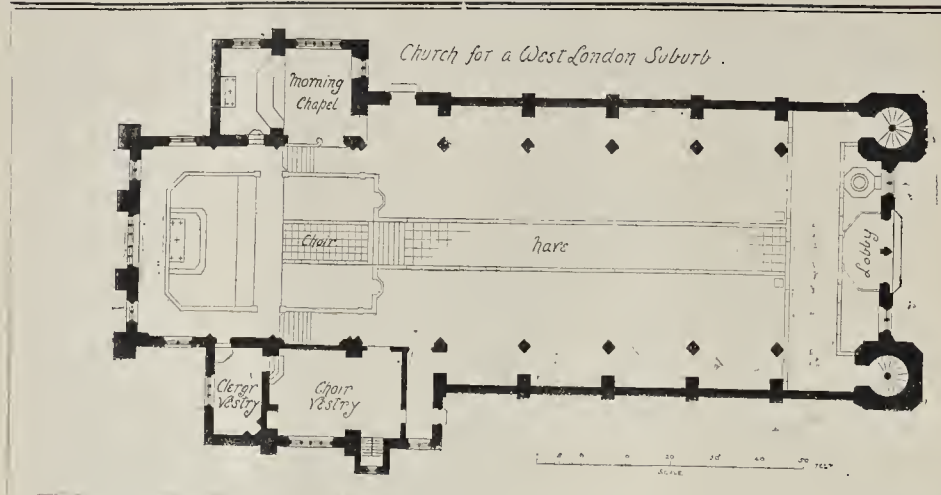
is of a different and more open pattern, but suitable in certain cases.

A new feature is Mr. Lewis Day's scheme for a staircase treatment, and we should not omit Mr. Stephen Webb's "poppy" ceiling, a conventional treatment round a circle in a square, and slightly in relief, which can be had plain white or painted. It is made in a new tough material called "relievo," which Messrs. Jeffrey have just introduced.

The "Jubilee" paper has quite a decorative effect, and is rich and sumptuous in character, and has very cleverly wedged into the design all the insignia and paraphernalia of Royalty and Empire which the present year is to honour.

CORSTORPHINE CHURCH.

This quaint little Church of Corstorphine is situated about three miles west of Edinburgh, between the Pentland and Corstorphine Hills. It takes the form of a cross on plan with an additional transept on one of the sides. A portion of the roof is still covered with old grey flagstones. Part of the structure belongs to a chapel which was founded towards the end of the fourteenth century. JOHN WATSON.



Illustrations.

A GRAIN SILO AT GREENWICH.

THIS building is being erected at Greenwich by Mr. S. P. Mumford as an extension to his steam flour mills, for the purpose of storing the grain to be made into flour.

It consists of twenty-three brick bins, average 9 ft. square and 47 ft. deep, each capable of holding about 370 quarters of wheat, with three open floors below and one above. The wheat is brought in barges in bulk, and raised by means of steam elevators, shown in the view, and is in its progress automatically weighed and partly sifted before being put into the bins. As it is required it is taken from the bins, and washed, cleaned, and ground, passing through numberless processes before it is sent out as flour, and without having been touched by hand from its arrival in the barge to its departure in the cart.

The foundations, which stand in the Deptford Creek, were put in by tide work, and have to carry a great weight; the wheat being stored in bulk in the bins or silos, no sacks are used.

The total height of the building from the river bed is 127 ft.

An attempt has been made to express in the exterior the use of the building. The circular lights under the main cornice give light to the bins.

The whole is built in cement with chain bond in the walls, the river wall is faced with blue bricks, and the upper portion with stocks and red brick dressings and ornament.

The work is being carried out by Messrs. Jerrard & Son, of Lewisham, the work of works being Mr. John Cropley, the machiner, being supplied by Mr. Henry Simon, of Manchester.

The building is a good example of the application of architectural treatment to a utilitarian structure. The architect is Mr. Aston Webb.

CHATEAU DE BULLON.

This is the country residence of M. Jas. Tissot, the well-known French painter, near Besançon, in the south-east of France. The château was originally built about the beginning of the eighteenth century, and has recently been considerably enlarged and remodelled. The view shows the garden front. The wings, the arcade, and the enclosure of the fountain or garden court, are all new, as well as the semicircular portico in the centre of the entrance front. It is built of stone quarried on the estate, of a warm white toning to a blue grey in colour, very hard and firm in texture. The enclosure walls are of red brick with dressings of the same stone. The work has been carried out by M. Pateu, contractor, of Besançon, with M. Vieille, of Besançon, as resident architect.

Close to the château on the right is M. Tissot's studio, illustrated in the *Builder* of



Grain Silo at Greenwich. Plan through Silos.

June 15, 1895, and behind the trees on the left are the new stables and other buildings. Around the house and studio an extensive formal garden is now being laid out, in excavating for which the remains of the old Abbey de Bullon, of which this is the traditional site, were uncovered. Portions of several of the nave piers were found *in situ*, with their archaic carved capitals of about the tenth century, and these have been carefully preserved.

The site is a very fine one in the Jura country, in the valley of the Loue, a splendid river flowing at the foot of the high wooded rocks seen in the background of the view, which is from a sketch made on the spot.

J. M. BRYDON.

CHURCH FOR A WEST LONDON SUBURB: WEST ELEVATION.

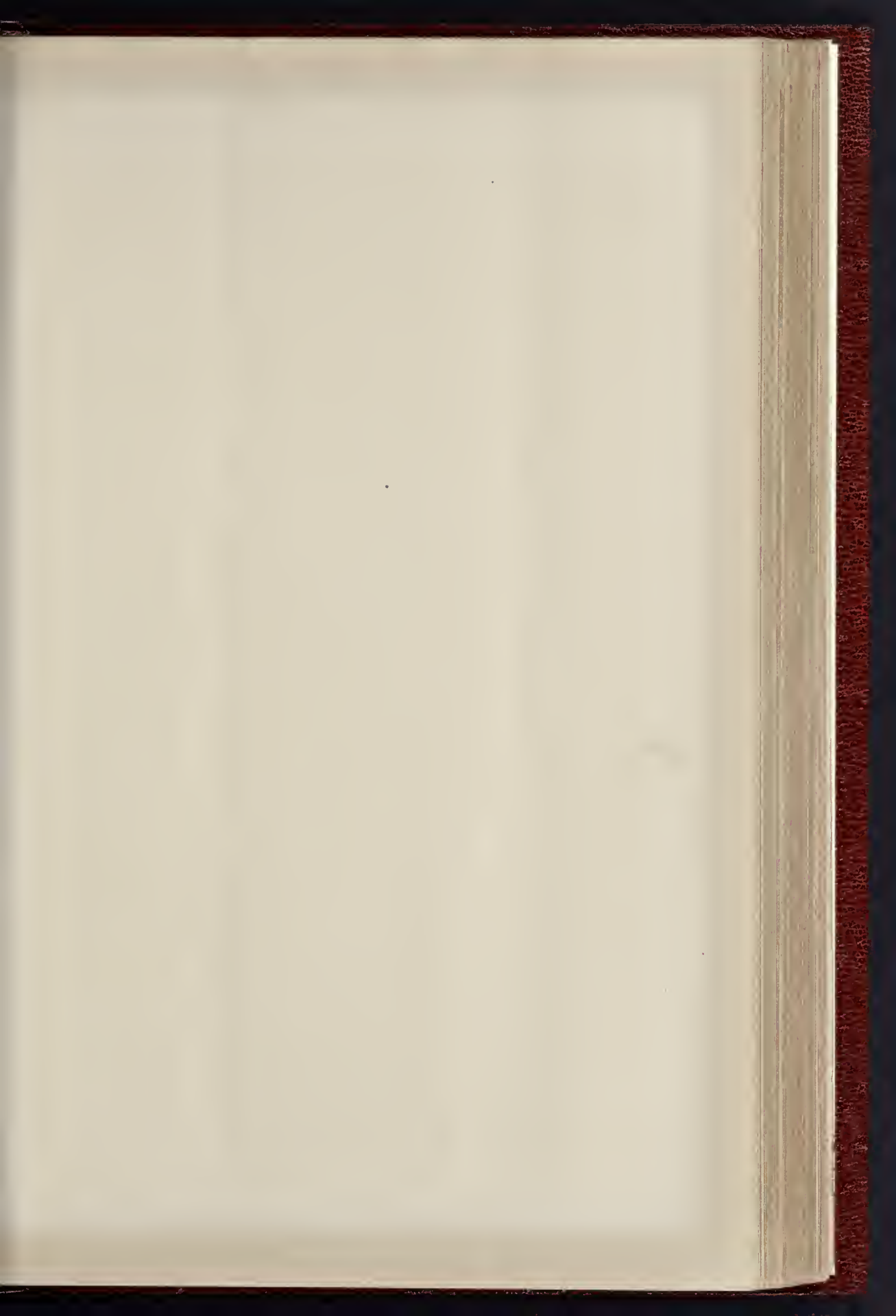
This is a design for a supposititious site, and similar in conception and general treatment to that for St. Oswald's, Fulham, but much larger, and with a western gallery reached by two flanking turrets, which appear in the drawing now reproduced.

This church was intended to seat 1,000 people.

E. P. WARREN.

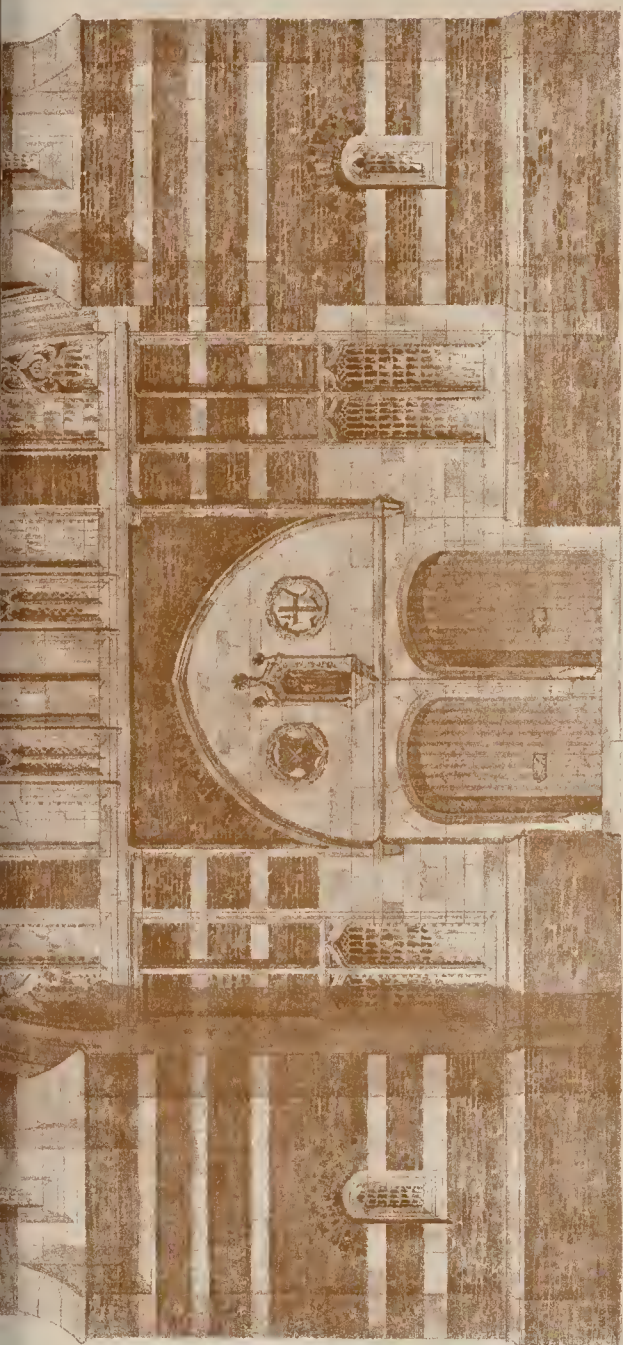
SOUTH AISLE WINDOW, ST. PETER'S, SAFFRON HILL.

In this window the figures of St. Peter, St. Paul, and St. John, occupying the upper



THE BUILDER, MAY 1, 1897.





WEST ELEVATION



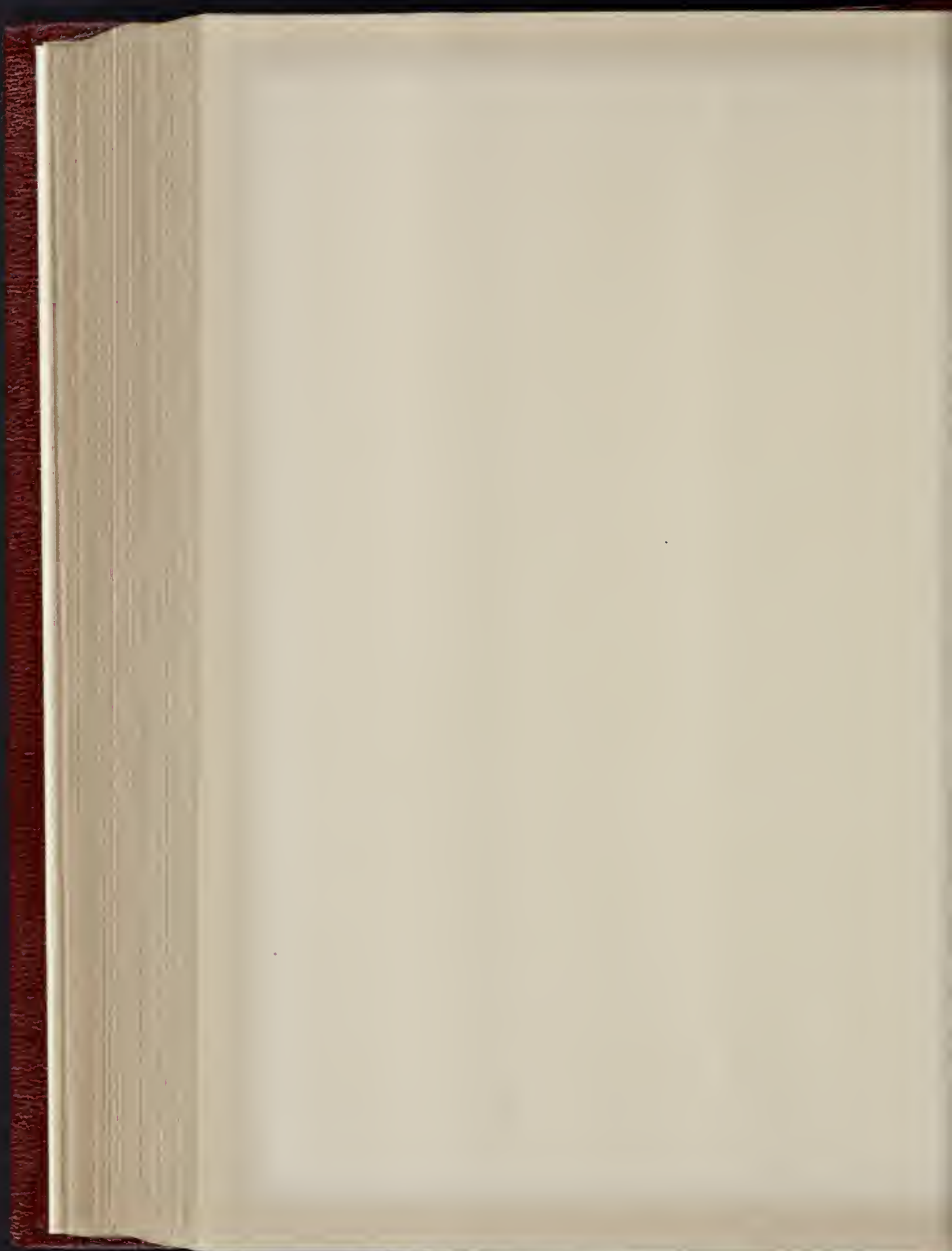
SCALE



Ed. Warren Archt. 1895

PHOTO SPAQUE & CO. 4 & 6 EAST HARDING STREET, BETTER LANE, E.C.

CHURCH FOR A WEST LONDON SUBURB.—MR. E. P. WARREN, ARCHITECT.





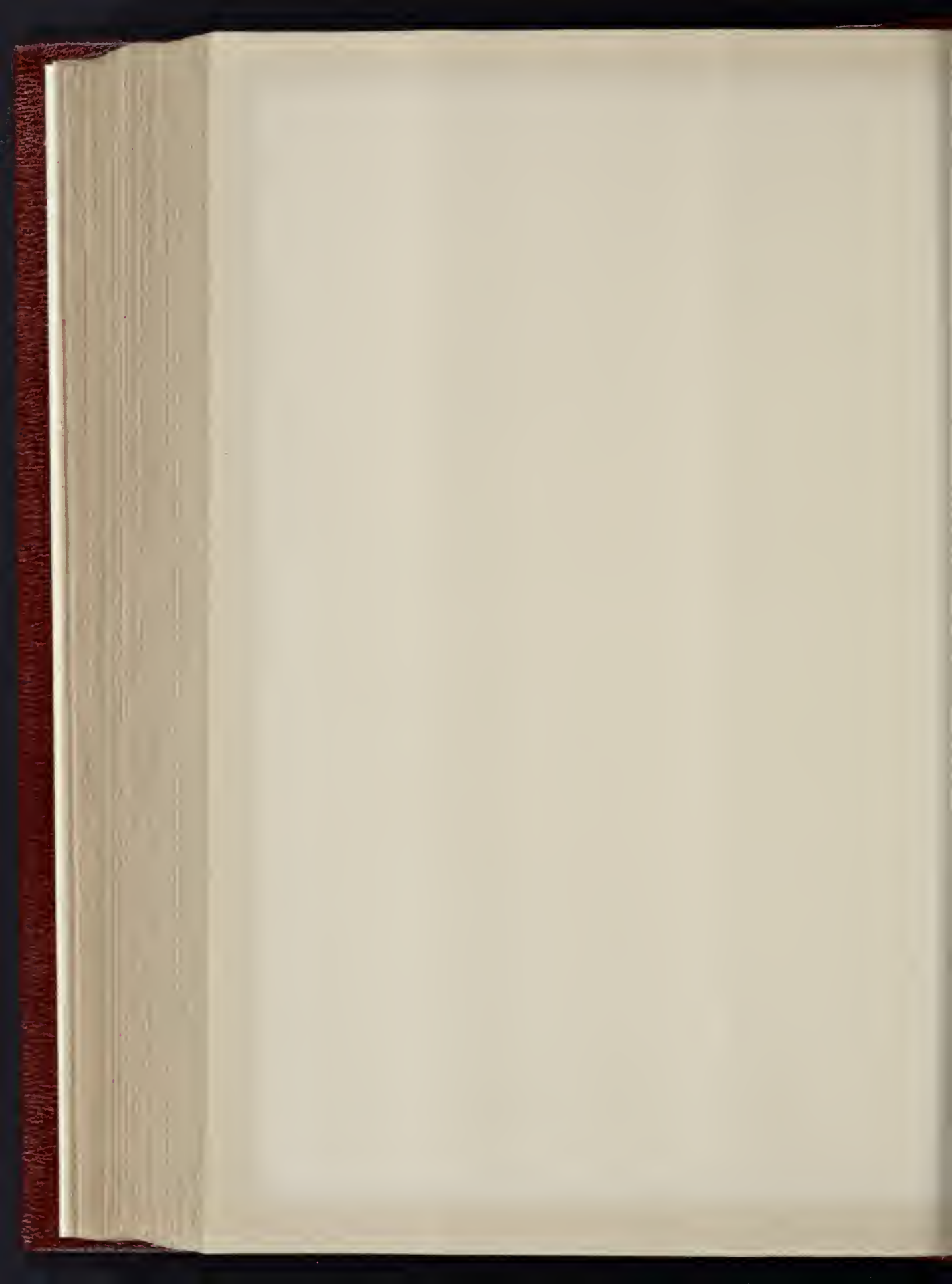
THE BUILDER, MAY 1, 1897.



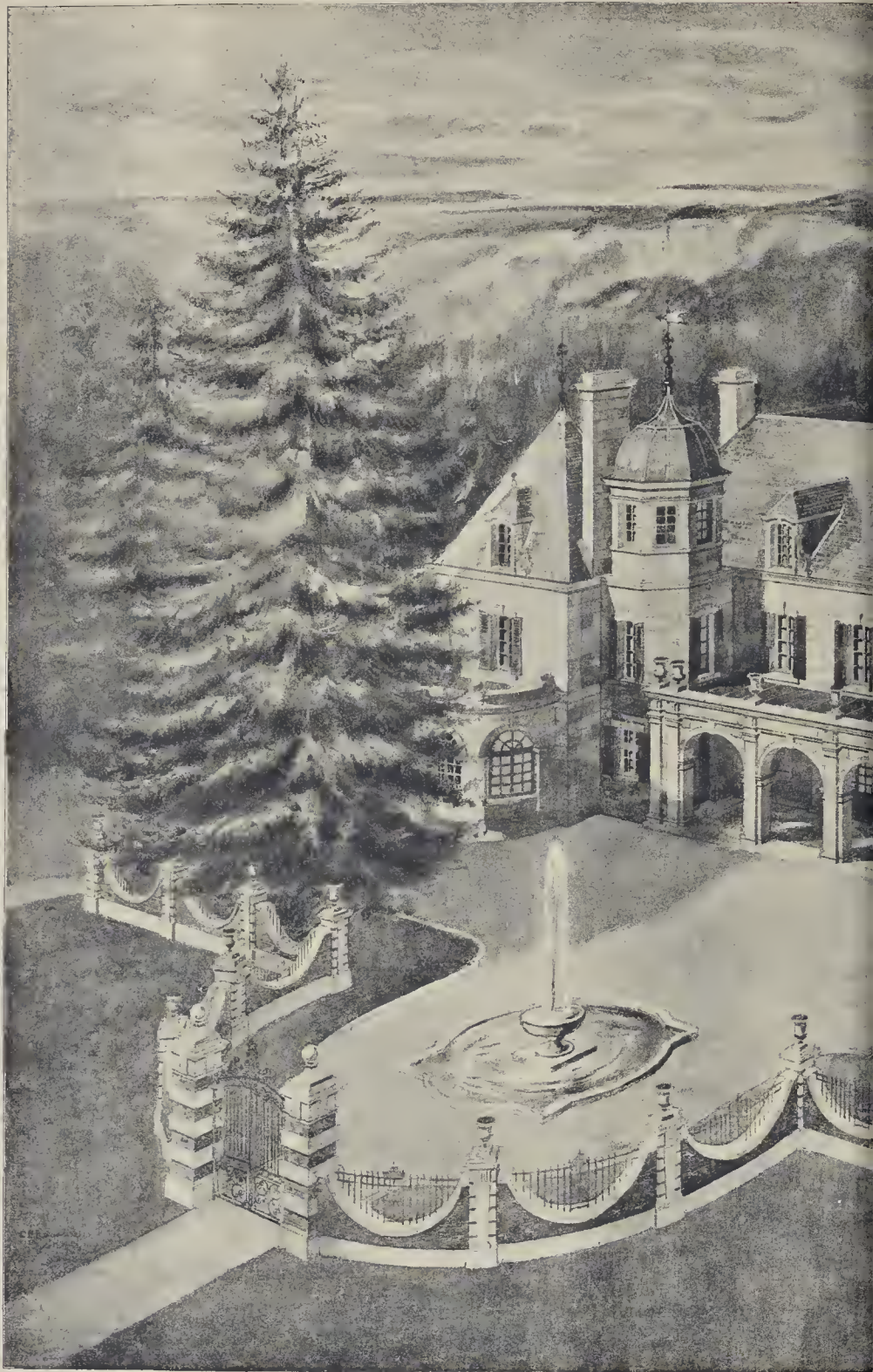


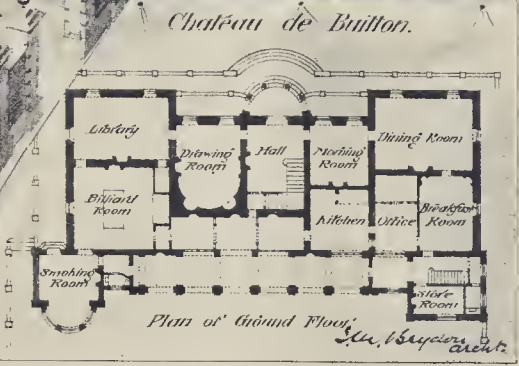
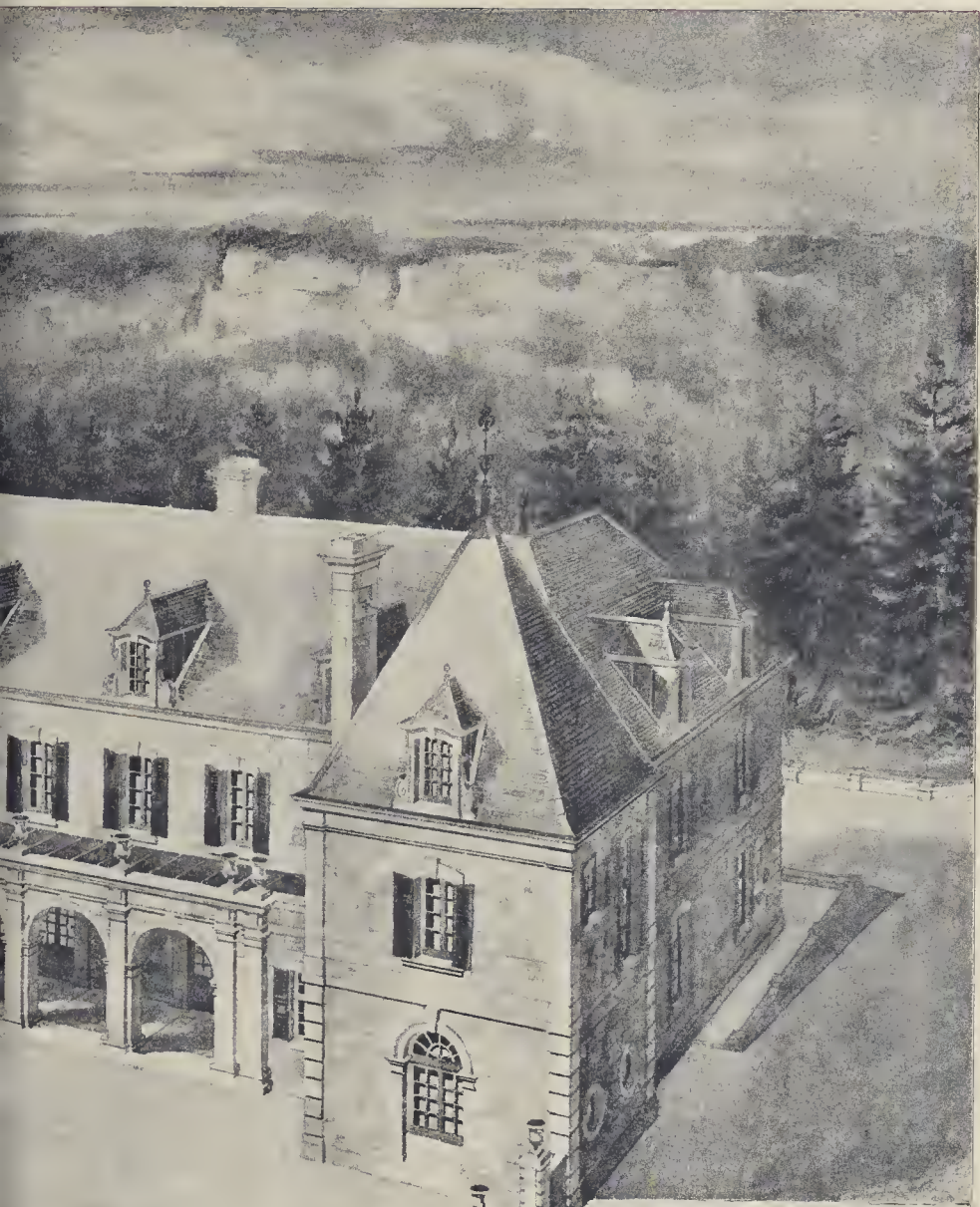
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SOUTH AISLE WINDOW, CHURCH OF S. PETER, SAFFRON HILL.—DESIGNED BY MISS M. LOWNDES.



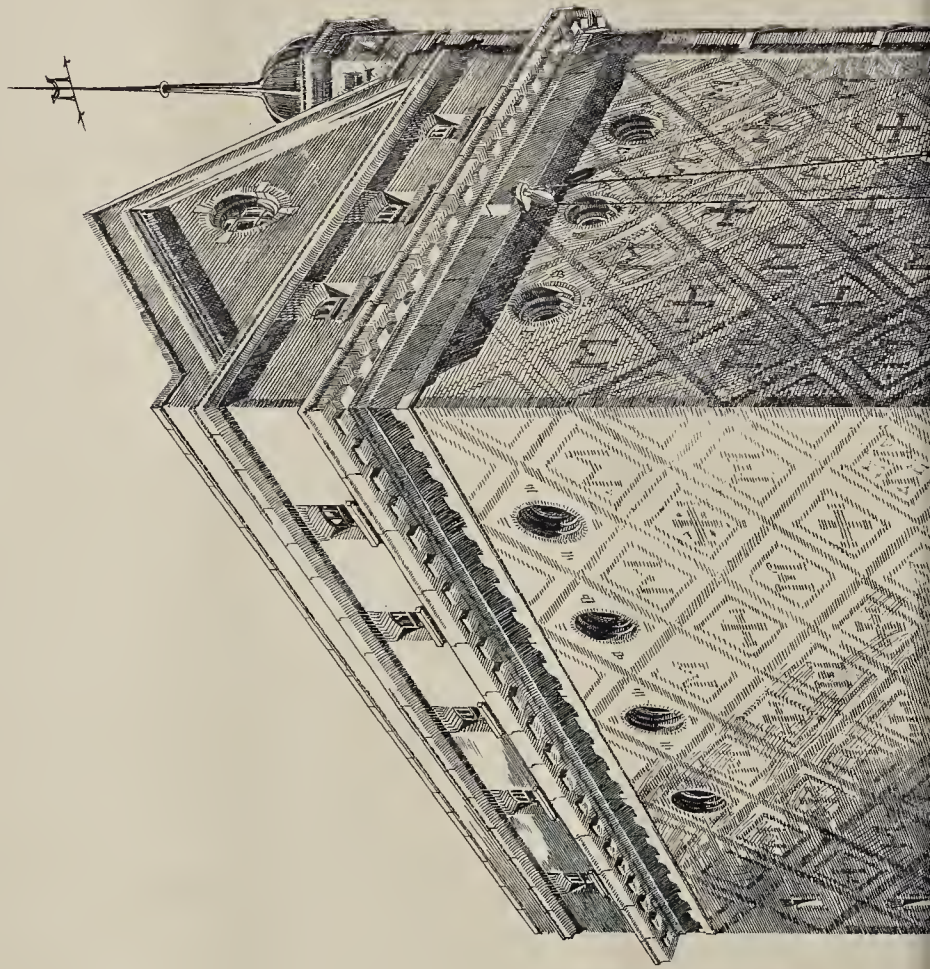








THE BUILDER. MAY 1, 1897.



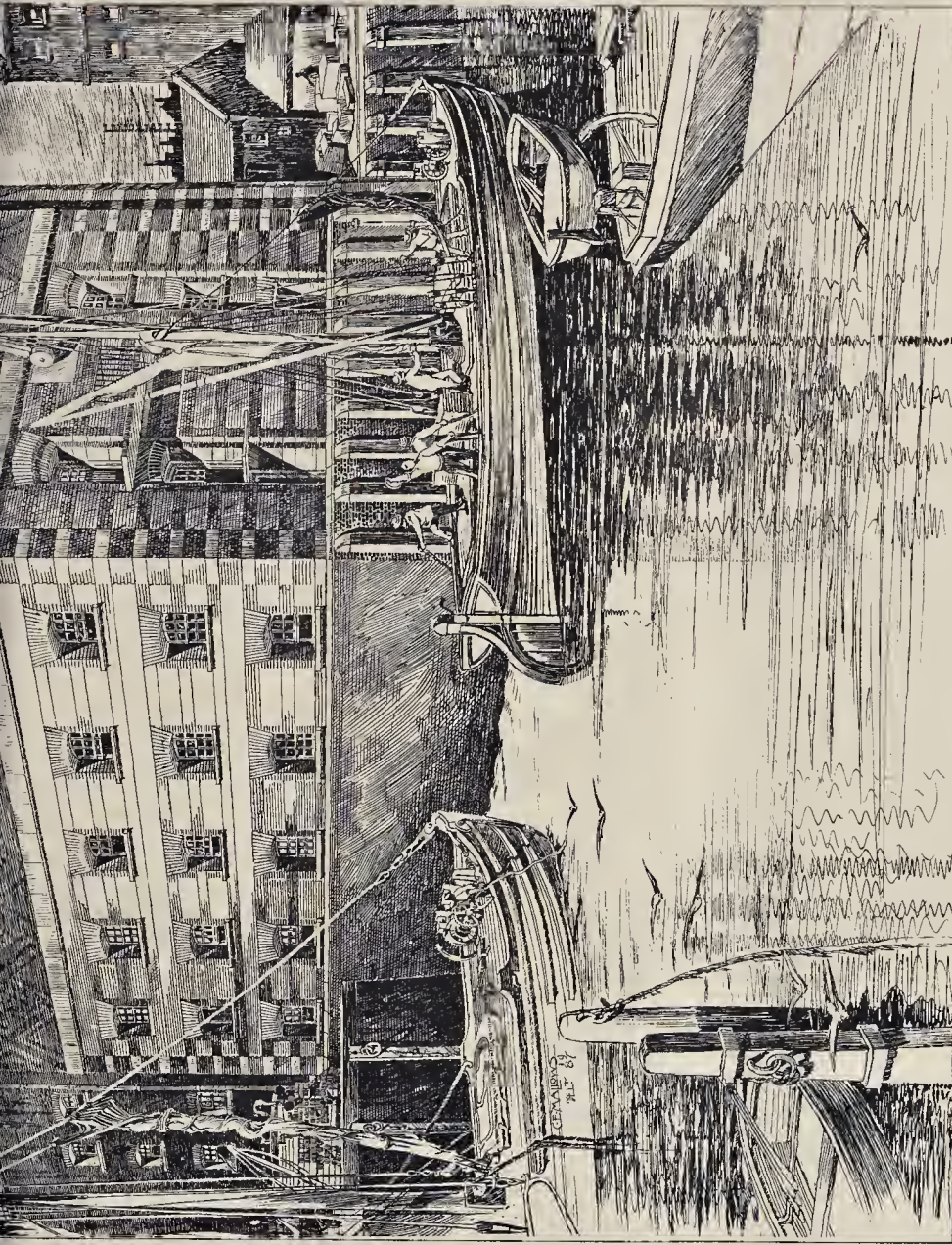
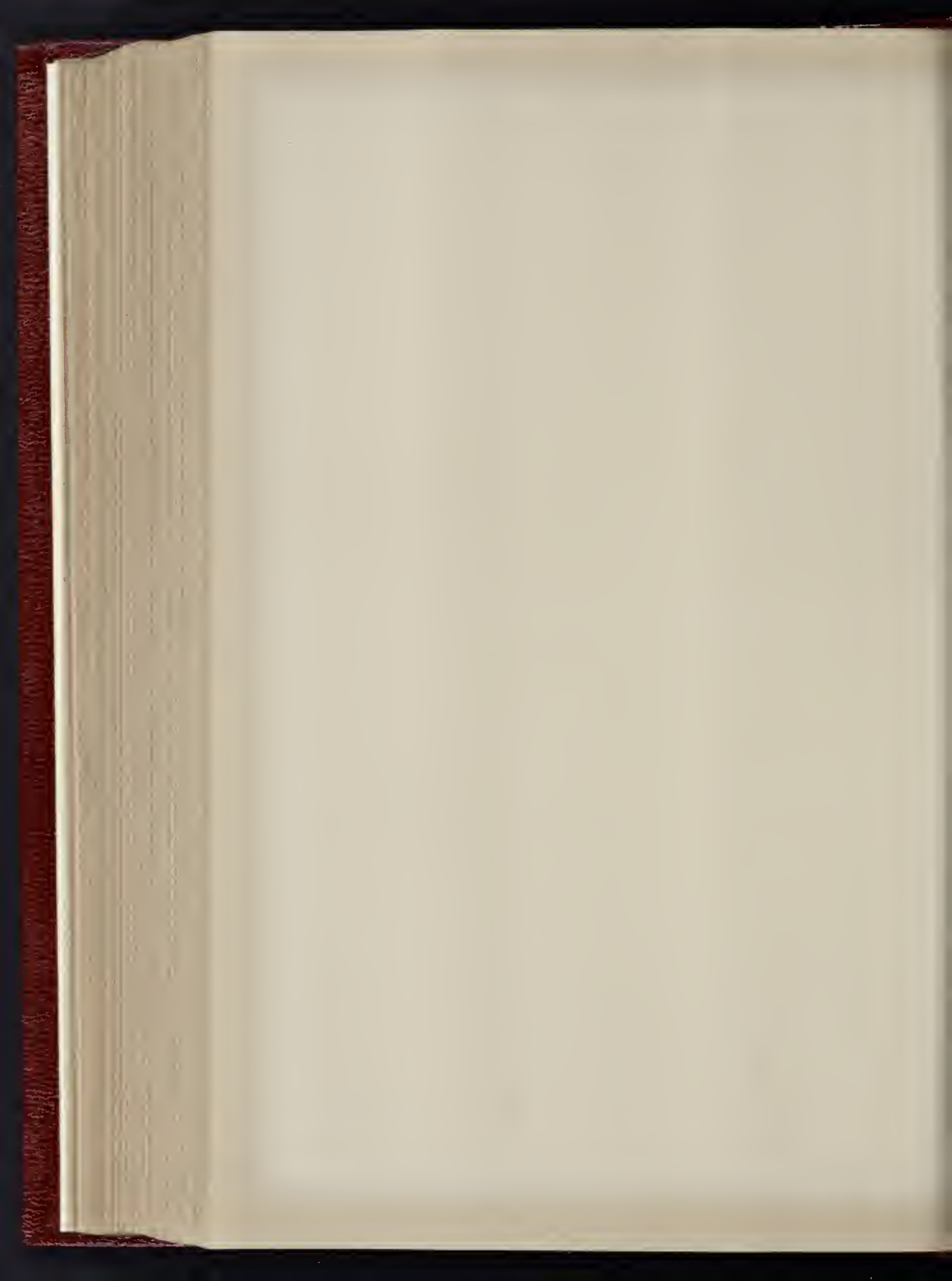
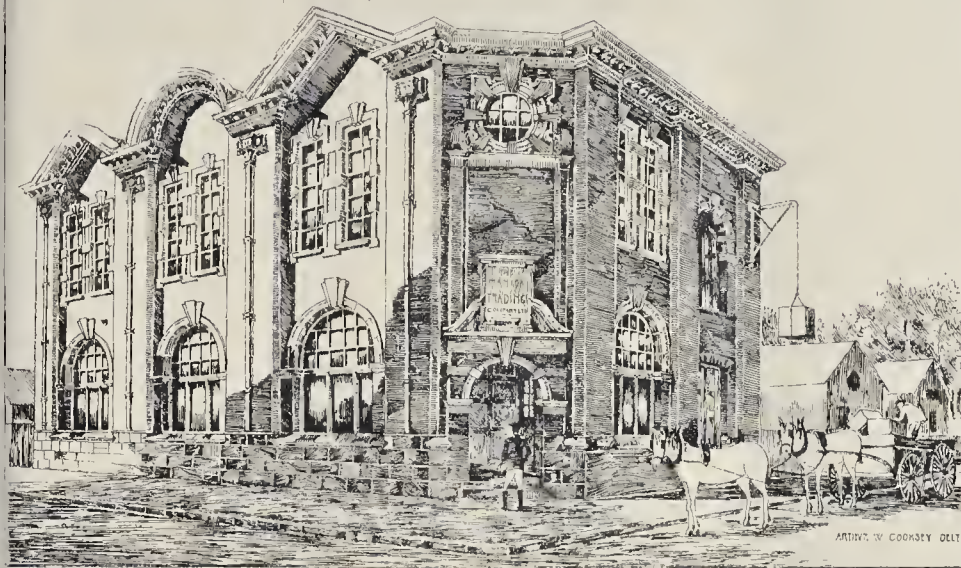


PHOTO LITHO FRAGLER & 425 EAST HAWKING STREET, LITTLE ROCK, AR.

A GRAIN SILO AT GREENWICH.—MR. ASTON WEBB, F.R.I.B.A., ARCHITECT



NEW STORE.
FORT SALISBURY.
RHODESIA.



portions of the three lights, are represented in crimson and purple robes, as martyrs, standing beneath the trees of Paradise. Their martyrs are depicted below.

In the lower panels all the small figures appear in different reds and crimson; while white glass is used for the martyrs themselves. In painting the glass I have used as little as possible, leaving the surface, which is beautiful texture, perfectly clear in the lights.

MARY LOWNDES.

NEW STORE, FORT SALISBURY,
RHODESIA.

THINGS connected with Rhodesia are of interest just now, and we give here a sketch of a new warehouse built at Fort Salisbury on the design of an English architect, Mr. W. Cooksey.

The building is a new store for the Manica Trading Company, and is the first of several to be built in other towns to replace the existing galvanised iron buildings.

The whole of the joinery has been executed by Messrs. Josoline & Young, of Borough High-street, London. The constructional iron and steel work has been executed by Messrs. Brownlie & Murray, of Glasgow, the rain-water gutters, spouts, &c., by Messrs. Thomas Elsey. The glass, brass furniture, and other fittings have all been sent from our country, including the hoist, which has been supplied by Messrs. Arnold Goodwin & Sons, Southark. The building itself is to be faced with a very good local red brick.

ARCHITECTURAL SOCIETIES.

ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.—At the tenth meeting of the Discussion Section of the Architectural Association for this session, which was held at 59, Great Marlborough-street, W., on March 24, a series of short papers was read on "The Progress of Architecture during the Reign of Queen Victoria." Progress in architectural art was dealt with by Mr. H. R. Appelbee, who described the dead Classicism which was just giving way at the beginning of the reign of the archeology of the Gothic revival,

which soon became rampant, only to be succeeded at a later period by a resuscitation of Renaissance architecture more or less archeological. The Crystal Palace was perhaps the one unique building of the reign. At the present time, on looking back, we might believe that progress had been made through these various revivals towards a fresher and more original style, of which the present time showed some hopeful signs.—Progress in construction was interestingly spoken of by Mr. Matt. Garbutt in his paper, in which the influences of steam power, machinery, iron, and terra cotta, were noticed. These forces and materials, together with the revived use of concrete, had enormously advanced the constructive arts.—Mr. C. H. Strange read a very interesting paper on the architectural literature of the period, in which he noticed the very great influence of books illustrating both foreign and domestic work; and the not less important bearing on architecture of the new and vigorous thought of the times, as expressed in the writings of Carlyle and Tennyson, Ruskin and Browning, of the results of the vast amount of research and erudition contained in the voluminous records of the various learned and scientific societies; and of the lectures and essays of such men as Barry, Viollet-le-Duc, and William Morris.—Progress in sanitation was next recapitulated in a paper by Mr. A. E. Young, who read a letter containing the reminiscences of a sanitary engineer in practice forty years ago. The old conditions of water supply, heating of buildings, lighting, ventilation, drainage, and sewage disposal were compared with those now existing; while the enormous increase of protective legislation in connexion with building and with the housing of the working classes and such matters was noticed.

—Mr. A. W. Waddington read a paper which dealt with progress in architectural education, as seen in the Architectural Association and other kindred institutions, whose sole or partial object was the study of architecture with a view to its advancement. For the architectural student of fifty years ago the works of Vitruvius, Palladio, and one or two others may be said to have contained the whole gospel architectural. At the present time text-books of design and construction were innumerable, while the institutions, whose main object was

the training of students for the practice of architecture, had mostly sprung up within the present reign—until at the present time the greatly-increased facilities for travel, sketching, reading, and otherwise gaining architectural knowledge were so numerous that we were fully justified in deeming that progress in this department had been very great.—The meeting was adjourned till April 7 when the papers were discussed and commented upon. The two meetings were productive of a very interesting review of the progress that has been achieved in matters architectural during the Queen's reign, which has been so marked by advance in every department of civilised life.

EDINBURGH ARCHITECTURAL ASSOCIATION.

—At an ordinary meeting of the Edinburgh Architectural Association, held on the 21st ult. in the Royal Institution—Dr. R. Rowand Anderson, President, in the chair—a large number of drawings of old Scottish work by students of the Applied Art School were exhibited, and explanatory historical and architectural notes on them were read by Mr. J. Forbes Smith and Mr. Ramsay Traquair, students. Among the subjects of the drawings were Holyrood Abbey, Craigmillar Castle, Argyll's Lodging at Stirling, and Cowane's Hospital. The Chairman, in proposing a vote of thanks to Messrs. Ramsay Traquair and Smith for their communications on the interesting buildings they had been studying, said that the Association, in devoting one of its evenings to an exhibition of the work of the students of the Applied Art School, was desirous to make it known, especially to the young men who were to follow applied art, that the Association was doing its best for them, because it made annually a handsome subscription from its limited means to forward the cause of education, and it desired to make it known that it did not limit its subscription to benefiting those only who were to follow architecture, but that it gave its support to a school which, in carrying out its system of education, made no distinction between the architect and all other art workers—that was to say, that the scholarships and other awards at the disposal of the school could be obtained and held by the decorator, the sculptor, and any other art worker equally with the architect. The Association also desired to emphasise the great importance of the study of ancient work, in all its departments, as a true

foundation for the future work of the artist. Work of the character they saw that night might be described as analogous to anatomy in the study of medicine. They brought the student into actual contact with work of all kinds. He was taught to dissect, to analyse, and to work out for himself all the reasons that gave rise to the various features he saw in buildings. All artists of eminence had recognised that the study and the analysis of ancient work were among the most important factors in the education of all art workers, and the Association desired to make it known as widely as possible that the Applied Art School held out every inducement to students, within its, he was sorry to say, somewhat limited means, to come and perfect their education.

DEVON AND EXETER ARCHITECTURAL SOCIETY.—The annual meeting of the Plymouth, Devonport, and Stonehouse branch of this Society was held at Plymouth School of Art on the 22nd ult. Mr. Charles King presiding. The report was considered satisfactory, meetings and excursions having been held at regular intervals during the year, and several matters of considerable importance to the local members of the profession have been discussed. The Chairman, in his address, expressed the hope that the members would make the coming season even more satisfactory, and spoke of the desirability of an *esprit de corps* among the members of the profession generally. The ballot for the election of officers resulted as follows: Chairman, Mr. C. King, re-elected; Committee, Messrs. H. G. Luff, M. A. Bazeley, B. P. Shires, J. H. Dwelley (re-elected), and A. G. Bewes; Hon. Secretary and Treasurer, Edgar M. Leest, re-elected. Votes of thanks were passed to the retiring officers, on the motion of Messrs. Shires and Bazeley.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE.—**ARCHITECTURAL CRAFTSMEN'S SOCIETY.**—Under the auspices of this Society, a paper was recently read on "Steel and its Use in Structures" by Mr. Kendrick Edwards. Mr. James Lochhead presided. The paper treated fully of the Siemens system of steel manufacture, and the treatment of steel ingots in the cogging mill. Mr. Edwards then compared the relative values of steel and iron, with reference to weight and cost for the same strength, showing the decided advantage for most purposes of steel over iron. In connexion with structures many practical details were discussed, as showing faults and points to be avoided in everyday work, as well as the theoretical correctness of design, and in connexion with this the lecturer asked for more attention on the part of architects and engineers to the matter of calculations and detail. A discussion followed, in which Professor Gourlay took part, and in closing it the Chairman proposed a vote of thanks to Mr. Edwards for his paper.

ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

A HOME Counties District Meeting of the members of the Incorporated Association of Municipal and County Engineers was held at the Town Hall, Dover, on the 24th ult.

Mr. F. J. C. May, C.E., of Brighton, presided, and amongst those present were Messrs. Santo Crimp, London; W. Weaver, Kensington; Norrington, Lambeth; J. P. Barber, Islington; Dodd, Wandsworth; Savage, West Ham; Lafan, Twickenham; T. Cole, Westminster; Secretary; Mann, Sevenoaks; Campbell, Canterbury; Blair, St. Pancras; E. Pritchard, Birmingham; Hooley, Nottingham; Fowler, Manchester; Price, Birmingham; Yabbicom, Bristol, &c.

The Mayor of Dover having offered the members of the Association a hearty welcome to the town,

On the proposition of the President, Mr. Lafan, of Twickenham, was re-elected honorary district secretary.

Mr. H. E. Stilgoe, Borough Engineer, then read a paper on "Some of the Public Works of Dover." The paper was mainly descriptive of the arrangements made for scavenging the town. Hitherto the work has been carried out under contract. The house refuse had been collected every day, the pails containing the same being placed on the edge of the pavement or within the forecourts, where such existed, early in the morning, and for the most part removed by ten o'clock. The contract system was by no means good. First, the horses, carts, &c., were anything but a credit to the

town; secondly, there had been in the past a difficulty in getting the work done as expeditiously and regularly as it should be, particularly with regard to the collection and disposal of house refuse. The Council had, consequently, determined to undertake the work themselves, with their own staff of horses, carts, and men. The present cost of the work by contract was 3,372*l.*, and the estimated future cost 4,112*l.* It would, therefore, be seen that the estimated annual cost by the direct contract system was 740*l.* in excess of that of the contract system. The amounts of the contracts for this work had been increasing steadily year by year, and the slight additional expenditure which might be expected under the direct control system was well balanced by the greater efficiency.

The President said he greatly approved of the daily system of collecting house refuse, though he had not been able to adopt it at Brighton, where the collection was made weekly. He congratulated the Dover Corporation upon having taken the advanced step of a daily collection. The second principle in the paper appeared to be the collection of refuse and the scavenging of the streets by a staff in the direct employ of the Corporation, as against the system of doing the work by contract. On that point he felt very strongly that the work should be entirely in the hands of the Corporation.

Mr. Collins, Norwich, thought the Corporation had no power to compel householders to put the refuse outside the houses; though he admitted that when they had to go into the houses to collect the refuse it made it a very slow process.

Mr. Read, Gloucester, said a similar system was in operation at Gloucester.

Mr. Campbell, Canterbury, said he was greatly in favour of the Corporation's undertaking this work themselves, as hired men were not so directly under control as their own staff.

Mr. Weaver, Kensington, admitted that there was not the slightest doubt that men working for contractors would do more work than men working for Corporations; but, at the same time, he argued that the work was never so efficiently done. The Corporation would have to face an increased cost, but they would have the work much better done.

Mr. Barber, Islington, said he also agreed that the work would be much more efficiently done by the Corporation employing their own staff.

Mr. Yabbicom, Bristol, said that five years ago the Corporation of that city undertook such work, and the change had been made with very satisfactory results.

A vote of thanks was unanimously accorded to Mr. Stilgoe for his paper.

Mr. Stilgoe then read a paper on the Dover Corporation electric tramways. He said the rapid development of building operations on the new estates being laid out in the borough, and the advance of commercial enterprise in connexion with the coalfields and the proposed new national harbour at Dover, had made the construction of tramways in the town almost a necessity, particularly from the point of view of conveying the working population to and from their work, and for the general convenience of the public. A Provisional Order was obtained, and subsequently confirmed by the Tramways Orders Confirmation Act, 1896. This Act gave the Corporation, as promoters, the power to work the tramways by horse or mechanical traction (except steam locomotives), and the power which had never been granted to a Local Authority before, viz., that of working the tramways. The gauge was 3 ft. 6 in., and was decided by the narrowness of one or two of the streets through which the line passed; but in the interests of economy of the initial cost of permanent way he would have recommended it in preference to a broader gauge. They had adopted the electric overhead trolley system of traction. Acting on the advice of their electrical adviser, Mr. S. Sellon, who had carefully considered the question of whether it would be more advantageous for the Corporation to have its own power station or to take the necessary current from the Dover Electricity Supply Company, they entered into an agreement with that Company to provide all the power required for working the tramways at a price of 3*d.* per Board of Trade unit, subject to reductions on a sliding scale as the consumption of energy increased. This installation possessed features of unusual interest which deserved the careful study of all interested in the success of either tramways or electric lighting stations. The well-known disadvantage that all electric supply stations

laboured under was the want of a day load, and the consequent length of time that the plant was not only not earning a dividend, but that its stand-by losses were constituting an actual drawback to the dividend-earning capacity of the undertaking. Tramways, on the other hand, found the inevitable fixed charges in connexion with a generating station (and particularly with those of smaller size) were a serious consideration, and made it possible for a tramway to purchase its supply of electric energy from an electric lighting station at a price which while yielding them a fair profit, would be below the cost at which the tramway could generate its own electricity. The Dover Corporation was the first body which had practically grasped the economic possibilities of the problem before them, and the Dover tramways would be the first tramways to be worked from an existing electric lighting station. This pioneer movement and its results would be watched with much interest by all municipalities interested in the success of their electric lighting stations.

The President said that some time ago Brighton turned out in thousands to meet the great display of motor-cars from London, but the thing ended in fiasco, and only five cars reached there. But the idea of the motor-car was growing, and some enterprising men in Brighton proposed to have motor char-a-bancs to take people to the Dyke; but the motor had not been licensed.

Mr. Yabbicom, Bristol, said that in Bristol the overhead electric system was appreciated, but it was a disfigurement of the streets. Though the Bristol Company had not succeeded in obtaining the extension which they had hoped for, the public had taken the matter up, and they hoped, by bringing pressure to bear upon the Corporation by the ratepayers, to get an extension of the system.

Mr. E. Pritchard, Birmingham, approved the Dover policy of municipalising the tramways. He believed they had a thoroughly workable system; but as a result of the electric lighting plant not belonging to the Corporation, they were going to pay what he considered the excessive sum of 3*d.* per unit for the electric power.

Mr. Lobley, Hanley, said that a good deal had been said about the appearance of overhead wires, but it was a remarkable thing that every deputation which had gone abroad had come back converted to the trolley wire (Mr. Price: "No")—not Birmingham. He was prejudiced himself some time ago, but after he had been in Boston twenty-four hours, he had ceased to notice the trolley wire. He could not agree that the conduit system was the best. With regard to cost of electricity, he would be glad to get 1*d.* per unit in Hanley.

Mr. Price, Birmingham, said he had been fortunate enough to be one of the deputations which visited the Continent recently to investigate the various systems of electric traction. The result of their investigation was that they would not on any condition sanction overhead wires in Birmingham. In Birmingham they had been engaged for years in removing wires from the streets; it would be folly to go back and put wires in the streets. He agreed that, commercially, the overhead system was economical; it was cheap to install, and the cost of working was not greater than any other system. The difference of initial cost had been somewhat exaggerated. The cost of equipping a good overhead system was 7,000*l.* a mile; and a good conduit system had been put down for 10,000*l.* a mile. The price charged per unit for electricity was not more than 1*d.* anywhere on the Continent.

A paper by Mr. A. T. Walmisley, C.E., Engineer to the Dover Harbour Board, on groynes, was taken as read. In the course of his paper, the author remarked that the ambition of every maritime town under municipal control was to combine the maximum advantages of a seaport with a minimum of its dangers. This fact gave primary importance to the maintenance of cliff faces, the retention of a foreshore, and the execution of such works of protection as were necessary to secure these objects. A shingle beach was the natural protection of a coast, as the most erosion and the greatest encroachments of the sea occurred in places where shingle was deficient, or where groynes were not properly maintained; but where groynes had been properly set out and maintained they had exerted an influence to protect a coast or wall against which they abutted. They should, as a rule, be directed towards the prevailing

gerous wind, and if the coast suffered from quarters, say, from south-east and south-west winds, land ties on each side of the groynes could be introduced. Care must be taken to give ample strength at the intersection of the inclination of the groyne with the level of high water, ordinary spring tides, owing to the momentum of the waves being greatest at the end of the tide. While there was no subject dependent upon local circumstances as the instruction to be adopted for a groyne, he directed attention to examples of groynes with their verticals, and also with iron verticals, the latter generally consisting of double railway rails with 3 in. or 4 in. planking intervening to a box groyne system, suitable for situations where a broad base foundation was needed, the case of timber bolted between old rails practice had sometimes been to weld the metals together at the point, necessitating expense of heavy labour. At Sandgate this was obviated by the introduction of an improved pile point, devised by Mr. Stilgoe, and patented by him. The point or shoe was made with a V-shaped head, from whose flange a link contrived to receive the vertical railway metals which were connected therewith by bolts. A system of open groynes, which had been advocated by Mr. A. Dowson, consisted of uprights driven into the foreshore, having horizontal gratings attached to them, which it is alleged trapped and retained the shingle. The author preferred the addition of diagonal boarding as well as longitudinal boarding, which aided to prevent apertures in a groyne where shingle could work through, and also served in exposed situations to tie the groyne well both at the head and foot. The storm angle beach upon the south coast was approximately 1 in 10, and this formed a ruling precedent for intermediate groynes upon a fore-re. The critical time was after a gale of wind in winter. Groynes did not create a danger; they only arrested it, and this arrested danger was judiciously arranged. There was no doubt that when, by their aid, beach could be raised, the erosion of cliffs was reduced to a minimum by the check upon the wave action which otherwise would dash against an unprotected cliff. In conclusion, the author said that the danger arising from groynes should be escaped attention. They produced ill as well as good effects, because it not infrequently happened, that whilst sand and shingle might be collected upon the windward side of the groyne, all such accumulations were simultaneously prevented from taking place on the leeward side. Hence the situation and direction of the groynes to a foreshore should be studied on all points of view.

During the day the members visited and inspected the new harbour works, the electric light works, the new town depot and stables, and the tramways which are in course of construction. The Mayor of Dover entertained the members to luncheon at the Town Hall.

FIRE-CLAY MANUFACTURES.

THIS was the title of a paper read by Mr. V. H. Allen before the Northern Architectural Association on the 24th ult., at Messrs. Harrisons' Works, Blaydon-on-Tyne.

After a few preliminary remarks, the author proceeded to deal with the raw material, fire-clay. "A good fire-clay," he said, "should have a uniform texture, a somewhat greasy feel, and be free from impurities. Silica and alumina are the chief substances of which fire-clay is composed. The proportions of these substances vary very much in the clays obtained in Northumberland and Durham; but I should consider a fair average to be as follows—50 to 55 per cent. of silica and 30 to 37 per cent. of alumina.

The great bulk of the clay raised is used in the manufacture of fire-bricks for heat-resisting purposes, but of this class of manufacture I do not propose further to refer.

There is a fire-clay of very fine quality, and of many respects different from that which I have just spoken of. This clay is found apart altogether from the coal measures. It is also different in colour, being of a reddish-brown tint instead of a slate grey. It possesses a very dense body when burned, similar to that of stoneware. The outcrop of this clay is found and worked a little to the north of Corbridge.

I will next speak of the treatment of clay. It is delivered out of the pits mostly in large, hard pieces, and has to be ground into a powder of varying degrees of fineness or

roughness, according to the article into which it is to be manufactured. If for heat-standing purposes, it has to be ground what we term 'rough'; if for treatment for salt-glazed goods it has to be ground finer, and if for white or cane goods it has to be ground finer still, and for this latter purpose carefully selected so that no nodules of iron-stone may be left in the clay, as in that case it would fuse at the great heat in burning, and spoil the goods. The modern method of grinding is as follows—The lumps of clay are tipped into a perforated pan mill some 8 ft. to 9 ft. in diameter. This pan revolves, and revolving within this pan are two metal rollers. The clay is carried under the rollers by the revolutions of the pan, and is thus crushed by degrees into powder which gradually finds its way through the perforations in the bottom of the pan. Underneath the perforated bottom of this pan is a cast iron saucer, which receives the powdered clay thus passed through the perforated mill. It is then carried round by an iron arm, so arranged that all the ground clay is forced into a well or huge pocket a little below and at one side of the foundation of the mill. Working down into this are the elevators which fill themselves with the ground clay, and carry it up to a higher story any height that may be required, and then empty themselves into a shoot, which conveys the clay into a riddle.

This riddle is hexagonal in form, say 7 ft. or 8 ft. long and 3 ft. or 4 ft. in diameter. This is kept revolving, and its action in so doing allows the fine clay to pass through the wire forming the riddle into a further shoot, which, in its turn, delivers the clay of the required degree of fineness to wherever it may be wanted. The wire of these riddles is of varying degrees of fineness, in some cases fifteen meshes to the inch, in others only five meshes to the inch. Whatever particles of clay are too large to pass through the riddle or sieve (for practically the riddle is only a large sieve) are returned to a separate shoot, that, in its turn, conveys the rejected particles of clay back to the pan-mill to be re-ground.

The clay that has been passed through the riddle and delivered to its destination is now ready for mixing. For this purpose it is put into a pan-mill with a *solid* bottom. This pan-mill also revolves, and has within it two revolving rollers. A sufficient quantity of clay is put in, and as this is being done water is added to reduce it to a plastic condition. The metal rollers passing over this wet clay knead, prepare, and give it body, the required stiffness being regulated by the supply of water to the clay. The men in charge of this mill can tell by experience when the clay is ready for the machine or mould. It is then taken out and ready for manufacture.

There are other methods of preparing the clay, but the foregoing is the most modern, and I believe the most effective. In the manufacture of all the varied articles made by my firm, the clay is prepared up to this stage for every one of them in the same way, rough, medium, or fine clay going through the same process, but not through the same riddle.

I have now to describe how the various goods are manufactured from the prepared clay. Firstly, I will take the process of manufacturing sanitary pipes. These are all made by a properly constructed pipe machine, which consists of (1) a steam cylinder, (2) a clay cylinder, (3) a contrivance for forming the inside of the pipe, (4) another for forming the outside of the pipe, and (5) one for moulding the inside and the outside of the sockets.

The steam cylinder stands on a metal frame placed on the strong beams or girders of the first floor. Immediately below this floor is placed the clay cylinder. Between the steam and the clay cylinders is a space of about 18 in., through which the prepared clay is thrown into the mouth of the clay cylinder by boys. Attached to the piston of the steam cylinder is a metal disc, termed a plunger, which works through into the clay cylinder and forces the clay down until it forms a pipe. At the underside of the clay cylinder an apparatus is fixed for shaping the pipe. This consists firstly of a cone or core, which is attached to the end of a strong rod passing down the centre of the cylinder. These cores are the exact size of the internal diameter of the pipe to be manufactured. This, you see, determines the inside size; and, secondly, a large square cast-iron plate, with a circular piece cut out of the centre, equal in size to the diameter of the outside of the pipe, regulates the thickness of the pipe. This we term the die plate, and it is fitted

on to the frame work of the lower and outside portion of the clay cylinder. These die plates correspond in every case with the size of the before-named cores, so that when the core and the die plate are both accurately fitted into the bottom of the clay cylinder, you have an open space through which the clay emerges equal to the section of the pipe to be manufactured.

But before the pipe can be manufactured, the socket of the pipe has to be formed, and small though the socket may be in proportion to the pipe, it is much more difficult to manufacture, and takes a much higher power to press than the pipe itself, inasmuch as you have to press the thin wall of clay round a corner, so to speak, and then down the length of the socket. Several moulds are provided, internal and external. The internal mould is a thick ring, in shape the exact reverse of the inside of the socket; this is placed directly under the core previously described, and held there until securely locked. The external mould is made in two halves, and obviously the exact reverse of the internal mould; these are worked in grooves attached to the underside of the die-plate, and are brought together by a lever. The contrivance holds all the mould, internal and external, together.

When the socket moulds are in position, steam is applied by a lever, and the clay is forced down the clay cylinder through the space between the solid core and the circular edge of the die-plate right into the socket mould. When this socket mould is filled, the two halves forming the external mould are released. The internal mould remains. Steam is applied again, and the pipe is delivered to its required length, then cut off with fine wire. There is no joint whatever between the socket and the body of the pipe, the supply of clay being continuous; it is then carried away by the men to the flats to be dressed, dried, and made ready for burning. Every size of pipe requires its own size of cone, die-plate, and socket moulds.

Out of the pipe machines such as I have described, any sized pipe, 2 in. to 24 in. in diameter, can be made—some fifteen or sixteen different sizes. Special machines are constructed to make pipes up to 36 in. in diameter. Pipe machines are largely constructed in Leeds. When the pipes are what we term 'white,' or 'bone dry,' they are set in the kiln. We have found the best kind of kiln for burning pipes to be the circular kiln. These have fires all around them, so that there is every chance of the whole kiln getting equal heat. The pipes are protected from the flash of the fire by an internal wall running up 1 ft. or 2 ft. above the fire. The top of the wall all round the kiln is utilised for setting goods on to be burned, excepting the portion directly in front of the fire.

These kilns are known as down-draught kilns. The heat ascends to the top of the kiln, but as there is no outlet there, it is drawn by the draught of the chimney down through the pipes and through the bottom of the kiln (the arrangement of which is known as a riddle bottom) to a central well, and thence through underground flues to the chimney.

When the kiln is as full as possible the door gap is built up, the fires are lighted, and the heat got up very slowly. In the course of three or four days the kiln comes to its full heat, which is so intense that, looking into it at this stage, you can see every part of the kiln with startling clearness.

And now comes one of the most interesting events of all the process of the manufacture of a pipe, that is, the imparting to it of the brown gloss or glaze with which you are all so familiar in a sanitary pipe. This is done by throwing into the kiln, at almost its greatest stage of heat, a few barrowfuls of common salt. The temperature of the kiln is so high at the "burning off" that the volatile salt is at once converted into vapour, which completely surrounds all the exposed surface of pipes, &c., in the kiln, and there is consequently a reaction of the vapour on the silica of the clay bodies. The agent which promotes the action of the silica and common salt is the aqueous vapour which is always present in the flames of the furnace. The oxygen of the water produces soda with the sodium of the common salt, while the hydrogen combines with the chlorine, and is evolved as hydrochloric acid. The soda then enters into combination with the silica and forms the glaze. This may be termed a coat of soda glass, or in other words, the salt, subject to the great heat, instantly vapourises and covers every particle

of exposed surface. The first application puts on to the articles in the kiln a preparatory coat of glaze, and successive charges at different periods add to the thickness and lustre of the gloss, until sometimes we get what is almost equal to a coat of glass. After the last application of salt the kiln is finished, as far as the burning is concerned. All air inlets are closed up, and the kiln is allowed to cool down very carefully. Some idea of the time occupied in this process may be of interest to you, so I will give you a fair average of same—

Time of drying on flat 2 days.
Time from lighting the kiln to setting it off full fire..... 2 days.
(Termed *soakings*.)
Time under full fire 1 day.
Time for cooling 2 days.

Total..... 7 days.

This average applies more particularly to our own case; other manufacturers generally require more time, according to the nature of the clay. Before leaving the manufacture of pipes let me say that they are made in two different thicknesses, viz., one-tenth and one-twelfth of the internal diameter, the former to meet the requirements of certain engineers, who regularly specify them, and the latter for general use, where not otherwise specified. Bends are made from the pipe machine. Junctions are formed by sticking the size of junction required on to the pipe. Very quick bends, traps, interceptors, and specialities, are made from plaster moulds.

We will next speak of the manufacture of glazed bricks. The clay for these is prepared as previously described, then delivered to a moulder, who moulds them from a brass mould in the usual way; as soon as they are sufficiently stiffened they are pressed in a hand or steam press, laid on the flats to dry, and when quite dry are put into the kilns and burnt to what is known as biscuit heat, or only a moderate degree of hardness; they are then brought out of the kilns again to be prepared, dipped with body and glaze, and made ready for the final burning. As very few have any idea of the number of times these bricks have to be handled before they finally emerge from the kiln, fit and ready for sale, I will describe the method fully. Up to this time each brick has been handled in the process thus described about ten times, and they have, in the following, to be handled a further ten times, so you have for a total, say, twenty times for each brick to pass through a workman's hands.

The bricks are now sorted, brushed clear of all dust, and put on to a long board in patches of four or five in close contact; a boy dips a brush in water and rubs over the face or other portion to be afterwards glazed; another boy follows with a brush dipped in a certain preparation termed "tint," and brushes the bricks to fill up the pores and form a groundwork for the next process, which is the dipping of the brick in the first tint (a mixture of ball clay, &c.), of the consistency of something like cream; this is of a very tenacious and adhesive character, and completes the groundwork. It is then dipped in a mixture of about the same consistency named "body," which determines the colour of the brick; this largely consists of china clay, which gives a dead white colour.

The brick now receives its final dip in the glaze itself (a preparation of felspar, Cornish stone, &c.). But with these repeated brushings and dips there is a superfluous substance on both sides and ends of the bricks that has to be removed, or otherwise the bricks would stick together in burning, or if they did not you would have an edge that would be highly objectionable. This has to be cut patiently off every brick before it can be set in the kiln; this being done, the kiln is filled and burnt again. It takes about five or six days to burn the kiln off, and then a further week to cool it down. Quick cooling is apt to cause crazing. The whole process of glazed brick making requires the utmost care; the proportions of the different minerals of each of the three preparations forming the tint, the body, and the glaze, have to be most accurately weighed out; a mistake in any one of these would be serious. The raw materials forming these are put into tanks containing water to steep; then the whole mixture has to be sieved and resieved through gradually finer sieves until a very fine liquid is obtained. Further, the consistency of this has to be regulated by weight, viz.: 27, 28, 29, or 30 oz. to a pint. One of these weights will be fixed according to circumstances; half an ounce heavier

or lighter will have a disastrous effect. Take the case of the glaze: if it is the slightest degree, or say $\frac{1}{2}$ oz. heavier than the fixed weight, the bricks may come out crazed. If it is $\frac{1}{2}$ oz. lighter, there will be little or no glaze on the brick. To get coloured glazed bricks, we use prepared stains to produce the required colour. Some of these are applied to the body as in blue glazed bricks; some are applied to the glaze, as in chocolate or brown bricks.

Cane and white glazed kitchen and scullery sinks are made from moulds. After they are out of the moulds they are squared and dressed up, and when they are required to be made white the body determining this is brushed on with specially made brushes. It will take five or six coats of this white body to cover the clay perfectly, and give the necessary tone of whiteness, but you cannot apply more than two coats per day. The sinks must be made quite dry, or as we term it, "bone dry," before the glaze can be applied. There are two systems in the trade for glazing sinks. One system is by twice firing, or biscuiting, then glazing as in the case of the bricks; in this case the glaze is thrown on to the sink in its biscuit stage, and then reburnt and glazed, or in some works the glaze is applied by immersing the sink in the glaze and then burning it. The other method is by one burning only. We adopt this latter system. In this case the glaze is brushed on in a similar way to the body. Every particle of moisture has to be expelled before putting the sink into the kilns. Each system has its own advantage and its drawbacks, and you have to be guided by local circumstances as to which to adopt.

In the matter of kilns, sink kilns are quite different from the well-known Newcastle, or the round kiln; they are termed muffled kilns, and are constructed so that no flame may reach the contents. The heat goes all round the kiln between the outer and inner arches, and gradually but effectually penetrates through the walls and floor of the inner arch. The utmost care has to be exercised in the burning of these kilns, first of all to apply the heat very gradually, and then to determine the exact moment when it is burnt sufficiently.

Just as we are assured 'there is a tide in the affairs of men, which, taken at the flood, leads on to fortune,' so there is a moment in the burning of sinks, which, if seized, crowns the effort with success; or missed, ends in partial, or complete, failure. To enable us to attain this much desired end, small trial pieces are inserted in the kiln with the sinks, and drawn out from time to time until the crucial moment arrives, when it is declared to be finished. The kiln has then to be cooled down most carefully, which takes about six or seven days.

Channel pipes and bends, for which a great demand has arisen in late years, are made out of plaster moulds; the number of moulds required is enormous. The body and the glaze, in the case of these articles, can be run on; they are dried and burnt with the sinks. Fireclay water-closets are made in plaster moulds, accurately fitted together, the body and glaze applied as in the case of sinks and bends; they are also burnt in a similar manner to sinks. Majolica glazed bricks differ from ordinary glazed bricks in their manufacture in one or two particulars:—1st. The body beneath the glaze is for the purpose of obtaining a fine surface, not so much for determining colour. 2nd. The glaze is very soft, and runs at a much less heat. 3rd. There is no waste to be cut off the edges of the bricks; it overlaps without interfering with the utility of the brick. 4th. Each brick has to be set face up and burnt independently of the other, and also in a muffled kiln.

COMPETITIONS.

GOVAN TOWN HALL.—At a meeting of Govan Commissioners, held on the 14th ult., it was decided to award the first places to the plans marked respectively G, E, and O of those submitted in response to the Commissioners' invitation for competitive plans for the erection of the proposed Burch Hall. The premiums offered were 100*l.*, 50*l.*, and 25*l.*, and all three have gone to Glasgow architects. Messrs. J. Thomson & Sandilands, 241, West George-street, take first place with G plan, Messrs. Thomas Dykes & Robertson, 65, West Regent-street, second place with E plan, and Mr. W. H. Howie, 134, West Regent-street, third place with O plan. The estimated cost of the building according to the plan adopted is 23,000*l.*

CONSERVATIVE CLUB, NUNEATON, WARWICKSHIRE.—The successful architect in this competition is Mr. C. W. Smith, Market-place, Grantham.

Correspondence.

To the Editor of THE BUILDER.

THE R.I.B.A. ELECTIONS.

SIR,—As the truth of the statement that a large proportion of the members do not vote at the annual elections for the Council has been questioned, following are the actual figures from the Institute *Journal* in reference to the last election—

There were only 498 envelopes containing the voting papers, and twenty-nine of these were spoiled by informality. No candidate obtained more than 301 votes, although the total number of members with voting powers was then 1,581; therefore, no less than 1,113 neglected or refused to send in voting papers.

It is to be hoped that there will be more vote this year, and that they will consider that six members of the Council, with twelve existing members, is a fair proportion.

The best way to secure this result would obviously be to "plump" for new candidates only, for it is absolutely certain that twelve at least of the ones will be returned.

"AN ARCHITECT FROM YORK."

April 28, 1897.

SIR,—The fact that sixty existing members (out of sixty-four) have nominated themselves for the Standing Committees should be widely known. The best thing to be done under the circumstances was to "plump" for new candidates, as in any case a large proportion of existing members must necessarily be returned.

As seven members of the existing Council are renominated for eighteen seats, it is desirable that a number vote, and for new men only. The existing seventeen members will, no doubt, be well looked after by their own friends, and, as they have renominated themselves, will, probably, also vote for each other; but a few of them should make place for new blood.

A LONDON ASSOCIATE.

MORLEY BATHS COMPETITION.

SIR,—I should be greatly obliged if you could (through the influence of your paper) get to know the result of the Morley Baths Competition. The designs were sent in before the end of January; deposit of 10*s.* was made for conditions, which was to have been returned on receipt of bona-fidesigns. It is now virtually the end of April, three months have gone, and not a word have we heard except through a traveller of a Leeds fireclay firm, who was at my office in February, and confidentially stated that Messrs. Holton & Fox, of Dewsbury, were the winners. The following week this was published in your paper, and a week or so later it was stated that another design was proposed, as the design of Messrs. Holton & Fox had not come out according to estimate. (Here note that the conditions gave no amount, or even any suggestion of the sum to be spent.) This brings me to about the third week in February, since when we have been in total darkness as to the scheme.

In your issue of January 2, an architect wrote you enclosing copy of correspondence which passed between himself and the Borough Surveyor of Morley, which, he considered, threw a doubt upon the fairness of this competition. Under any circumstances, I think, it is quite time the result was known, and plans and deposits returned to the unsuccessful competitors.

A COMPETITOR.

The Student's Column.

SPECIFICATIONS.—XVIII,

PLUMBER.

It is usual to keep separate the external and internal plumbing, and to commence with the specification of the external work.

Materials.—The whole of the sheet lead to be the best new pig lead, properly milled and free from all defects, to be weighed whenever required at the contractor's expense, and to weigh the specified weight. The contractor is to supply all necessary solder, lead hooks, copper nails, &c., required in laying lead work. Solder is not to be used in fixing external lead work save where absolutely necessary, but lead clips of not less than 6 lbs. lead are to be used; and for securing edges turned into joints of brickwork, as in aprons and flashings, lead wedges are to be used, and joints are to be pointed in cement. The zinc to be Vieille Montagne zinc, and it is to be supplied and laid by Braby's, of Euston-road, London, with holding-down clips, improved solid stoppings and ridge plates. No soldering or other rigid fastening is to be externally used. (If th

hitect has reason to believe that the con- tor will employ a competent zinc layer, not lumber, it may not be necessary to stipulate it the work shall be done by Brabys'. But it very important that zinc should not be laid th rigid fastenings, so as to be perfectly free expand and contract. Neither copper nor nailing must, of course, be used for zinc

Lead in Flats and Gutters.—Lay the flat over with 7 lb. lead, laid to a fall of 1 1/2 in. ft. with 2 1/2 in. rolls, 3 ft. apart, centre to stre, and cross-rebated drips 10 ft. apart, as on plan. The drips in all cases to be in. deep, and the ends of rolls to be properly ssed. The gutters to main roof to be laid th 7 lb. lead, 9 in. wide in narrowest part, d turned up 9 in. under slating, and dressed er tilting fillet. The cesspools to be of 7 lb. d, 8 in. by 8 in., inside dimensions, and 6 in. ep, with a 3 ft. length of 3 1/2 in. bent draw d pipe of the substance of 7 lb. lead, with ed end soldered to bed of cesspool, which is e dressed into dish and rebated peration. These bent lead pipes are to dis- arge into heads of rain-water pipes.

Lead Valleys.—The valleys of main roof o be laid with 6 lb. lead, 18 in. wide, dressed der slates, and over tilting fillet; the joints eams to be lapped and welded.
Flashings.—Where lead roof abuts against ickwork the lead is to be turned up 5 in., and ver flashings 6 in. wide of 5 lb. lead are to e led, turned into joints of brickwork 1 1/2 in., here the sloping edges of roofs abut against rical sides of dormer, put lead secret gutter n. wide of 5 lb. lead, covered with 5 lb. lead shing, 6 in. wide, with 4 in. laps. This flash- g to be close copper nailed to boarded sides of dormer cheeks.

Cheeks of Dormers.—The dormers on of to have their cheeks covered with 6 lb. ad, secured to boarding with close copper iling at top, and soldered dots and screws, o, 3, to each cheek.

Chimney Gutters.—The gutter at back of imneys to be of a minimum width of 6 in., id with 6 lb. lead, turned up 5 in. against ickwork, and with cover flashings of 5 lb. ad, 6 in. wide, fixed in a similar manner to ose before described.

Aprons.—Put aprons, 12 in. wide, of 5 lb. lead, all chimneys and dormers.

Soakers.—Put soakers or secret gutter to hips already described under "slater."
Skylight.—Specify the lead work round the skylight in a similar manner to that already ven for chimney stacks; that is, lead gutter a top, apron at bottom, and soakers or secret uler at side, either with or without flashings.

Lead Sills.—Cover the sills of with lb. lead, properly-dressed round same, cop- eral at top edge, and with bossed ends to rojections.

Pomnels of Hips.—Cover the pomnels of ipped with 6 lb. lead, beaten up, bossed, and tted to wooden hip knob on roof in accord- ce with detail.

Lead Rain-water Pipes.—The rain-water pipes to be 3/4 in. drawn lead pipes, weighing 3 lbs. per foot run, and each to have ornamental lead caps and tucks purposely made in accordance with detail. The heads to be of lb. lead, bossed, beaten up, and cut in accordance with detail, and each to have No. 2 pieces of strong 3/4 in. lead pipe as stiffeners cross top, to take long coach screws for fixing. The coach screws to have hexagonal eads, and to be covered with ornamental ad bosses, as shown on detail, soldered on.

Lead Eaves Gutters.—Dress the eaves gutters in stone cornice of main roof with 7 lb. ad laid to fall of 1 in. in 10 ft., the joints to be apped and welded, lead to be dressed over one cornice projecting 1/2 in. beyond top corner, slightly turned up, secured to stone work, with lead plugs and screws and sol- dered dots 3 ft. apart, and taken up 9 in. under slating. The cesspools to be formed as already escribed for lead gutters.

Zinc Flats.—Flat over to be covered with No. 15 gauge Vieille Montagne zinc, laid to fall of 1 1/2 in. in 10 ft., with capped rolls 3 ft. 10 in. from centre to centre. Drips to be 3/4 in. deep cross rebated and 7 ft. apart.

Zinc Gutters.—Lay the gutters to with No. 15 gauge Vieille Montagne zinc of a minimum width of 9 in., laid to a fall of 1 1/2 in. in 10 ft., turned up under slates 9 in. on each side, eured with holding down clips. Drips to be 3/4 in. deep cross rebated and 7 ft. apart. The cesspools to be in 5 lb. lead, 8 in. by 8 in., inside dimensions, and 6 in. deep, with a 3 ft.

length of 3 1/2 in. bent pipe of 6 lb. lead to dis- charge into head of water pipe.

Zinc Eaves Gutters.—These are by no means to be recommended, but if used should be specified thus: Eaves gutters to be O.G. moulded 4 in. eaves gutters of No. 15 gauge Vieille Montagne zinc with stiffening tubes 3 ft. apart, and fixed to fascia with large-headed zinc nails.

Internal Plumber.

Lead Pipes.—The pipes to be of the follow- ing weights per yard run:—

Wastes:—1 in. 7 1/2 lbs.
1 1/2 in. 15 lbs.
2 in. 18 lbs.
2 1/2 in. 24 lbs.

The services and supplies:—

1/2 in. 6 lbs.
3/4 in. 9 lbs.
1 in. 12 lbs.
1 1/4 in. 16 lbs.
1 1/2 in. 24 lbs.

Taps.—All the taps to be of quality brass, or gun-metal taps, and unless otherwise de- scribed, the bilh and stop-cocks to be "full- way" high-pressure screw down valves. The ball valves to be of the make known as "equi- librium." All bilh-taps to have screw ferrules, and all stop-cocks screw unions, so that the taps may be removed for repairs without breaking the joints in the pipes.

Fin-lined Pipes.—The whole of the pipes used for cold water supply to be wrought-iron, block fin-lined pipes known as Walker's Patent Health Water Pipe, to be obtained of

and to be put together in accordance with the instructions of the patentee; (or) the whole of the pipes used for cold water supply to be block fin-lined lead pipe, the joints of which are to be formed with gun-metal linings and screwed sockets, the pipe ends being tinned to linings.

Joints.—All joints in lead pipes are to be wiped soldered joints, and no blow pipe or bit joints are to be used.

Pipe Fixing.—All horizontal pipes are to be fixed on 1 1/2 in. by 3 in. wrought and splayed fillets, plugged to wall with hollow groove on top side for pipe to lie in, and each to be laid with a fall towards the rising main, so that pipes may be emptied from draw-off tap at bottom of same.

Vertical pipes are to be fixed by face tacks, and not by pipe clips or wall-hooks. Water pipes in roof are to be cased with 3/4 in. deal casing, 6 in. by 6 in., clear inside, packed with slag wool. (Or they may be encased with felt or other good non-conductor, so as to preserve them from frost as far as possible.)

OBITUARY.

M. PAUL BLONDEL.—This eminent French archi- tect, a former pensionnaire of the French Academy at Rome, and official architect to the Louvre, has just died at the age of fifty. He was a native of Paris, and after studying as a pupil in the atelier of M. Daubigny and at the Ecole des Beaux-Arts, he obtained the Prix de Rome in 1870, and sent home a number of fine drawings, among which his restoration of the Temple of Fortune at Preneste gave him at once a reputation. The "Direction des Bâtimens Civils" found in him a learned, helpful, and energetic official. But he carried out also a number of works in private practice, of which the most important are the Furtado-Heine Dispensary, some large private residences at Mul- house, a Chateau near Limoges, the monument to Etienne Doleat at Paris (in collaboration with M. Guilbert, the sculptor) &c. At the Louvre, where he succeeded M. Guillaume, he commenced the work of rearranging the salle des Etats. Though M. Blondel was known to have been suffering more or less for some time from a local ailment, it was never supposed that his life was in danger, and his comparatively early decease has come as a painful surprise to his friends and the French architectural profession generally.

Mr. J. GARDNER.—Mr. J. Gardner, architect, of Cheriton-place, Folkestone, died somewhat suddenly on the 19th ult. Deceased was well known as one of the leading architects in the town, and designed most of the modern ecclesiastical edifices in Folkestone. The funeral took place on the 20th ult. —Kentish Express.

GENERAL BUILDING NEWS.

THE JUBILEE PAVILION, ST. PAUL'S CHURCH- YARD.—The huge pavilion to be erected for the Diamond Jubilee Celebration by Mr. J. N. Maskelyne in St. Paul's Churchyard, on the site now occupied by Messrs. James Spence & Co.'s premises, has been designed by Mr. J. G. Buckle. The pavilion will consist of four tiers, and will seat about two thousand persons. A distinguishing feature will be the substitution of inclined approaches to the tiers

in lieu of the usual steps. The pavilion has also been designed so as to permit of the several parts being prepared and brought upon the site ready for fixing. There will be ladies' retiring rooms at each tier level, and refreshment saloon, lounge, smoking-room, and lavatories in the basement. The cost, including decorations, will be about 4,000l.

TOWN HALL, ROTTERHAM.—The new Town Hall at Rotterham was opened on the 28th ult. The architects of the building were Messrs. J. Murray and F. Foster, whose designs were selected in competition. The building, which is in the Renaissance style, has a frontage of 53 ft. to Lower-road, a return frontage of 161 ft. to Neptune-street, and a frontage of 54 ft. to Moodie-street. It contains, besides the usual offices and a Coroner's Court, a Council Chamber and a public hall, with sitting accommodation for 900 persons. The building has been wired by the Brush Electrical Engineering Co. for the purpose of lighting it by electricity at a future date, and the combination gas and electric fittings have been supplied by Messrs Charles Smith, Sons, & Co., Limited, as have also the locks and ironmongery throughout. The heating is by hot water on the low pressure system by means of a Gurney boiler, carried out by Messrs. Palowkar & Sons; and the fire hydrants and fire extinguishing apparatus have been provided by Messrs. Ham, Baker, & Co. The ventilators have been supplied by Messrs. Kite & Co.; the speaking tubes by the Homaconic Tube Co.; and the chimney-pieces by Messrs. Shuttley & Co. Mr. John Carter has officiated as clerk of works, and Mr. Diprose as general foreman. The whole contract for the works has been carried out by Mr. Howell J. Williams. The furniture has been supplied from the designs of the architects by Messrs. Atkinson & Co. An illustration of the building and a short description appeared in our issue for March 16, 1895. BOARD OF SCHOOLS, GLASGOW.—On the 23rd ult. Rosemount Public School, Milburn-street, Garnag Hill, Glasgow, was opened by Sir John Neilson Cuthbertson. The school is erected on a site at the highest point of Garnag Hill. The site has a considerable fall from front to back. The drill-hall, janitor's house, and heating and ventilating apparatus have been placed on the lower level facing eastwards. The school and class-rooms, sixteen in number, and varying in size from accom- modation for 173 to sixty-two scholars, are grouped round the central hall on two floors, and provide places for fully 1,203 children. The walls are of red sandstone from Ballochmyle quarries, finished in squared rubble with polished dressings. The play-grounds are laid with tar-macadam paving. The total cost, exclusive of site, is expected to come within 13,000l. Mr. J. B. Wilson, of Glasgow, was the architect.

CATHOLIC CHURCH, BIRKDALE.—The Roman Catholic Bishop of Liverpool (the Right Rev. Dr. Whiteside) laid the foundation stone of the new church of St. Teresa, Birkdale, on the 25th ult. The building will be Gothic in design, the architects being Messrs. Simott, Simott, & Powell, and the contractors Messrs. Fairbridge & Hatch, of Birkdale.

ALTERATIONS, DUNBAR PARISH CHURCH.—The alterations at Dunbar Parish Church have been accomplished. The whole of the interior has been removed, and the large area has been sub-divided into nave and aisles by means of an arcade of five arches and pillars on each side. A semi-octagonal apse has been thrown out at the east end, opening into the nave with a large chancel arch, and having a minister's vestry on one side and an organ chamber on the other. Two of the apse windows contain stained glass. The nave ceiling has been opened out and raised. The tracery front of the old gallery has been worked into the front of the end gallery, and the steps of the old stairs have been used again in the staircases. The Dunbar monument now stands on the floor level of the church, against the east wall of the north aisle, completely restored. The work has been carried out from the designs, and under the supervision, of Messrs. W. & J. Hay, architects, of Liverpool, by Messrs. Robert Hall & Co., of Gala- shiels, and by local tradesmen.—Glasgow Herald.

PUBLIC HALL, KIBBINGROVE.—The foundation- stones of the new Victoria Hall and Public Offices, about to be erected by the Urban District Council, were laid on the 22nd ult. It is proposed to erect buildings for the accommodation of the Council, and a hall for public meetings, &c., a fire station, and a town yard. Messrs. Wood & Hutchings, of Unstall, are the architects; and the tender of Mr. Charles Cope, of Unstall, for 2,060l., has been accepted.

HALL, ORMOND QUAY PRESBYTERIAN CHURCH, DUBLIN.—A new hall has just been opened in con- nexion with this building. It has been erected from the designs and under the superintendence of Mr. W. M. Mitchell, architect, the contractor being Mr. John Good.

SCHOOLS, LLANRWST, NORTH WALES.—A new County Intermediate School for girls is to be built, and additions made to the boys' school at Llanrwst, North Wales, from the plans and under the superin- tendence of Mr. H. Teather, of Cardiff.

CHILDREN'S HOME, FORMBY, LANCASHIRE.—A children's home has just been opened at Formby for the Church of England Incorporated Society for Waifs and Strays. The building, a brick structure, is situated in Andrew's-lane. On the ground floor there is a recreation-room 33 ft. by 10 ft., and dining

room 24 ft. by 16 ft., also matron's room, kitchen, scullery, pantry, laundry, washhouse, and the usual outbuildings. Upstairs there is a dormitory containing eighteen beds, a smaller one containing twelve beds, and a ward for sick children containing four beds; also matron's and servants' bedrooms. There is one bathroom and latrines on the ground floor for boys and on the bedroom floor for girls, and the latrines are outside in a covered yard. The building was designed by and the contract carried out under the personal superintendence of Mr. J. H. Havelock Sutton, of Liverpool and Formby, and the work was executed by Messrs. J. & G. Chappell, builders, of Walton.

WESLEYAN CHAPEL, IRTHLINGBOROUGH.—On Good Friday the new Wesleyan Methodist Chapel, which has just been erected at Irtlingborough, was opened for public worship. The new building has been built from plans by Mr. John Wills, and the contractors were Messrs. E. Brown & Son, of Wellingborough. The heating work, &c., has been executed by Mr. Marriott, of Higham Ferrers.

NEW GOVERNMENT OFFICES, DERBY.—The new Government offices, which have been erected at Derby for the accommodation of the County Court and Inland Revenue officials, were recently opened. The elevation of the building is in brick and terracotta. Ascending the steps from St. Peter's Churchyard, the visitor to the new premises enters a corridor extending the full length of the building. On his right are the registrar's and clerks' offices, and on the left the Inland Revenue offices, with a private room for the collector. Beyond are solicitors' rooms, stores, and jury rooms. A semi-circular stone staircase leads to the upper floor, on which will be found a registrar's court, measuring 48 ft. by 30 ft., and a smaller judge's court. The registrar has also a private office adjoining the bankruptcy department. Overlooking the street are private rooms for the Supervisor of Inland Revenue and Surveyor of Taxes. In the basement are caretaker's quarters, heating room, County Court, and revenue stores. The general office of the County Court is large enough for a numerous staff. In both courts ample provision is made for solicitors. The judge has a private apartment connected with the Bench. The building is illuminated by electricity, and is heated on the low pressure hot-water system. The boiler is situated in the basement. This work has been done by Messrs. J. G. & J. S. Ellis, Limited, of Sheffield. The premises have been erected by Mr. Wm. Eaton, of Derby. The architect was Mr. Tanner, of H.M. Office of Works.

WELSH BAPTIST CHAPEL, CARDIFF.—The tender of Mr. Jonathan Lewis, Cadoxton, has been accepted for the erection of the new Salem Welsh Baptist Chapel, Barry Docks. Mr. E. Jenkin Williams, Cardiff, is the architect.

WESLEYAN CHAPEL, ASHOPTON, DERBYSHIRE.—On the 22nd ult. a new Wesleyan chapel and school was opened at Ashopton. The work had been carried out by Messrs. Alfred & Hedley Hill, of Tidswell and Litton, and the architect was Mr. Herbert W. Lockwood, of Sheffield.

RESTORATION OF LESLIE PARISH CHURCH, ABERDEEN.—This church was reopened recently, after undergoing alterations. The plans for the restoration were prepared by Mr. Marshall Mackenzie, Aberdeen, and the work was carried out under his personal supervision. The style of the reconstruction and decorations is in the Renaissance, in keeping with the original building. The whole of the seating has been renewed and re-arranged. The entrance to the church is now from the west end, instead of from the east end, as formerly. A vestry has been formed at the entrance. The pulpit has been placed on a raised platform at the east end, and on this platform is also a Communion table. All the woodwork is of pitch pine.

THEATRE, SWINDON.—A new theatre is to be built at Swindon. It is to be erected at New Swindon, from designs prepared by Messrs. R. Milverton Drake & J. M. Pizey, architects, of Bristol. The theatre will accommodate about 1,600 persons. Three sides of the theatre abut on public streets. Externally the building will be of brick and freestone. It is to be called the Queen's Theatre, and will be opened about the beginning of October.

GROVE HALL, WANSTEAD, ESSEX.—The new building known as Grove Hall, Wanstead, was opened recently. The building has cost upwards of 2,500l., and it will seat over 500 people. The architect was Mr. E. N. Whitaker, and the builder Mr. J. Jolliffe.

METHODIST FREE CHURCH, BELLINGHAM, NORTHUMBERLAND. The opening of the new Methodist Free Church and School, Bellingham, took place on the 10th ult. The buildings are of stone, in the Gothic style. The block of buildings includes a chapel to seat 400 persons, a schoolroom, two vestries, lavatory, &c., heating chamber, and storage room. The ventilation of the chapel has been carried out by Messrs. Stott & Co., of Oldham. The schoolroom and chapel are heated throughout by hot water pipes. The contractors for the work are:—Masons, Mr. Isaac Welton, of Birtley; joiners, Mr. James Aynsley, of Bellingham; slater, Mr. J. Hewitson, Newcastle-on-Tyne; plasterer, Mr. A. Charlton, of Birtley; painter and glazier, Messrs. Forbes & Son, of Birtley; plumber, Mr. W. M. Smith, of Hexham; and heating, Mr. R. Vaux, of

Sunderland. The plans were supplied by Mr. W. Welton, of Humshaugh.

PRIMITIVE METHODIST CHURCH, NEWCASTLE.—The foundation-stones of a Primitive Methodist Church for the west end of Newcastle were recently laid. In 1887 a site was secured in Kingsley-terrace, Arthur's Hill, and it is upon this that the new church is now being erected from the designs, selected in a limited competition, of Messrs. Marshall Dick, architects, Newcastle. The hall in connexion with the church is placed below the building and is not sunk into the ground as a basement, and the school is entered from the street level on the Normanton-terrace side. The main entrance to the church is from the north end, at the junction of Kingsley-terrace and Normanton-terrace, and is approached by a flight of stone steps, which give access to a vestibule, communicating with the tower stairs and entrance, which is at the north-west corner. The church consists of nave and transepts, containing the bulk of the sittings on the ground floor, a small gallery, only accommodating about ninety, occupying the north end over the entrance vestibule, &c. The total accommodation is for about 500. The windows to the church are long trifoliate-headed lights, those in the main gable being grouped in pairs within a hooded arch. An organ chamber is provided, with arched opening facing into the west transept, where the choir is also to be situated. In the rear, on the church level, are arranged the church parlour, the minister's vestry, and the stewards' room, whilst a staircase communicates with a side entrance in Kingsley-terrace and with the other rooms below. The stone used is from the Kenton and Windy Nook quarries, the exterior being rock-faced with chiselled quoins and dressings. The seating of the church is to be of Oregon pine, stained and varnished; and the floors of hall, &c., of wood blocks on concrete. The heating is to be by low-pressure hot-water. The buildings throughout are to be lighted by electric light. Mr. T. Hutchinson, Newcastle, is the contractor for the work.

SCHOOLS, YNSYBYWL, GLAMORGANSHIRE.—The Crebyn Ddn Infant Schools have just been opened. The schools, which cost 1,070l., were built by Mr. Thomas Hughes, Mountain Ash, from plans prepared by Mr. Arthur O. Evans, Pontypriid.

NEW BONDED WAREHOUSE, ABERDEEN.—The Shore Porters' Society have decided to carry out additions to their warehouses in Shore-lane. The new structure will be one of six stories in height. The architect of the warehouses is Mr. R. G. Wilson.

PROPOSED CHURCH, DUBLIN.—It is proposed to erect a new parochial church for Teanogue, Dublin. Mr. W. H. Byrne has been appointed architect. The building will be in the Romanesque style, with nave, side aisles, and transepts, and its cost without a spire is estimated at about 12,000l.

WESLEYAN SUNDAY SCHOOLS, HULL.—On the 21st ult. the new Sunday Schools built in connexion with Queen's-road Wesleyan Chapel, Beverley-road, Hull, were opened. The arrangement of the building is on the central-hall plan, with class-rooms surrounding the same on the ground and first floor. Accommodation in the central-hall is arranged for about 700 scholars. Attached there are an infants' schoolroom, and twelve class-rooms of various sizes, a church parlour, minister's vestry, and the usual kitchen and offices. The cost of the building is about 3,500l. The architects are Messrs. Gelder & Kitchen, and the builders, Messrs. Colley & Levitt, and Messrs. Hodson & Hebblewhite.

ST. MATTHEW'S PAROCHIAL HALL, BOOTLE.—The memorial stone of St. Matthew's Parochial Hall, Bootle, was laid on the 20th ult. The plans for the new hall were originally designed by the late Mr. Charles Aldridge, and are being carried out under the superintendence of Messrs. Willink & Thicknesse, Liverpool. The contractors are Messrs. G. Woods & Son. That portion of the building at present contracted for will provide a hall capable of accommodating about 400 people. This hall can be divided by folding doors so as to make one part available as a working men's club, and leave the other part available for meetings. There will be a large room for a young men's club, and an apartment for the Young Women's Bible Class. The upper portion, which the committee are not in a position to undertake at present, will provide a large entertainment hall, with a gallery.

ORANGE HALL, BELFAST.—The foundation-stone has just been laid of the West Belfast Orange Hall, situate in the Shankill-road. The frontage is 46 ft. 8 in., next the main road, and extends from front to back along Brookmount-street 105 ft. From the front entrance vestibule a corridor 6 ft. wide extends down the centre, and communicates with side entrance at the rear. The front entrance vestibule contains the staircase to the large hall, and behind, on the left, the lodge and ante-rooms, and on the right are the reading, card, ante, and box rooms, as well as back staircase, lavatories, hall, kitchen, yard, and, at the further end, a house for the caretaker. A wide stair at front, and another at rear, will give access to the large hall, which is 62 ft. long, including gallery, and 36 ft. wide. In front there will be a gallery about 12 ft. wide, having stewards' room under, moveable platform at end of hall, and ladies and gentlemen's retiring-rooms at rear. The architect is Mr. William Batt, of Belfast, and the works will be carried out by Messrs. Campbell & Lowry.

SANITARY AND ENGINEERING NEWS.

DRAINAGE OF FALMOUTH.—Mr. Breerton, C.E., in reference to the drainage of Falmouth, recommends an expenditure of about 8,000l., in providing a main and enlarged tank at the Market Strand, further seaward; also filling in the light behind Market Strand, down to Messrs. Carne's premises, a draining the adjacent houses into the tank instead of the foreshore.

SEWAGE WORKS, RAWMARSH.—On the 23rd ult. Col. J. C. Marsh, as Inspector of the Local Government Board, held a public inquiry in the Court Hall, Rawmarsh, relative to an application by the Rawmarsh Urban District Council for sanction to borrow 4,500l. for purposes of sewage disposal works. Mr. J. Platts is engineer of the sewage works.

WATER SUPPLY, MELROSE.—The opening ceremony in connexion with the supplementary water supply to the burgh of Melrose was performed on the 20th ult. by the Duke of Buccleuch. After consideration of the engineer's reports, the Commissioners decided upon the springs of Allanshaws and Lauder Common, which will yield from 90,000 to 150,000 gallons per day. The water is conveyed by lead pipes to regulating chambers. There are three of these regulating chambers on Allanshaws connected by 5-in. cast-iron pipes. The water from the lower regulating chamber is conveyed to service reservoir south of Melrose in a cast-iron main, consisting of 5-in., 6-in., and 7-in. diameter cast-iron pipes. Owing to the height of the source above Melrose, it was found necessary to break the pressure, and this is done by a break pressure chamber. In order to supply the asylum with water the service reservoir has been constructed on a site acquired by the Commissioners from the Duke of Buccleuch, adjoining the public road to the south of the asylum grounds. This service reservoir, the water level of which is below the level of the natural surface of the ground, is constructed of concrete, having a semicircular roof, the whole being covered with soil. It is 100 ft. long by 24 ft. wide, and has a depth of 10 ft. of water, giving a capacity when full of 150,000 gallons. The total length of cast-iron main from Allanshaws to the service reservoir is about ten miles, and the length of fire clay piping on Allanshaws and Lauder Common conveying the water from the springs to the regulating chambers, is about two miles. The total cost of the scheme will be about 10,000l. The engineer is Messrs. Belfrage & Carfrae, Edinburgh, and the following are the contractors for the different contracts:—Laying cast-iron main and distributing pipes and constructing service reservoir, Messrs. John McKnight & Son, Edinburgh; developing springs and laying fireclay pipes on Allanshaws and Lauder Common, Mr. George Spence, Stow; supplying cast-iron pipes, Messrs. D. Y. Stewart & Co., Glasgow; supplying valves, hydrants, street valves, &c., The Glenfield Company, Limited, Kilmarnock.

STAINED GLASS AND DECORATION.

WINDOW, ORMISTON CHURCH, NEAR EDINBURGH.—A memorial stained-glass window has just been erected in the Parish Church, at Ormiston. The window was executed at the studios of Messrs. A. Ballantine & Gardiner, Edinburgh.

WINDOWS, ST. CUTHBERT'S CHURCH, NEWCASTLE.—On the 17th ult., in St. Cuthbert's Church, Newcastle, two stained-glass windows, placed in the church in remembrance of the late Mr. Arthur B. Gibson, the architect of the church, and his children Rex and Phoebe, by his wife and sisters, were unveiled. Messrs. Morris & Co., have executed the design, which was by Sir Edward Burne-Jones.

WINDOW, HOLY TRINITY CHURCH, RAMSGATE.—In memory of Lady Wills, a stained glass window has been placed in the east end of Holy Trinity Church, Ramsgate. The window is illustrative of the nativity and scenes in the Saviour's early life. The window has been designed and executed by Messrs. Joseph Bell & Sons, of Bristol.

RENOVATION, SHEEPWASH PARISH CHURCH, DEVONSHIRE.—The decoration of the parish church of St. Laurence has now been completed. The work has been designed and executed by Messrs. Fox & Son, of Plymouth; the wood carving is by Mr. Herbert Read, of Exeter.

FOREIGN.

FRANCE.—A monument has just been inaugurated at Nantes by the President of the Republic, in the memory of the "Enfants de la Loire Inferieure morts pour la Patrie." This monument is the design of M. Corroyer, and is composed of a four-sided pedestal ornamented with four figures at the angles, representing soldiers of different regiments, executed by MM. Le Bourg and Allouard. It is surmounted by an allegorical group by M. V. Barau. Tomorrow (Sunday) the monument raised by subscription to the memory of Charlet is to be inaugurated. It is the work of Alexandre Charpentier, sculptor, and is placed in the square of Denfert-Rochereau. The Direction des Beaux-Arts has just converted the little chapel of the Gobetins Manufactory into a museum. A set of water-colours and drawings have been placed there, which have been valuable in the execution of the tapestries.—The Municipality of

lontreuil-sous-Bois (near Paris) is proposing to erect a statue to Pierre de Montereau, the celebrated architect of the Middle Ages, by the Sainte Genevieve. The committee on the Victor Hugo monument have decided that the monument, which is the work of M. Ernest Barrias, shall be exhibited at the 1900 Exhibition. It will be placed out of doors in front of one of the Palaces, and it will then be possible to judge of the effect on it of its surroundings. The inauguration will not take place till 1902.—The first church at Chesnay, in the Faubourg de Versailles; the first stone has just been laid; the church is to have a fine stone steeple.—The new Museum of Algerian Antiquities at Mustapha Superieur, close to the Governor-General's palace, was just inaugurated. It is situated in the midst of a beautiful park which is one of the prettiest walks in the environs of Algiers.—In turning up the roadway in the Rue Saint Jacques, between the Fontaine and the Lycée Louis le Grand, portions of the Roman road have been brought to light which connected Lutetia with Genabum (Orleans), and with the centre of Gaul.—The first bronze in the Chenavard Competition, at the Ecole des Beaux-Arts, has been awarded to M. Sirois, pupil of M. Moynan, architect; M. Dehaudt, pupil of the same architect, has gained the second prize; and the third has been awarded to M. Hulot, pupil of M. Marcel Lambert.—The death is announced of M. Charles-Olivier de Penne, a well-known and admirable French animal-painter. He was born in 1831, and was a pupil of Léon Cogniet and Charles Jacques, and obtained second Prix de Rome in 1857, and a silver medal and the Cross of the Legion in the 1880 Exhibition. Among his principal works may be named "Un Cerf forcé," "Chieus Vendéens," "Pendant la Chasse," "Cerf à l'Eau," and "Relais"; the two latter of which are at present to be seen at the Old Salon.

GERMANY.—The proposed alterations at the State Hospital at Berlin, to which we referred recently. It appears that the total expenditure will be larger than at first anticipated, amounting to over eleven million marks, or 550,000l. Of this sum about 450,000l. will be devoted to the hospital proper, whilst the other amounts will be spent on various schemes in connexion with the establishment.—We notice with considerable interest that a technical contemporary in Germany seems to be seriously taking up the subject of fire-protection, and is illustrating various configurations, with plans and sketches.—The Society of German Engineers will hold its thirty-eighth annual meeting at Cassel on June 14 next, when a large number of important papers are to be read.—A number of churches are being erected at Lichterfelde, near Berlin, and the German Empress is taking particular interest in their erection.—The thoroughfare at Berlin, known as "Am Kupfergraben," is to have material alterations, together with several other of the thoroughfares on the river front. A considerable expenditure is also to be incurred on several new bridges in connexion with these improvements.—There is some fear of an impending strike in the building trades at Berlin, during the present summer.—The Annual Art Exhibition, which is to be opened at Berlin on May 1, will this year have a specially national character, as there are only a few exhibits from other countries.

AUSTRIA.—A new Architectural Society has been formed at Vienna, and will be called "Verein von Baumeister in Oesterreich." The first meeting has been held under the presidency of Herr Kroes, when a paper was held by Herr Stigler, on the defects in Austrian building operations.—The Royal Technical College at Vienna has received a bequest of 10,000 florins, by the will of the deceased railway engineer, Viktor Kueferle. The sum is to be used for travelling studentships.—Excursions are being regularly undertaken by the students of the Vienna Technical College, under the guidance of their professors, and this year one of the more important for engineers left Vienna on the 15th inst. for the German seaport towns, and for Antwerp. There were sixty students, under the guidance of Privy Councillor Von Hartmann.—A historical little theatre at Vienne, which might be expected with our Sadlers Wells Theatre, will cease to exist after this month. It was known as the Rudolphseher Theatre.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. Deards, of Victoria Works, Harlow, Essex, has appointed Mr. T. A. Scott, of 14, Fitzroy-avenue, Belfast, as his sole agent for the North of Ireland for Deards' patent "Self-locking" glazing system.

TRADE NEWS.—Messrs. Hayward Bros. & Eckstein have secured the contract for supplying iron staircases for the same building.—The Anaglypta Company (Dartven & London) are making a boldly designed commemorative panel of the Queen's reign, showing the Royal Arms and a medallion portrait of the Queen.—Mr. G. W. G. The Corporation of Darwin have decided to extend the use of Poharite at their sewage works,

and four additional filters are now to be laid with Poharite.

THE CARPENTERS' COMPANY.—In consequence of the death of Alderman Sir William Lawrence, the Carpenters' Company have postponed their forthcoming dinner, and also their projected ball.

APPOINTMENT OF CLERK OF WORKS.—Mr. J. H. Verrell has been appointed clerk of works to supervise the construction of the foundations of Horton Asylum, Epsom, for the London County Council.

THE BUILDERS' CLERKS' BENEVOLENT INSTITUTION.—At the monthly committee meeting of the Builders' Clerks' Benevolent Institution (of which Mr. Thomas Hall, of the firm of Messrs. Hall, Beddall, & Co., the successors to Messrs. Lawrence & Sons, is President at the present time), reference was made to the death of Sir William Lawrence, the first President of the Institution (1866), and the committee decided to instruct their secretary, Mr. H. J. Wheatley, to write to the surviving members of the family, expressing their sincere regret for and deep sympathy with them in the great loss sustained. "To the late Sir William," Mr. Wheatley's letter continued, "this Institution is very deeply indebted indeed, as to his original encouragement and great influence must be attributed the striking success resulting from his original effort made. Such services were at the time, and continue to be, very highly appreciated."

CONFERENCE OF SLATERS AND TILERS.—The triennial conference of the Amalgamated Society of Slaters and Tilers has just been held in Newcastle. There are 1,100 members in the society, located in thirty-nine towns in England, and one in Ireland. The delegates, who numbered twenty-six, were welcomed to Newcastle by the general secretary, Mr. J. Burn. Mr. Geo. Baker, of York, was appointed Chairman of the conference, with Mr. Timmins, of Liverpool, in the vice-chair.

POPE'S VILLA, TWICKENHAM.—An interesting discovery, says the *Starry Mirror*, has been made at Pope's Villa, Twickenham, the residence of Mr. H. Lansdowne, M.P. The villa, which stands on the river bank, is being altered, and on removing a thick coating of concrete from a stone over one of the entrances a deeply-carved inscription was found. This reads:—"On this spot stood, until 1809, the house of Alexander Pope. The grotto that formed its basement still remains. 1848."

DISCOVERY OF ROMAN REMAINS, WINCHESTER.—During the progress of the excavations and operations for new roads, drains, &c., now being carried out in a field on the east side of High-street, under the supervision of Mr. A. Frampton, architect, many evidences, says the *Salisbury Journal*, of Roman or Romano-British Winchester have come to light. There can be no doubt that somewhere in the field are the remains of one or more Roman villas.

THE AMALGAMATED SOCIETY OF CARPENTERS AND JOINERS.—The annual report of this society, just issued, shows that there has been a net gain of seventeen branches, making a total of 799 at the close of the year. The number of members admitted was 8,635, and, after allowing for deaths and exclusions, a gain appeared of 4,476, making the present membership 29,000. The receipts from those in employment amounted to 126,577. 10s. 10½d., and disbursements to 99,993. 16s. 1d., thereby enabling the society to increase its cash balance from 79,422. 10s. 7d. to 105,956. 5s. 4½d., the largest amount accumulated during any year of the society's history.

A STATUE OF DARWIN FOR SHREWSBURY.—Messrs. Henderson & Webster, Aberdeen, are progressing with the manufacture of a pedestal in polished emerald pearl granite for a statue of the late Charles Darwin. The statue is to be placed in the open space in front of the Free Library in the town of Shrewsbury, where Darwin was born, and of the famous Grammar School of which he was an alumnus. The granite pedestal is 4 ft. 6 in. high, and will stand on two steps, probably of Aberdeen granite. The statue itself will represent Darwin in a sitting posture, and will be of bronze, 6 ft. 6 in. high, so that the total height from the ground level will be 12 ft. The sculptor is Mr. Horace Montford, London. The base of the pedestal is 4 ft. 8 in. in width, and in front, both of the base and die, is a semi-circular projection. The extreme length of the die is 6 ft. 3 in. It is formed out of a single block, 6 tons in weight.—*Aberdeen Journal*.

CAPITAL AND LABOUR.

BUILDING TRADE DISPUTE, LEEK.—A meeting of employers and workmen has just been held at the "Swan" Hotel. Messrs. J. Mathews, J. Heath, and T. Grace, with Mr. Bowden, Burslem and district secretary, represented the masters. Notices had been given by the bricklayers for a rise of a halfpenny per hour, and for the apprentice rule to read "One apprentice to five journeymen," instead of one to three, as now. The masters had given notice for a reduction of a halfpenny per hour, and for notices of alterations to be given on January 1 instead of February 14, and to take effect on May 1 instead of May 14. After considerable discussion it was arranged that the masters should give a further per hour rise, the men agreeing to the rule as to notices being altered to January 1, and the rule as to apprentices to remain as now, the above arrangements to be for three years.

WAGES IN THE BUILDING TRADE AT PORTSMOUTH

—The Council of the Master Builders' Association had before them, at a special meeting recently, an application from the carpenters in the borough for an increase in their wages of a halfpenny per hour. Last summer there was a long strike of carpenters and painters, but eventually they returned to work on the old terms, the carpenters intimating they should again press their claims in the spring. Their notice expired on the 1st inst. (to-day). It appears that all the master builders in the borough have been consulted on the question, and they are unanimously of opinion, it is stated, that the increase of a halfpenny an hour should not be given.

THE BUILDING TRADES, STAFFORDSHIRE.—The building trade shows further signs of improvement, and all classes of operatives are working well, full time being general. Bricklayers have no members out of employment, and joiners are working overtime at a number of jobs. There is a general demand for joiners not only in the Potteries, but in most of the surrounding towns. Plumbers and painters are very busy. Bricklayers' labourers are much better employed, there being less out of work than has been the case for months past. At Leek all branches of the trade are busy, particularly joiners and bricklayers. At Stafford trade is moderate, with no operatives out of employment. At Crewe all departments are working well.

STRIKE IN THE BIRMINGHAM BRICK TRADE.—A general strike has taken place among the brick-makers of Birmingham, and between 400 and 500 men are out. The local building trade is at present exceptionally brisk, and if the strike is persevered with much inconvenience will certainly be felt. The point of difference seems very small, viz., whether an advance of 3d. per hour should take effect at once or a week hence, but a great deal of bitter feeling has been raised between the parties. Negotiations have been going on for some time past for a readjustment of the prices, and from the information we have received, it seems that the men broke off the negotiations when there was a prospect of an amicable settlement being arrived at by their leaders. The men appear to have become impatient at what they considered the unwarranted delay in coming to terms.—*Liverpool Courier*.

NEWPORT CARPENTERS AND JOINERS.—The Newport members of the Amalgamated Society of Carpenters and Joiners having failed to obtain from the master builders of the town a schedule of concessions, including the shortening of working hours on Saturdays, percentage on all overtime after full day's work, prompt payment of wages, better provision for keeping tools in order, and the determination of holidays by a board consisting of an equal number of employers and workmen, have passed the following resolution:—"That on and after the first Saturday in May, 1897, it is the opinion of this meeting that a strike is undesirable, but that our members refrain from working after five p.m. on weekdays and one p.m. on Saturdays—under a penalty, for the first offence, of 10s.; second offence, 11.; third offence, 21., or expelled the Society—until such time as the Newport Master Builders' Association consent to be placed upon our rule-book the proposed alterations as contained in the percentage for overtime; also any member knowing of another member working and not reporting to his Branch Secretary will be liable to the same penalty."—*Western Mail*.

MEETINGS.

- FRIDAY, APRIL 30.
 - The Architectural Association.—Mr. Hugh Stannus on "The Classic Cornicé." 7.30 p.m.
 - Royal Institution. Professor J. J. Thomson on "Cathode Rays." 9 p.m.
 - Institution of Mechanical Engineers.—Ordinary General Meeting (continued).—Paper by Mr. W. G. Walker, entitled "Experiments on Propeller Ventilating Fans, and on the Electric Motor Driving Them." 7.30 p.m.
- SATURDAY, MAY 1.
 - The Architectural Association.—Sixth Spring Visit, new Fever Hospital, Lewisham.
 - Royal Institution.—The Rev. J. P. Mahaffy on "The Greek Theatre According to Recent Discoveries."—10.30 p.m.
 - St. Paul's Ecclesiastical Society.—Visit to the Church of St. Saviour, Southwark, under the guidance of Mr. G. H. Birch, F.S.A., at 3 p.m.
 - Institution of Junior Engineers.—Visit to Blackwall Tunnel Works. 3 p.m.
 - Sanitary Inspectors' Association.—Mr. W. H. Grigg on "The Proposed Drainage By-laws for the Metropolis." 6 p.m.
 - Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at the Sewage Outfall Works, Barking.
- MONDAY, MAY 3.
 - Royal Institute of British Architects.—Annual General Meeting. 8 p.m.
 - Society of Arts (Cantor Lectures).—Mr. Lewis F. Day on "Design in Lettering."—I. 6.30 p.m.
 - Society of Engineers.—Mr. H. G. Connor on "Automatic Gas Station Governors." 7.30 p.m.
 - Liverpool Architectural Society.—Annual General Meeting. Closing address by the President, Mr. G. Braddley. 6 p.m.
- WEDNESDAY, MAY 5.
 - The Architectural Association.—Banquet to Celebrate the Jubilee of the Association, to be held at the Troadero Restaurant, Piccadilly—circus. 7 p.m.
 - Carpenters' Company Lectures.—(Carpenters' Hall, London Wall).—Lectures on Carpentry and Joinery.

COMPETITION, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITION.

Table with 4 columns: Nature of Work, By whom Advertised, Premiums, Designs to be delivered. Includes 'Designs for Schools' by Chesterfield Sch. Bd.

CONTRACTS—Continued.

Table with 5 columns: Nature of Work or Materials, By whom Advertised, Form of Tender, &c. Supplied by, Tenders to be delivered. Includes 'Paving and Channel Keel' by West Ham Council.

CONTRACTS.

Table with 4 columns: Nature of Work or Materials, By whom Required, Form of Tender, &c. Supplied by, Tenders to be delivered. Includes 'Hall and Offices, Northgate' by Market Weighton Parish Council.

PUBLIC APPOINTMENTS.

Table with 4 columns: Nature of Appointment, By whom Required, Salary, Applications to be in. Includes 'Clerk of Works' by Leicester Corp.

Those marked with an asterisk (*) are advertised in this number. Competition, iv. Contracts, pp. iv. vi. viii. & xxi. Public Appointments, pp. xviii. & xxi.

Professor Banister Fletcher on "Timber Roofs; also Composite Roofs." 8 p.m.
Royal Archaeological Institute—(1) Mr. Talfourd Ely on "Vreaths." (2) Paper by Professor T. McKenny Hughes, entitled "A Comparison of Flint Implements of Paleolithic and Neolithic Age." 4 p.m.
Society of Arts.—Mr. C. E. D. Black on "The Railway to India." 8 p.m.
Builders' Foremen and Clerks of Works Institution.—Ordinary Meeting of the Members. 8 p.m.
Edinburgh Architectural Society.—Mr. J. J. Henderson on "Cement and Concrete." 8 p.m.
THURSDAY, MAY 6.
The Architectural Association.—Conference to be held at No. 9, Conduit-street, when subjects connected with the policy of the Association and also the question of suitable accommodation will be discussed. A collection of drawings made by past students in the class to be exhibited. 3 p.m.
Annual Soiree, St. George's Hall, Langham-place. 8 p.m.
Society for the Encouragement of the Fine Arts.—Second Conversation at the Galleries of the Royal Society of British Artists, Suffolk-street.
Society of Antiquaries. 8.30 p.m.
FRIDAY, MAY 7.
Institution of Junior Engineers.—Mr. L. G. Ferreira on "Electrical Railway Signalling." 8 p.m.
SATURDAY, MAY 8.
Royal Institution.—The Rev. J. P. Mahaffy on "The Greek Theatre According to Recent Discoveries."—II. 3 p.m.
Edinburgh Architectural Association.—Visit to Hope House Policies.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.
6,282.—SLIDING PIVOTTED WINDOW SASHES: H. Johnson.—In order to obtain a self-balancing reversible window-sash in a manner that may be applied to the existing plan of window, and even to existing window, inventor hangs sashes with galvanised steel wires, &c., fixes lower corners of upper sash, then brought over pulleys and fixed to the centre (or bottom) of lower sash. Two metal bars are sunk in edgways between sash stile, and a double stile and several other small adjuncts are provided.
7,566.—WASTE OR SLOP WATER-CLOSETS: A. Hocking.—The object of the invention is to render it impossible for any article to get lodged in the basin of the water-closet or push down the shaft of an earth closet. Invention claims the improved arrangement and construction of an apparatus to prevent any blockage of closets by adopting a longitudinal diaphragm, a movable flap of terra-cotta, and other items of apparatus.
8,456.—FLAT WHITENASH BRUSHES: T. J. Pickford.—The handle of brush is slightly tapered at top; the binding for bristles, &c., consists of sheet metal, tapering, with small holes along top for the linking of the binding wire. After wire is linked through the holes, cement is poured on the roots of the bristles.
8,807.—TILES, SLABS, WALLINGS, &c.: J. S. Rigby.—Inventor forms tiles, slabs, &c., of earthenware, glass, terra-cotta, &c., with indents and projections which are

not at right angles with surface, but hang over. These may be arranged in different directions, and may be produced in a coat of fluxing material applied to one surface of the tile, slab, &c.
10,586.—TILED HEARTHES FOR DOMESTIC FIREPLACES, &c.: J. Simpson.—The inventor provides a hearth capable of removal by constructing a frame of angle iron (wrought or cast) of the shape of hearth, with a sheet metal base riveted thereto, on which tiles may be arranged in pattern as desired.
9,080.—SURFACES TO RECEIVE PLASTER: E. Edwards.—This invention consists in the use of longitudinally grooved boards, the grooves having inclined sides, so that they are of dovetailed section. Grooved surface is left rough. The boards are nailed to rafters, studs, or other timbers.
7,725.—SASH FASTENERS: J. H. Watson.—This invention comprises a counterpoised and swinging catch arm, loosely mounted or pivoted to a bracket, &c., on one of the meeting bars, and arranged to swing forward and to overhang the edge of other bar on bars coming together, and to be pushed back on bars approaching each other. In another form the catch arm is actuated by a spring. Inventor also claims other combinations on same principle.
NEW APPLICATIONS FOR LETTERS PATENT.
APRIL 12.—9,223, W. Greenwood, Safety Chain Fastenings for DOORS.—9,239, A. Ansell, Sliding Sashes and Frames.—9,237, J. Douglas, Ventilator.—9,279, S. Lawrence, Sash Fasteners.—9,271, S. Lawrence, Raising and Lowering of Window Sashes, &c.—9,272, G. Young, Tool for Forming Grooves in Wood, &c.—9,315, C. Richardson, Asphaltic Pavements, &c.—9,316, L. Kasson, Paving Compositions.
APRIL 13.—9,317, W. Jackson, Window Sashes or Frames.—9,413, E. Blumenau, Counterjoint Bits.—9,447, J. and S. Benke, Compositions or Paints for Preserving Structures.—9,465, J. Kaiser and J. Willbrand, Door Fastenings.—9,466, J. Kaiser and J. Willbrand, Door Fastenings.
APRIL 14.—9,479, J. Brinkler, Self-closing Door Hinge.—9,494, J. Grislain, Thermo-Automatic Water Waste Exhauster.—9,549, G. Burt, Machinery for Boring Tunnels.—9,551, A. Austin and E. Caporn, Door Fastener, &c.—9,557, H. Burr on Bars coming together, and to be pushed back on bars approaching each other. In another form the catch arm is actuated by a spring. Inventor also claims other combinations on same principle.
APRIL 15.—9,567, R. Reeves, Treatment of Sewer Air or other Obnoxious Gases, and also Sewage Matter During Transit in Drains.
APRIL 16.—9,617, J. Cresswell, Inlet Ventilator.—9,622, H. Craig, Syphon Water Closets.—9,627, W. Osment, Sliding Window Sashes.—9,650, W. Allman and J. Cope, Heating Buildings and other Places by the Circulation of Hot Water.—9,658, W. Drayson, Mechanism for Starting the Syphons of Flushing Cisterns.
APRIL 17.—9,725, J. Moore, Regulation and Fastening of Window Sashes in their Frames.—9,726, H. Doullon, Joints of Stoneware Pipes.—9,768, J. Slater, Pedestal Water Closets.—9,799, C. Connock, Adjustable Chiffon Fence.
PROVISIONAL SPECIFICATIONS ACCEPTED.
5,714, H. Johnston, Fitting up Electric Bells.—7,709, W. Oates and J. Green, Connecting Junctions and Main Drain Pipes.—7,931, C. Greenhall, Waste Water Closets.—7,937, H. Parker, Pedestal Bracket Seats for Water Closets, &c.—8,216, H. Lloyd, Sewer Drains, &c.—8,154, F. Holton and T. Morley, Window Frame and

Sashes.—8,256, A. Habershon, Fireplaces.—8,269, J. Sayers, Artificial Stone.—8,481, M. Ahern, Bricks, Tiles, &c.—8,625, J. Cooper and F. Hensley, Step and other Platforms, Platforms or Balconies for use on Houses and other Buildings.
COMPLETE SPECIFICATIONS ACCEPTED.
Open to opposition for two months.
8,265, T. Rhodes and others, Flushing Closets, &c.—9,497, R. Ellis, Window Fasteners.—1,944, L. Corisse, Door Hinges, &c.—13,065, A. Pollard, Cleaning Paint or Varnish Brushes, &c.—2,750, E. Evans, Sash and Window Fasteners.—25,880, A. van der Vygh and others, Fireproof Artificial Stone.—3,724, W. Turner, Graining Tool.—4,141, H. Horn, Window Glass.—5,439, W. Wilkinson, Paving Blocks, Tiles, &c.—6,426, F. Galby, Door Hinges.

SOME RECENT SALES OF PROPERTY.

Table with 3 columns: Property Name, Date, Price. Includes 'ESTATE EXCHANGE REPORT' for April 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30.

PRICES CURRENT OF MATERIALS.

Table listing prices for various materials including timber, iron, copper, and other building supplies with columns for item names and prices.

COSSPORT (Hants).—For alterations, &c., at the workhouse, Park road, for the Abstinence Board of Guardians. Mr. H. A. F. Smith, architect, Starchambers, High-street, Gosport. Quantities by the architect.

HALE END (Essex).—For mission hall at Hale End, Chingford. Mr. F. Bosenham, architect.—Estimated £1,200. W. Shurmer, 1, 1893.

HANWELL.—For the erection of eight semi-detached villarecidence, 51, Spokes-road, for Drayton Park Syndicate.—J. Christie, Kensington-road Station, W. Estimated £2,600. [No competition.]

ILFORD.—For rebuilding the "Angel Hotel," Ilford. Mr. H. W. Wakley, architect.—Estimated £8,450. J. Ferrard & Son, 2, 1897.

IPSWICH.—For additions to Tower House, for the School Board, Mr. J. S. Corder, architect, Tower-street, Ipswich. Quantities by Mr. J. S. Corder, architect, Tower-street, Ipswich. Estimated £2,500. J. Kenney, 2, 1897.

KINGS LYNN.—For the ironwork for a grain warehouse, "Bentick" Dock.—About 320 tons wrought iron at per ton. Estimated £1,200. L. Barker & Co., 1, 1897.

LEYTON.—For rebuilding the "King William IV." public-house, High-street, Leyton, Messrs. Shaker & King, architects.—Estimated £5,514. J. Anley, 2, 1897.

LEYTONSTONE.—For new premises for the London and Provincial Banking Company, Mr. A. R. Barker, architect.—Estimated £6,394. Patman & Fotheringham, 5, 1897.

LONDON.—For the erection of works at Gainsborough-road, Victoria Park, for Messrs. G. Ellis & Co. Mr. W. H. Duffield, architect. Quantities supplied. Estimated £1,780. J. Anley, 2, 1897.

LONDON.—For the erection of warehouse, Hope Wharf, Rotherhithe, S.E., for Mr. A. F. Gardner, Mr. A. R. Stening, architect. Quantities supplied. Estimated £1,300. Outwater & Co., 2, 1897.

LONDON.—For erecting a new police-station at Poplar for the Receiver for the Metropolitan Police District, Mr. J. Dixon Bullen, architect. Quantities by Mr. W. H. Thurgood.—Estimated £10,840. Higgs & Gill, 1, 1897.

LONDON.—For proposed work for Caning Town Congregational Church, Mr. F. Troup, architect.—Estimated £1,115. Maddison, 1, 1897.

LONDON.—For alterations and shop-fittings, Home and Colonial Stores, 4, Station Parade, Horseley Rise, Mr. Robert Willey, architect.—Estimated £240. E. Houghton & Son, Strand Green, accepted.

LONDON.—For pulling down and re-erecting "The Prince George" public-house, Hillingdon-street, Waltham, for Messrs. Barclay, Perkins & Co. Limited, Mr. George Hubbard, architect, 23, Finsbury-circuit, E.C. Estimated £1,000. Halam Bros., 4, 1897.

LONDON.—Accepted for new doctor's room and consulting at the Poland-street Workhouse, for the Guardians of the Westminster Union, Messrs. John Waldram & Son, surveyors, 22, Buckingham-street, W.C. Estimated £1,200. J. Johnson & Manners, 1, 1897.

LONDON.—For the erection of a warehouse in Ironmonger-lane, E.C., for Mr. Salmon, Mr. George Waymouth, architect, 23, Monagrate-street, E.C. Quantities by Mr. A. Paul & Quality.—Estimated £1,200. J. Anley, 2, 1897.

LONDON.—For alterations, &c., at the "White Hart" Hotel, New Cross-road, Messrs. Edicks & Meyers, architects.—Estimated £3,650. J. Anley, 2, 1897.

LONDON.—For alterations, &c., at the "The Cat and Mutton" public-house, London Fields, N., for Mr. H. S. Locke, Mr. Henry Roberts, architect, 13, Lewisham-street, S.E. Estimated £735. Taylor, 1, 1897.

LONDON.—For alterations to Nos. 20 and 21, Bunhill-row, City, Mr. Walter Stiel, architect, 5, Queen Victoria-street.—Estimated £590. Lascelles & Co., 6, 1897.

LONDON.—For bar-fittings at the "Coach and Horses" Inn, Broad-street, Lambeth, S.E., for Nalder & Colley's Brewery Company, Limited, Messrs. R. M. Churt & Son, architects, Union Bank Chambers, Croydon.—Estimated £240. Sage, 1, 1897.

LONDON.—For alterations, &c., at "The Cat and Mutton" public-house, London Fields, N., for Mr. H. S. Locke, Mr. Henry Roberts, architect, 13, Lewisham-street, S.E. Estimated £735. Taylor, 1, 1897.

LONDON.—For the erection of a gate lodge, Dulleston, for Major-General Bond, Mr. W. E. Finkerton, architect, 8, Diamond Derry.—Estimated £145. Joseph Colburn, Strand, Robert Colburn, 65, road, Derry (accepted), 1, 1897.

SPITAL.—For the erection of a block of fifteen houses, Promenade, for Messrs. Boston, Mr. J. L. Miller, architect, 39, Ride Hill, Berwick-on-Tweed.—Estimated £1,200. Messrs. D. Storrar & Son, 1, 1897.

HENDERSON BROS.—For alterations, &c., at "The Cat and Mutton" public-house, London Fields, N., for Mr. H. S. Locke, Mr. Henry Roberts, architect, 13, Lewisham-street, S.E. Estimated £735. Taylor, 1, 1897.

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TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us not later than 10 a.m. on Thursday, N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.

BANFF.—For the erection of police-stations, for the County Council, Mr. F. D. Robertson, architect, 95, Mid-street, Keith.—Craigleith Police-station.

Masonry.—Wm. Alexander & Sons, Dufftown, £233 0 0. Carpentry.—Peter Day, Fochinis, Perthshire, 123 0 0. Slating.—Alexander Tough, Craigleith, 49 10 0. Plumbering.—R. K. Rathie, Keith, 8 0 0. Roofing.—James Munro, Aberdeen, 12 7 0. Painting.—Robert G. Grant, Aberdeen, 5 4 0.

John Gilroy, Dufftown, £310 0 0. Carpentry.—James Day, Fochinis, Perthshire, 123 0 0. Slating.—James Warren, Ballinloch, 45 12 0. Plastering.—Hime Brown, Dufftown, 23 10 0. Roofing.—R. K. Rathie, Keith, 29 19 0. Painting.—Garden & Ward, Dufftown, 7 0 0. Heating.—Robert Tindall, Aberdeen, 13 0 0.

Dufftown Police-station, £605 10 0.

Masonry.—Wm. Alexander & Sons, Dufftown, £233 0 0. Carpentry.—Wm. Russell, Fife Keith, 184 7 0. Slating.—John Wilson, Dufftown, 47 9 0. Roofing.—Sutherland & Reid, Keith, 29 19 0. Painting.—R. K. Rathie, Keith, 19 10 0. Heating.—Garden & Ward, Dufftown, 7 0 0. Heating.—Robert Tindall, Aberdeen, 13 12 6.

BARNSTAPLE.—For the construction of a concrete impounding sewer, Cross-street, for the Town Council, Mr. H. Masterton, engineer, Brompton-street, Barnstaple. James Nuttall, £100. W. C. Shaddock, 5, Hills, 100. J. Parnester, £80. Wm. Plymouthe, £147. H. Burgess, 50.

BRANDON (Suffolk).—For additions, &c., to school buildings, High-street, for the School Board, Messrs. E. Boardman & Son, architects, Queen-street, Norwich.—Estimated £1,500. Parsons & Sons, £1,295. J. C. Fryer, £1,450. W. D. H. Veil, £1,024. J. G. Cowell, Seham, £1,500. W. T. Newton & Sons, 1, 588. Cambroghishe, £1,483. 0.

BROMLEY.—For erection of the "Royal Bell" hotel, Bromley, Kent, Mr. A. Saunders, architect.—Estimated £28,070. P. & F. J. Wood, £28,070. R. Hansen, £28,070. W. D. Howe, £18,000. Walls & Son, £20,400. Cosby, £18,420. W. Shurmer, £19,890. Patman & Fotheringham, £17,825. F. & H. Higgs, 12, 1897.

CARDIFF.—For the erection of new bottling stores at the Temple Quay, for the School Board, Messrs. Veall & Sant, architects. Quantities by the architects:—Estimated £1,539. W. Thomas & Co., £1,295. Turner & Son, £1,539. J. B. & J. W. Jones, £1,295. Cadwallader & Hockridge, £1,000. Henry Gibson, £1,800. S. Clewton & Son, £2,238. H. Venning, £1,896. John Gibson, £993. W. Symonds & Co., £1,820. J. & H. Madge, £1,918. James Allardice, £1,798. F. & H. Higgs, Accepted.

DORCHESTER.—Accepted for building a house in the Cornwall-road, Dorchester, Mr. A. L. T. Tully, architect, 16, Cornhill, Dorchester.—Estimated £1,650.

The Builder.

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MAY 2, 1897.

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Design for Parish Institute, Portsea.—Mr. R. T. Blomfield, Architect.....	Single-Page Ink-Photo.
S. Mark's Church, Plumstead Common.—Mr. R. J. Lovell, Architect.....	Single-Page Ink-Photo.
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The Lesson of the Paris Fire.



THE catastrophe at Paris, with the particulars of which our readers will have become fully acquainted from the daily papers, is one of the most terrible fire disasters of modern times; and as it took place

under circumstances somewhat unusual it forms one more of those tragical warnings which we receive from time to time, drawing our attention afresh to the necessity of being on our guard against fire on all occasions when our crowds are congregated within any kind of structure from which there is not easy and ample exit.

In 1831 we had the "Ring" Theatre fire, on December 8, at which there were over 450 fatalities, whilst on March 23 in the same year, nearly 200 people had been killed at the fire in the Municipal Theatre at Nice. In 1837, on May 25, there were 115 fatalities in connexion with the fire at the Opéra Comique, Paris, and in the same year we had a catastrophe at Exeter with 86 people killed and a large number injured. In the above four instances the buildings were theatres proper, substantially built, and though perhaps defective in planning and construction, must be considered *bona fide* substantial structures. We have had innumerable cases throughout the world, and more particularly in the United States, where theatres were used for other purposes, such as fêtes or bazaars, and were destroyed with a larger or smaller number of fatal results. Again, we have had temporary theatres, built either in half-timber work, in corrugated iron, or practically entirely of match-boarding, and these have been used either for dramatic performances or other purposes. The building in the Rue Jean Goujon, Paris, was essentially a temporary wooden structure, and it was being partly used for some performances, and partly as a bazaar with all the paraphernalia of stalls and booths, with light canvas divisions, &c. The exact number of deaths has not yet been officially reported, but it would appear that about 125 have been killed, and that there have been further a large number injured. The exact cause of the outbreak does not appear to

have been yet determined, for reports of equal authenticity, speak of the fire having been caused by a petroleum lamp on the one hand, and on the other by the electric installation. The exact plan of the building is also not yet forthcoming, but it would appear that the arrangement was that of a shed 150 ft. long, with only one main entrance known to the general public, and some extra entrances and exits, one of which had been used by a limited number of stallholders, whilst the others were either entirely unknown or so hidden away as to be quite useless.

As far as we are concerned, the exact details of the results are comparatively unimportant, and are rather matter for the daily papers, and it is only our intention to point out the great risk of temporary buildings on the one hand, and on the other the danger of using rooms unsuited in plan for bazaars, public entertainments, or similar functions.

The great danger of the temporary building is that its light construction and the flimsy decorations used so facilitate a spread of fire that the audience has no time to reach the exits, and becomes at once so frightened that the very worst state of panic ensues immediately on the outbreak. Where the structure is a substantial one, the flames do not appear so terrible in the initial stages of an outbreak, and the large proportion of an audience generally gains the open quietly without any considerable difficulty or crush. That part of the audience which is on the ground level almost invariably escapes unscathed, whilst the occupants of the upper tiers in a theatre, or the balcony in a concert-room, run the greater risk. In the present case it appears that the whole of the visitors were on the ground level, and that it was on account of the enormous rapidity of the spread of fire in the temporary structure that the panic immediately became so serious and so many lives were lost. One might almost say that the identical fire, occurring in a similar room which had been substantially constructed, would not have caused the same terrible panic, nor the same number of fatalities, given the same class of visitors. As regards the visitors, we may add that it is an important point to remember, in the consideration of the Paris fire, that whilst, on the one hand, the majority belonged to the educated classes, who are

generally considered less emotional and excited in times of danger, we have, on the other hand, to deal with a nation which is known for its excitability. A great authority on theatre fires has always attributed our immunity from catastrophes to a great extent to the presence of mind of English men and English women, shown both in facing a danger or in effecting a rapid exit. There is not the slightest doubt that a Frenchman or an Italian would under the same circumstances behave differently to an Englishman or a Norwegian. Nearly all the theatre fires that occur in London are prevented from spreading by the presence of mind of the employes.

As regards the use of buildings for the purposes of public entertainments, when they are not suitable for large gatherings, we may take the opportunity of warning our public authorities as to the great responsibilities they incur in allowing a large concourse of people in their town halls or assembly rooms, for such purposes as bazaars, when a quantity of easily inflammable material is collected, the presence of which was not contemplated in the original provision against danger from fire. Such assembly rooms, which are often situated on a first floor level, very frequently only have one approach. A large council chamber, situated on the first floor of a municipal building, does not lend itself to the purposes of a bazaar, however handsomely it may be decorated. Considerable attention has been given to the safety of theatres, but there are many public halls throughout the country which have been sadly neglected, and we know of many assembly rooms which, besides being badly planned, show such elementary defects as to have doors opening inwards.

In this year of continual celebration, our public halls are being used to a great extent for various kinds of festivities, and it would be well if some immediate steps were taken to abolish many of the minor defects in the various places of entertainment, before the lesson of the Paris catastrophe is forgotten. As regards the general arrangement and planning of new public halls, or the material alteration of existing ones, it would, perhaps, be advisable to postpone the improvements until some definite policy has been arrived at, by which the work can be done syste-

matically and continuously, in such a manner as to fulfil reasonable requirements, without causing unnecessary friction. The whole of our theatre regulations are conceived in a somewhat casual spirit, according to the amount of interest shown in various localities. London has a set of regulations at present, many of which are serviceable, and can be used in the provinces. The details of these regulations are, however, frequently changed or the code is read differently from time to time. What we require is a model set of regulations applicable to the whole country, firstly for theatres, secondly for music-halls, thirdly for concert rooms and assembly halls, and fourthly for the many classes of public halls or rooms, not forgetting the swimming-bath, which is used for dances or other entertainments during the winter season. Such model regulations have been framed by other nations, and in many instances they have either been officially recommended to the Local Authorities or have become law. Austria has a set of model regulations applicable to the whole country, and similarly Prussia. At present we are afraid that private interests generally take precedence of those of the audience, excepting only in the metropolis and in a few of our larger provincial cities. The occurrence of the great catastrophes in 1881 and 1887 resulted in the improvement of our London regulations. We trust that the lesson of the Paris Bazaar will result in further improvements, more particularly as far as our public halls are concerned, not only in London but throughout the kingdom.

As we have already said, the actual details of the catastrophe at Paris are of but little direct interest, and we scarcely think that the official inquiry by the French Government will show any results of particular value. The catastrophe is, however, an object lesson in many respects for other classes of buildings than theatres or public halls. We may particularly point out the danger of temporary exhibition buildings, in which large numbers of people congregate, and which require special facilities for exit. Even such substantial structures as our Royal Academy building should not be forgotten, for it is terrible to think what would occur in the case of a panic whilst the picture galleries are crowded. Our churches also frequently show material defects in planning, and it should not be forgotten that panics arise in places of worship, though there need not be necessarily any fire to cause the alarm. The safety of the public, in all classes of building, deserves more attention than has been accorded to it, and if it is too difficult or complicated to frame the necessary regulations and enforce better buildings we, at least, trust that architects will be sufficiently conscientious to consider the dangers they may create by bad planning, quite apart from the responsibility thrown upon them should a catastrophe occur in one of their buildings.

But the main and most important lesson of the recent Paris fire is, that temporary structures require to be brought under rules and regulations in regard to danger from fire, quite as much as permanent buildings. In many forms of temporary structures for festivities or shows the arrangements are such that exit is easy in all directions. But where it is not, the danger is far greater than in a permanent structure, in consequence of the usually inflammable nature of the materials.

THE ROYAL ACADEMY EXHIBITION.

THE opening of the Royal Academy still remains the most interesting artistic event of the year, though it is impossible not to feel painfully conscious of the gaps which recent losses have left. With no Leighton picture, no Millais picture, and Mr. Tadema's principal work not appearing in its usual place on the walls, Gallery III. is indeed shorn of much of its ancient honours; nor is there anything to fill the vacant places. Outside of portraiture, there is not a single work which can be called a great or a leading picture this year. If pictures of the first rank are wanting, however, the second rank shows a considerable proportion of good and interesting works; and two or three well-known painters have surpassed their previous efforts.

It is a year of portraits, in some sense; not that there are more than usual, but that the portraits are on the whole the finest works exhibited, and are interesting for their curious diversity of style and treatment. Foremost among them may be mentioned the two by M. Benjamin-Constant: Mr. Frederick Ayer (47) and the Earl of Ava (194), the latter presented to Lord Dufferin on his retirement from the French Embassy. These are examples of the highest class of simply realistic portraiture, with no attempt to make any special pictorial effect by treatment of the costume or accessories or by any special code of colour; the last-named is an especially fine and dignified work: in both cases the heads are beautifully painted. Mr. Herkomer shows the "superb" order of portrait in that of Mrs. E. Bourke (241), in black dress with red roses at her bosom, a crimson curtain behind, and posed in an attitude of remarkable ease and dignity. With this one may contrast Mr. Shannon's portrait of Mrs. George Peck (404), painted as if to show with how little detail, with how broad a sweep of the brush, a portrait can be sufficiently finished for resemblance, while still preserving the character of a sketch on a large scale. Mr. Sargent's principal portrait, in Gallery III., Mrs. Carl Meyer (291), shows in an even exaggerated form his frequent habit of adopting a very high sight line for a seated portrait, so that from the ordinary point of view the sofa and the figure (as suggested in the humorous sketch in *Punch*) appear to be slipping down an inclined plane. The method enables the painter to give a great deal of the detail of carpet and sofa cover, but it produces a false and unpleasant perspective effect. In other respects this is a brilliant and effective portrait of a lady's face and arms and a mass of white satin dress. Mr. Orchardson's portraits are studies in colour, in which sometimes, as in his portrait of Mrs. Tullis (410) the colour combination, where the main elements are a primrose dress and a light grey background, and the general effect, seem to have received more attention than the painting of the face. His best portrait is that of the Provost of Oriel (355), admirable both in colour and character. Among other noticeable portraits are Mr. Fildes's of Mr. Donaldson (29), the hands and face in which are finished with extreme care and delicacy; Mr. Briton Riviere's of "Mrs. Methold and her Deerhounds" (233), in which, however, the dogs are the most important and successful element in the picture; Mr. Hugh Riviere's of the Rev. Canon Ainger (339)

and Mr. Poynter's of Mr. Sidney Colvin, remarkable mainly as excellent likenesses (which, as Mr. Collier says, is after all one of the objects of a portrait); Mr. Herkomer's "Madonna: a portrait" (625), a fine forcibly painted figure of a brunette relieved against a nearly white background; Mr. Shannon's brilliant and fine sketch, rather than picture, of a little girl, "Jill," in a picturesque costume (639), and M. Léon Comerre's very French portrait of a very French lady (942). We may also include among portraits Mr. Collier's admirable painting of "The Whist-players" (992), four young men in evening dress seated round a table, lighted by artificial light; in the sense of completeness of execution and realisation of the painter's object this is one of the best pictures in the Academy.

Among figure pictures of the ideal class, of which there are not many, Mr. Frank Dicksee makes a distinct success in "Dawn" (147), represented by a nude figure in rosy light, with some light drapery floating away behind, appearing over a globe symbolical of the earth, while the darkly draped figure of Night comes down into the foreground. The picture is not great or powerful, but it is bright in effect and poetic in feeling. Two painters surprise us by works out of their usual track. Mr. Arthur Hacker has symbolised the death of the firstborn of Egypt by a night picture (23) of an ancient white-walled town through which floats a figure in long red drapery, holding in one hand an outstretched sword and hiding her eyes with the other arm. The painter has succeeded in giving an awful and Fate-like character to the figure, and the picture is an impressive one, and becomes more so as it is studied. Mr. Dollman, who has been known hitherto mainly as a painter of humorous *genre* pictures, surprises us still more with a painting of the old subject of the "Temptation of St. Anthony" (445), which has this new element in it, that the temptress displays not merely the attraction of physical beauty but of a most alluring tenderness of expression which is very well conveyed, and makes the picture a rather striking one, which keeps a hold on the memory. Mr. Logsdail, again, the painter of Venetian architecture and figures, comes before us with a life-size group of Sterne and Maria from the "Sentimental Journey" (564), a fairly interesting work, though neither the genius nor the capability of malice of Sterne are quite realised in the countenance of the man. We may also number among the surprises of the year the appearance of Mr. Hook and Mr. Colin Hunter as portrait-painters, the former with a portrait of his son (308), the latter with a graceful and expressive portrait of a lady (619). Once more, Mr. F. D. Millet, the painter of Georgian interiors, has made a sudden excursion to ancient Rome, and in a work entitled "Youth" (994) shows us two Roman lovers with their backs to the spectator, the lady's head turned sufficiently to show the profile of a face of exquisite beauty. This branching out of various clever painters from a well-worn track into a perfectly new one is an interesting feature of the exhibition, and offers a wholesome example to the many who are too prone to confine themselves to repeating one successful experiment in picture-making.

Among well-known artists who keep to their usual class of subject Mr. Orchardson

is foremost with his admirable scene in an eighteenth century French (?) drawing-room (227) where three men vie with one another in making themselves agreeable to a lady of very graceful and dignified figure. As usual, the colour effect is entirely original and the painter's own, and the accessories most carefully studied—notice the careful perspective drawing of the large carpet pattern; the three men are also very well differentiated. Mr. Alma-Tadema's "Watching" (173) is chiefly interesting, as usual, not for the figure but for her surroundings, especially the very characteristic-looking marble seat and the circular mirror with all the elaborate detail of the frame worked out in perspective. But this smaller work in Gallery IX. (the room of cabinet pictures), "Her Eyes are with her Thoughts, and they are Far Away" (769), though here again the figure does not come up to the idea suggested, is the more pleasing and complete work as a whole. Mr. Poynter exhibits a semi-architectural picture in which a "Message" (299), is delivered, in the shape of a written note, by one of two Roman young ladies who stand on the balcony of a columned building close to a port; the mast of a ship rises between the spectator and the balcony, and a man clinging to it receives the "message." The painting of the architectural details is careful and solid, but surely the cross-bars of the balustrade (the well-known Roman form of balustrade) are too thin; if made of marble, they look as if they would snap with a slight blow. While on architectural subjects, we should recognise the force and truth of Mr. Logsdail's picture of "The Bronze Horses of St. Mark's" (252), taken from the balcony and showing the side-view only of the horses, their partially gilded surfaces stained and defaced by time and weather. This is a very real work of its class, and the same painter's "Winter Morning on the Molo, Venice" (454) is another good architectural picture.

Mr. Godward, in his large profile nude of "Venus Binding her Hair" (664), has not come up to his great success of last year in "Campaspe," though it is a good learnedly painted work. As to Mr. Waterhouse's "Hylas and the Nymphs" (307) and Mr. Hacker's "Sea Maiden" (688) one does not know what the painters are aiming at; the former is an antique legend represented by mediæval women, and except in regard to colour has no attractiveness or beauty at all: as to the other it is difficult to tell whether the nude girl is meant to be a real or a supernatural or nymph-like personage; if the latter, her interlocutor seems to take the apparition in a very matter-of-fact manner. This is one of a class of pictures with which painters vex us; pictures which have not sufficient beauty to make them interesting on that account alone, and in which apart from that consideration there is no point or meaning. On the other hand, Mr. Bridgman's "Bacchanti" (133), a crowd of leaping figures, has a great deal to recommend it; it is full of spirit, energy, and fine drawing, and is one of the best things its author has exhibited at the Academy. Another success of the year in the shape of a classic idyll is Mr. Draper's "Calypso's Isle" (39), as much a sea-piece as a figure-picture, certainly, in which a half-nude figure who reminds us of Etty sits with her back to the spectator at the edge of a dark sea which reminds us of Mr. Somerscales,

and probably would not have been painted had not he shown the way; this is a striking and very successful work.

Among the pictures which endeavour to realise for us scenes in fiction or in history, the most important, in regard to scale and ambition at all events, is Mr. Abbey's play-scene in Hamlet (477), which however is a sad disappointment after his brilliant success with the scene from Richard III. last year. It is chiefly remarkable as an effort at archaeological realism, and perhaps for the portrayal of the king, a weak shuffling creature such as we may imagine him to have been; but the principal figures, those of Hamlet and Ophelia, certainly add nothing to our conception of the characters; Ophelia is not even beautiful, as we must certainly suppose her to have been; nor is the story told with dramatic point; in short, for Mr. Abbey, the picture is a failure. Of battle pictures there are several, among which decisively the best is Mr. Crofts' spirited painting of an episode of the attack on Hougoumont (196); the rest are mere stage work. Mr. Caton Woodville, in his "Fuentes d'Onoro" (940), has fallen into the trap set by Mr. Muybridge for painters of animals in motion, and in his endeavour to realise some of the attitudes recorded by instantaneous photography reminds us of what we heard an eminent painter remark at Mr. Muybridge's lecture at the Royal Institution some years ago, that these photographed attitudes of horses are of little use to painters, since they represent attitudes which are too momentary for the eye to take in, and therefore produce a false effect when registered permanently on canvas. Miss Kemp-Welch has done far better than this in her large picture of "Colt-hunting in the New Forest" (346), which comes near to reminding us (*longo intervallo*) of Rosa Bonheur. Lady Butler's Albura picture (to return to the battle pictures) may be very patriotic, but it is a very bad painting. Mr. Gow makes a real and effective scene out of Napoleon "On the way to exile" (221), showing the arrival of the Emperor at Rochefort in 1815; the drawback to it is that the face at the carriage window is hardly that of Napoleon; otherwise the picture is carefully studied. Mr. Boughton's rather large picture of "After Midnight Mass, Fifteenth Century" (278) shows some people, including high dignitaries, emerging from a cathedral into a wide level snow-covered road which looks just like a modern well-kept street, while the architecture, which is weak to a degree, looks like modern Gothic except that it is treated as old stonework, the painter apparently forgetting, as painters constantly do forget in these cases, that a building of the style that he shows would have been a nearly new one at that epoch. Mr. Lemon's group of Don Quixote and his squire (534) is a better than average representation of the famous pair.

Among paintings of humble life Mr. La Thangue's "Travelling Harvesters" (439) is one of the best; it is unnecessarily large (life size), and shows two or three rustic figures carrying bundles, coming up from a river side in warm evening light; there is a fine and true effect of atmosphere in the picture, and the figures are carefully studied types; still, it is not what we call a "picture" in the higher artistic sense, and in this sense the same artist has aimed higher in his "Gleaners" (1081), which we like still better

than the other, though in one sense there is less work in it. Mr. Stanhope Forbes has not made much out of his "Christmas Eve" (405), a village street with "waits" playing on brass instruments, and the church tower scene at the end of the vista; there is little of interest or character in the figures.

Mr. Melton Fisher gets a good deal of interest out of the representation of "A Children's Picnic" (647), not merely in the representation of child character but in his peculiar treatment of colour and light, by which a year or two ago he raised a shopping scene at a haberdasher's to the level of ideal art; this is not so much a representation as a translation of the scene into its pictorial elements. It seems too large however for the subject; at least, we do not know who would care to possess a picture of that size of such a subject. A rather interesting and more typical picture is that by Mr. Charles Sims entitled "Childhood" (1022), at first sight merely a crowd of children holiday-making in a meadow partially shaded by trees; but on closer inspection it is to be perceived that there is a certain amount of significant allegory in it; the work embodies a rather new idea, and contains moreover a great deal of incident; it is a picture that will lead one to look out for future works by the artist. We were nearly forgetting Mr. Arthur Hughes, who paints with his accustomed delicate and slightly unreal colour a wood landscape in the midst of which is a rural maiden dressing her very red hair, and calls it appropriately "Audrey's Toilet" (115); but it is not a subject to show Mr. Hughes at his best; his style, however he may finish and heighten up the detail, is not that of realism; his essential power lies in the treatment of scenes containing some poetic symbolism, as in some which have adorned the walls of the Academy in former years, and he would do better for himself to keep to that class of subjects; no doubt in this work there are charming passages, but it is not effective as a whole.

Among paintings which cannot be very well classified and which have some special merit and individuality of their own the following should not be overlooked: Mr. Mouat Loudan's "Butterflies" (117), a picture of a child in a long skirted-dress dancing, which is an original effort in colour if rather ungainly in design; Mr. R. Brough's "Fantasie en Folie" (138), a seated half length of a girl in a brown dress looking at a Chinese grotesque—a very clever thing; Mme. Ronner's admirable cat picture, "A Cosy Corner" (377); Mr. Tuke's "Beside Green Waters" (462) two nude lads with a curious and inexplicable background to the scene—not Mr. Tuke at his best, but worth attention; Mr. Lorimer's "A Dance" (497) a very pretty domestic lamplight scene; Mr. Clausen's "The Old Barn" (52), notable for the degree of suggestion of detail and texture in an apparently very unfinished manner; Mr. Margetson's "The Sea Hath its Pearls" (670); Mr. Jacomb-Hood's "The Little Swineherd" (678), in which the boy seems to have strayed out of Mr. J. M. Swan's domains; Mr. Wylie's "Barry Docks" (695); Mr. Kennington's "Maternity" (947); and Mr. T. Graham's "Crusoe Prisoner of the Sallee Rover" (1015), a very bright piece of sunlight and colour.

As to the landscapes, there is the shortcoming usual in our English landscape paintings; they are too pretty, too merely pictures

of scenes you can walk into. The broadest in style, the nearest approach to something like a grand landscape, is Mr. Parsons' "The Star that Bids the Shepherd Fold" (146), which has not the special qualities that have made him popular with exhibition-goers, but has higher ones, and is the best landscape we remember to have seen of his. Mr. North's picture which hangs as a pendant to it is an interesting but somewhat conventional work. Mr. David Murray's landscapes show the influence of French sympathy and study in his manner of treating detail, but the French breadth and power are not there, and perhaps the best of his works, after all, is the "prettiest," "Deeside" (476), for it fulfils all it seems to aim at, which the two Hampstead pictures do not. Mr. H. W. B. Davis's "Flowery May" (240) is rather like a repetition of his last year's picture, except that a cow is introduced as an addition to the sheep; this is a beautiful and brilliant painting of realistic landscape, but whether it fulfils all that landscape was instituted for is another question. His smaller work, "The Banks of the Upper Wye" (602), contains an exquisitely painted bit of distance. Among other landscapes Mr. Waterlow's small upright "A Tranquil Stream" (83) is a really artistic work with a very fine sky; Mr. Leslie's "The Day of Rest" (269) shows no doubt a very hard conventional style of tree-painting, and yet there is a repose about it which one cannot deny even while not liking the style; Mr. Weiss's "In the South Downs" (402) is a picture to be looked at; Mr. Arnesby Brown's "Herald of Night" (434) is a charming pastoral; Mr. Ridley Corbet, in "Vespers" (459), produces a successful imitation of Signor Costa's style; Mr. Alfred East's "Silence of Morning" (597) suggests the silence but hardly the colour of morning; Mr. Mark Fisher, in "Out of Harness" (641), paints landscape and horses in his usual forcible and original manner; Mr. C. W. Wyllie in "Rickmaking" (1047) shows a charmingly composed and very complete little work; and Mr. Johnson, in "A corner of Old England" (1060), a remarkably real bit of foreground, not overpainted. In sea pictures Mr. Brett's chief work, "The South Stack Lighthouse; the Wind Athwart the Tide" (384) shows a grand coast and a splendid realisation of the tone and general look of sea water, but there seems something of manner about the isolated foaming crests which seem to crop up here and there in a way that is rather artificial, as is the shape and curl of the waves; it strikes us that Mr. Brett produced more really natural seas a few years ago than he produces now; there is something like a trick of effect. Mr. Hemy has a fine powerful storm scene in "Lost" (334), in which the treatment and colour of the sea rather remind one of some of Mr. Hook's pictures, but with a difference. Mr. Hook, by the way, seems for the present to have nearly deserted the sea and gone up country; his "Low Water at the Tidal Crossing" (340) is his best work, and Mr. Brett's best, we are inclined to think, is the beautiful little picture in Gallery IX, "Whitshell Point" (858).

Of the sculpture we shall have something to say on another occasion.

WINDOW, UTOXETER CHURCH.—Another stained glass window has just been inserted in the parish church, Utoxeter. The work has been executed by Messrs Ward & Hughes, of London.

NOTES.

The New Employers' Liability Bill.
THE Home Secretary on Monday last introduced the Employers' Liability Bill of the Government. We shall take an early opportunity of calling attention to the Bill in detail. Meanwhile, it is desirable to point out that, although the Bill is limited to certain trades, it is a very important step in regard to the law of this subject. It embodies an entirely new principle, that is to say that a workman shall receive compensation for all accidents by which during the course of employment he may be injured. It matters not whether such accident is, so to say, purely accidental, or whether it is caused by the negligence of some one in authority over the injured person, or by a fellow-workman. As soon as the accident has occurred, and injury has thereby been caused, the right to compensation according to the scale in the Bill arises. It is also important to bear in mind that this right to compensation arises even if there has been contributory negligence on the part of the injured person, which negligence has helped to bring about the accident and consequent injury. This, it will be obvious, is a change in the law which will require ample discussion and consideration.

The Postal Improvements.

THERE was one feature of the Budget Speech last week of great importance to the commercial community, and of considerable interest to all classes, which merits a passing reference. We have been so accustomed to regard postal reforms as something to be wrung from a slow-moving and somewhat unwilling Department by means of long-continued importunity, that the announcement made by the Chancellor of the Exchequer comes as a gratifying surprise. It is more than reform, it is revolution. When it becomes an accomplished fact we shall no longer have to trouble ourselves as to whether a bulky missive weighs more than an ounce—or even two ounces, or three. It will have to be a very long letter to cost more than a penny, and as business houses will be enabled to enclose circulars and patterns with ordinary letters up to 4 ozs. without extra expense in postage, there will doubtless be more work for printers, and we shall require larger waste-paper baskets. As to the Post Office officials, the letter-carriers will hardly appreciate the change, but to sorters and examiners the absolute removal of all distinctions between letters and other postal packets will be an incalculable relief. The reduction on foreign and colonial letters, and in the parcel-post rates, will be greatly appreciated; but the substitution of a 4 ozs. for a 1 oz. minimum for a penny letter undoubtedly marks an era in postal reform. It is rather appropriate that this change is to come into operation on a historic date—Jubilee day.

Improvements in Westminster.

WE read that a petition has been addressed to the House of Commons for leave to introduce a Bill for effecting some comprehensive improvements within the parishes of St. Margaret and St. John, together with an extension of the Embankment as far as Lambeth Bridge. The Bill will provide for a wide clearance in the insanitary area lying between Horseferry-road and Victoria-street (east end), an avenue from the Victoria

Tower to Horseferry-road, and the laying out of a square in front of the Church House, Great Smith-street. It is proposed, further, to make a new street leading into Smith-square, and thus to open out the view of St. John's Church. All the improvements proposed in this Bill, and more besides, we may observe, were suggested years ago in an article in our columns (*Builder*, Sept. 2, 1878), accompanied by a sketch plan.*

The New Secretary of the Institute.

THE Council of the Institute of Architects have appointed as Secretary Mr. J. W. Locke, who was present at the annual meeting on Monday last and was introduced to the meeting by the President. There is every reason to think that in accepting Mr. Locke's application the Council have secured the services of an accomplished and cultivated gentleman, who will in every way be a worthy official representative of the Institute. Mr. Locke is a graduate of St. John's College, Cambridge, where he took honours in mathematics, and has since been engaged in teaching and literary work. It is perhaps to some extent to be regretted that for the first time the office of Secretary of the Institute of Architects is filled by one who is not an architect, which is a departure from ancient precedent; at the same time it must be admitted that there is nothing in the duties of the Secretary which imperatively calls for architectural knowledge, and the fact that the original provision under the old Charter, that the Secretary must be a Fellow of the Institute, was abrogated when the revision of the Charter and By-laws was made in 1880, indicates that there was some idea at the time that it might be convenient to leave the future choice unfettered in this respect.

Disfiguring the National Gallery.

IT is to be feared that, however bright London may look on June 22, it will for some time before and after the date be greatly disfigured. A hideous hoarding is already arising round the National Gallery, so that the many visitors to London will see the Trafalgar-square spoilt in appearance weeks before the day of rejoicing arrives. It is difficult to understand why this work should be commenced so soon, since to erect hoardings and temporary seats is work that is done every day all over England in a very short time.

Christ Church, Birmingham.

MOST people who have visited Birmingham will probably remember Christ Church, the classic church with a spire (a little reminding one of All Souls', Langham-place) which stands in a commanding position at an angle of two streets, opposite the Municipal Buildings. It is proposed by the ecclesiastical authorities to sell this church, or rather the site and materials, in order to raise a fund for providing two extra curates in the district, and building another church in some quarter where, it is asserted, it is more wanted. This seems to be the commencement in Birmingham of the same policy which has been pursued in regard to a good many City churches in London. Christ Church is not a Wren church, but it is a fairly dignified building in a remarkable situation, and

* Since the above was in type we learn that the Standing Orders Committee have not agreed to the introduction of the Bill this Session.

architectural landmark of the city, and we are informed moreover that it has an average congregation of 900, with nearly all seats free. Under these circumstances it seems a very undesirable proceeding to remove a church like this, and destroy an important architectural feature of the town, and we certainly hope that the proposal of the ecclesiastical authorities will not be sanctioned.

Mr. J. G. FRAZER'S long-looked-for edition of "Pausanias" is at last definitely announced for October. The work has far outrun the expected dimensions, and is to appear in six volumes, at six guineas net; but subscribers who send in their names before August 31 can obtain it for five. We are glad to see that Mr. Frazer intends his book for the educated public generally, and not merely for specialists. He rightly says: "It seemed to me that every educated person must have some interest in picturing to himself how ancient Greece, the mother of so much of our modern civilization, may have looked, if not in her meridian splendour, at least in the peaceful evening of her day, while she was still rich in the artistic beauties of the past. . . . Hence, I have been at pains to write as simply and clearly as I could, to avoid all unnecessary technicalities, and to give all quotations from Greek and their foreign languages in English." Mr. Frazer not only translates and comments on his author, but also supplements him. He gives detailed descriptions—often illustrated with plans—of many important remains of antiquity which Pausanias, from one cause or another, omitted to notice or describe. Such are the sacred precinct of Eleusis, the remains of Thoricus, Icaria, and Aphidna, the Temple of Athene at Ægina, the prehistoric palaces of Tyrnus and Mycenæ, the stædia of Herodes Atticus at Olympia, and a host of other antiquities.

It may be of interest to English architects to know that an International Congress of Architects is to be held at Brussels on the occasion of the International Exhibition which has just been opened. The dates selected are August 28 and September 22, and the meetings will be held under the auspices of the Central Society of Architects. The programme of the proceedings has not yet been quite definitely decided on, but it would appear that a number of important subjects will be under discussion, and that the social side of the gathering has not been forgotten. As regards the International Exhibition, we are but too forcibly reminded that it was the King of the Belgians, who, not many years back, vetoed what he called the opening of an exhibition of packing cases, and refused to attend any further ceremonies in connexion with shows of this description unless the majority of the exhibits were in position. What at present an exhibition of packing cases at Brussels, was hence opened without any ceremony, and it will not be probably until June that the King will pay his first official visit to the grounds, nor will it be worth the while of a foreigner to visit the Exhibition before June 15. As far as the arrangement of this Exhibition is concerned, and the representation of various countries, we have every reason to believe

that it will be an unusually successful one, as everything has been carefully thought out, and the various Governments or public bodies concerned have been unusually liberal. Perhaps one of the most interesting exhibits is the presentation of a railway constructed on the Mona Rail System, at an outlay of about 25,000*l.*; the line is nearly three miles long. An exhibit of two hundred house flags of English shipping countries is particularly picturesque. As regards the Art Section, we would only here note that the catalogue shows six hundred and fifty exhibits by British artists.

At Berlin the so-called "International" Art Exhibition has been opened, but this year it will again be found that the works of art represented are mostly of German origin, and that there is scarcely any claim for the ambitious title "international." At Munich the great annual "International" Art Exhibition will also soon be opening its doors; and here, as usual, the exhibits are of a somewhat more cosmopolitan character. Dresden has been equally ambitious, and also announces an "International" Art Exhibition, but with, unfortunately, little more claim to this name than Berlin. We cannot understand why Germany is always so desirous of giving its regular exhibitions a pretended "international" character, unless it is that the decadence in German painting causes the general public to desire to see some work of better type. If this is the case, however, it would be far more advisable to have a *bonâ fide* international exhibition in the country once in five or ten years. The constant sequence of minor "international" exhibitions in two or three towns has become tiresome to the foreign artists concerned, and if we judge from the architectural room alone, it is rare, indeed, that any country is represented in such a way as to give the visitor any idea of what is being done in that part of the world.

This report was a pleasant surprise for us. We have been often deceived by splendidly printed and illustrated Corporation Reports on Electric Traction which turned out to be of no value; but Birmingham is to be congratulated on having such an able Public Works Committee, and the intelligent manner in which the Sub-committee have examined the tramway systems in the numerous towns they visited is deserving of all praise. The Report is most interesting reading, and we agree with almost everything in it. We would like to make long quotations from it, but shall have to content ourselves with referring every one to the Report itself. The general conclusion at which the Committee arrived is that no consent be given for the erection of overhead wires in any part of the city. They say that less objectionable and equally efficient methods of applying electricity to the working of tramways are available at a reasonable cost. Dr. John Hopkinson, whom no one can accuse of being prejudiced against overhead systems, was present at the meeting of the Sub-committee, and heartily endorsed their conclusions. We are glad that the views we have always advocated are at last beginning to prevail in this country. We may mention that the municipal authorities at Paris, Vienna,

Berlin, Rome, Brussels, &c., do not allow overhead wires in central thoroughfares. It will surprise some people to learn that in New York they are laying down fifty miles of conduit this year, because permission for overhead wires cannot be obtained.

THE strength of this exhibition, as usual, lies in the landscapes, of which two of the most remarkable are Mr. Philip's "Island of Rum, from the Sands of Arisaig" (124), a very solidly painted landscape, with an expanse of undulating sand in the foreground and the blue rocky heights of the island in the distance, and Mr. Eyre Walker's "The Gladness of a Summer Day" (132), a bright landscape with a mass of white flowers in the foreground, which really answers to its title. Mr. R. W. Allan's "Home from the Meadows" (28) is interesting for its treatment of the water, which in manner rather reminds one of Clays; all his contributions are marked by his usual breadth of style and pure colour, except perhaps "Fresh from the Sea" (68), which, despite its title, is rather deficient in freshness. Mrs. Allingham is at her usual level of excellence in "Old Kentish Inn" (7) and "A Blue-bell Hollow" (113). Mr. Tom Lloyd's two principal works are experiments in effects of lighting; "A Dance at the Hall" (63) shows a park at night in the snow, an old house with all the windows lit up, and a group of deer in the foreground attracted by the lights; in "A Winter Afternoon" (165), we have again an old house with the windows ruddy not with transmitted but with reflected light: a more difficult thing to represent with pigments, and hardly so successful. Among other landscapes worth special attention are Mr. Waterlow's "Hillside, Connemara" (53); Mr. Albert Goodwin's large Indian scene, "The Jumna and the Taj Mahal, from Agra Fort" (116); Mr. Cuthbert Rigby's "Dinner Hour at the Quarries" (143); Mr. Walter Field's "Hampstead Heath" (162), a fine landscape though with rather a dingy sky, and Mr. Thorne Waite's "The Misty Downs" (133). Mr. Albert Goodwin is combining towns or buildings with landscape effect with his usual delicacy of colour, as in "Bamborough Castle" (31), and "Spiez, Lake Thun" (96), or with more powerful effect in "Whitby Abbey" (183). Among other works in which architecture is prominent are various drawings by Mr. Rooke, chiefly of streets and cathedrals in France, in which architecture is treated pictorially rather than architecturally. Among the few figure subjects Sir John Gilbert's "A Standard Bearer" (119) is one of the best and most effective examples of a *motif* which he has often repeated. Sir Francis Powell, in "A Glimpse of the Sea" (106), goes out of his usual course to show us, not the sea, but a pretty picture of two children looking at it over a wall. Mr. Bulleid's "At the Well Callirhoe" (177) is little more than a repetition of previous studies of the same kind. Mr. Melville, the impressionist member who represents a crowd of persons by dabs of colour in the midst of white spaces, is here again with a larger work than before, "A Spanish Bull Fight" (186); but, in spite of its exceeding cleverness and brilliant colour, the enlarging of the scale brings out the weaknesses of his method in a rather formidable manner.

Society of
Painters in
Water Colours.

Brussels
International
Exhibition.

The Birmingham
Tramway Trac-
tion Report.

A remarkable Picture Exhibition. An exhibition entirely composed of paintings of women and children has been organised at the *École des Beaux-Arts*, Paris, for a charitable object. All schools and all epochs are represented in this remarkable exhibition, from Ambrogio de Predis and Ghirlandajo to Meissonier. There are many fine examples of Rembrandt, Van Dyck, and Franz Hals; Velasquez and Goya are equally well represented, and the works of the French school include examples of Clouet, Largillière, Chardin, La Tour, Greuze, Fragonard, David, Ingres, Dubufe, Delaunay, and Cabanel. For the first time also, we believe, the English School of the eighteenth century and that of the commencement of the nineteenth have found a worthy representation in a French retrospective exhibition, which includes examples of Gainsborough, Reynolds, Romney, Hoppner, Lawrence, and Landseer, and the collection in this sense is said to have been quite a revelation to French visitors. The exhibition, which contains nearly 300 pictures, was formally inaugurated by the President on May 1; it is open to the public till the 23rd of this month.

ONE can only mention the last new exhibition at the gallery of the Society of Fine Arts, consisting of a collection of cabinet pictures of over-dressed women by Mr. Jan van Beers, to express our regret that a gallery which has hitherto maintained a high artistic standard in its exhibitions should have opened its doors to this class of work. That there is a superficial cleverness of technique in Mr. Van Beers's paintings cannot be denied; but from an artistic point of view they are commonplace, and from another point of view vulgar—or worse than vulgar; the art of the *demimonde*.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the Sixty-third Annual General Meeting (the Thirteenth General Meeting of the Session) of this Institute, held on the 3rd inst., Professor Aitchison, A.R.A., President, in the Chair,

The Hon. Secretary announced the decease of Mr. Arthur Baker, Fellow, and M. Charles Alfred Chastel de Boynville, Associate.

The Hon. Secretary also announced the decease of Mr. Henry Markby, the Institute solicitor, and stated that the Council had authorised the Secretaries sending a letter of condolence to his partners.

The Hon. Secretary announced that Mr. Charles G. Maylard, of London, had been reinstated an Associate in compliance with By-law 20.

The report of the Council for the official year 1896-97, a copy of which had been issued previously to every member resident in the United Kingdom, having been submitted and taken as read, the Chairman formally moved its adoption, which was seconded by Mr. Aston Webb, F.S.A., Vice-President. The same having been discussed, the report of the auditors was read, whereupon it was resolved, *nem. con.*, that the report of the Council for the official year 1896-97 be approved and adopted. The following are some of the salient points in the report:—

The Council elected on June 8, 1896, have held twenty-two meetings. The Committees of Council for the consideration of matters connected with professional practice, finance, and library administration, and for the award of the Royal Gold Medal, have held twelve meetings.

During the official year 18 Fellows (of whom 11 were previously Associates), 40 Associates (of whom 18 were Students), and 8 Hon. Associates have been elected. The number of Fellows is now 602, as against 594, and the number of Associates 986, as against 968 at the corresponding period last year. The number

of Hon. Associates remains the same, namely 55."

After mentioning the losses by death during the year, the Report continues:—"The Council deeply deplore the loss of their Secretary, William H. White, who was appointed in the year 1878, and held the office until the time of his death, a period of eighteen years. During that period the membership of the Institute largely increased, the present system of examinations came into operation, and the responsibilities of the chief administrative officer were in other ways augmented. Mr. White devoted himself to his duties with the utmost zeal, bringing into play all the forces of a naturally energetic temperament in promoting the knowledge of architecture and the welfare of the Institute whose interests he had so much at heart, and especially in maintaining cordial relations between it and kindred societies abroad. Mr. White's illness prevented his attending personally, except intermittently, at the Institute after the beginning of last year, although he maintained his interest in its affairs until the last, and his place will be very difficult to fill. The vacancy has been advertised, and out of fifty-seven candidates the Council have selected Mr. William J. Locke, B.A. Cantab., who will enter on his duties after Easter; and they have also appointed Mr. Herbert G. Tayler as Assistant-Secretary. During the vacancy in the Secretaryship an unusual amount of work has been thrown upon the Hon. Secretary, and the Council desire to record their indebtedness to him for so kindly carrying it out, and also for the willing assistance rendered by the whole of the staff. The Council also desire to express their acknowledgments to Mr. Alex. Graham, F.S.A., Vice-President, for his services as Hon. Editor since Mr. White's decease.

The Institute has lost a warm friend and generous benefactor in the late David Brandon. It will be remembered that the preparation and printing of the Library Catalogue issued to members in 1889 was due to his generosity, and he has supplemented this by a munificent bequest of 1,000*l.* A legacy of 100*l.* has also been received from the executors of the late David Mocatta. Both amounts have been invested, and the income will be of great service in the work of the Institute.

The preliminary examinations of June and November, 1896, were held in London, Manchester, and Bristol, with the result that 165 gentlemen have been registered as Probationers. At the same time intermediate examinations were held in London and Manchester, with the result that 68 Probationers have been registered as Students. There are now 872 Probationers and 798 Students on the respective registers. The final and special examination qualifying for candidature as Associate was held in London and Manchester in June, and in London only in November last, when of the 76 candidates examined, 35 passed.

The Asphelt Prize was awarded to Mr. T. Denton Brooks (A.), he having most highly distinguished himself among the thirty-five gentlemen who qualified during the year for candidature as Associate.

The prize offered by Mr. Arthur Cates for the best set of testimonies of study submitted by Students for admission to the final examination was awarded to Mr. C. S. F. Palmer (A.), who qualified for candidature as Associate in November, 1896.

The Council desire to record their indebtedness to the Allied Societies at Manchester and Bristol, under whose charge examinations have been conducted during the official year; as well as their obligation for the gratuitous services rendered by the London Board of Examiners.

A statutory examination was held in October last, when certificates of competency to act as District Surveyor in London were granted to Mr. O. C. Hills (A.) and Mr. George Tolley; and a certificate of competency to act as Building Surveyor under local authorities to Mr. J. H. Dunn.

The Royal Gold Medal for the promotion of architecture was presented to Mr. Ernest George, Vice-President, in June last. For the current year Mynheer P. J. H. Cuyper (Hon. Corr. M.), of Amsterdam, has been selected for the honour, for his executed works as an architect, and her Majesty the Queen has graciously signified approval.

Selections from the premiated drawings and specimens of testimonies of study submitted by candidates for admission to the inter-

mediate and final examinations are being exhibited under the charge of the Allied Societies at Birmingham, Leicester, Nottingham, Sheffield, Leeds, York, Newcastle, London, Glasgow, Liverpool, Dublin, Bristol, and Exeter, in the order named. Among these are drawings of Melrose Abbey by Mr. F. J. Wass, Institute Medallist; perspective and details of Provincial Hall, by Mr. J. A. R. Inglis (A.), Somme Medallist; measured drawings and sketches by Mr. William Haywood, Pugin Student; coloured studies by Mr. A. E. Henderson, the Owen Jones Student; coloured studies by Mr. A. Griffith (B.A. Oxon), to whom the second of the Aldwinckle Studentship was awarded; and a design for a bay of a church by Mr. S. K. Greenslade (A.), Grissell Medallist. These were accompanied by selections from the drawings of Mr. J. A. Swan, Mr. C. H. Holden, Mr. C. de Gruchy, and Mr. W. E. Dobson, to whom subsidiary prizes were awarded; and by specimens of work submitted by Mr. H. L. Anderson for admission to the Intermediate examination, and by Messrs. A. G. Bond (A.), G. W. Frazer (A.), and C. S. F. Palmer (A.) for admission to the Final examination.

In accordance with the decision of the Council, a Conference followed by the Annual Dinner was held in Manchester, in response to a request from the Manchester Society, on May 20 last. Mr. Penrose, the then President, presided, and was supported by some of the principal public officials of Manchester, as well as by members of the Council and of the Institute generally. The Council were assisted in the arrangements by the Manchester Society, and the visit was a great success.

Early in the official year the President received a communication from the Right Hon. Joseph Chamberlain, Secretary of State for the Colonial Department, asking him to submit the names of three or four architects to furnish designs for new public buildings to be erected at Kingston, Jamaica. A notice was inserted in the *Journal* calling attention to the matter and inviting applications from members of the Institute and others. A selection was made from those sent in, and forwarded to the Colonial Office, and an intimation was in due course received that Mr. W. H. Harrison (F.) had been selected to carry out the work.

The Special Committee appointed in December, 1895, to consider the question of the nomination and election of Fellows have, after numerous meetings and consultation with the Allied Societies, reported to the Council, who have adopted the suggestions made, and these will be submitted to the general body at a special general meeting on May 31.

A communication was received in June last from the Board of Regents, the governing body of the University of California, stating that it had been decided to prepare a programme for "a general competition for a permanent comprehensive, and grand plan of the grounds and buildings of the University of California at Berkeley," and asking for suggestions with respect to the preparation of such programme. The matter was referred to the Competition Committee, who have drawn up some suggestions which it is hoped will contribute to the successful issue of the Competition.

The present Jubilee year is also the Jubilee of the Architectural Association, and the Council are glad to have the opportunity of expressing their appreciation of the efforts of that body in the cause of architectural education.

This is followed by the Reports of the various Standing Committees. In the Report of the Art Standing Committee it is mentioned that the threatened demolition of the Trinity Almshouses by the Trinity House Corporation had been averted, the Charity Commissioner having refused their sanction to the scheme.

St. Mary Woolnoth has also escaped its threatened destruction, and in this matter also the action of the Committee greatly assisted to avert the destruction of the church.

The Committee, having taken much interest in the proposed site for the intended new County Hall for London, were invited to an informal conference with some of the principal members of the County Council, and certain of the head officials. In regard to the preservation of old buildings, at the invitation of the London County Council, the Committee consented to prepare a list of buildings in London which may be said to possess historic and architectural interest. Afterwards the London County Council themselves called a meeting for the consideration of the subject, to which the Committee were invited to send three representatives. The conference was held on

December 4, 1896, and after considerable discussion it was decided that it is desirable to prepare a register of the old buildings, and that a general committee should be formed of the various Societies represented at the conference, the matter being left in the hands of the London County Council. In regard to Vauxhall Bridge, the Chairman of the Bridges Committee has promised that a model of the proposed new bridge shall be made and submitted for the inspection of the Committee. The question of Carfax Tower, Oxford, and of the removal of the steps before St. Martin's Church were also among the subjects considered by the Committee. In the former case they reported that the Tower was destitute of architectural interest, and required remodelling; in the latter case they reported against there being any necessity for the removal of the steps.

In the Report of the Literature Committee it is stated that the Committee have arranged for the printing of the catalogue of the Loan Library as a separate publication. They have had under consideration the expediency of printing a supplement to the catalogue of the Reference Library, to be bound up with the Brandon Catalogue. The question of reprinting the series of papers on "Brickwork Tests" and on "Heraldry" is under consideration.

The Committee have been able out of "The White Bequest" to add several valuable works to the Reference Library, and to make an important extension of the Loan Library, to the development of which much attention has been paid.

Mr. Alexander Beazeley, the Librarian, having resigned at the end of last year, the Librarian's report has been made by Mr. Rindolf Dircks, Acting-Librarian, and states that during the twelve months ending March 31 of the present year 154 volumes and 54 pamphlets were added to the library, exclusive of periodicals, reports, and transactions of societies, and parts of works issued in serial form now in progress; and exclusive of the collection of books presented by Colonel G. A. White in fulfilment of the wishes of Mr. William H. White, the late Secretary of the Royal Institute.

The number of volumes presented to the Reference Library was 112, and to the Loan Library 12. The works purchased comprise 24 volumes for the Reference Library, and 6 volumes for the Loan Library.

Of drawings, prints, and photographs 74 sheets and 6 volumes were presented, exclusive of the White donation.

In the report of the Practice Standing Committee, it is mentioned that the question of the payment of architects' fees by fire offices in connexion with the reinstatement of buildings after fires has been further considered by the Committee. After correspondence and negotiations with the principal insurance companies through their Association, a report thereon was submitted to the Council, and was published in the *Journal* of February 4 last.

Letters were referred to the Committee by the Council respecting architects participating in the commission of quantity surveyors, also respecting charges and duties of architects and other matters, and reports have been made thereon to the Council.

The proposed new by-laws of the London County Council regarding drains were considered, and a report thereon, suggesting amendments, was made to the Council. The amended paper on the subject of the professional charges of architects prepared by a sub-committee has received much attention, and is still under consideration.

In the report of the Science Standing Committee it is stated that a further series of experiments in brickwork testing is in hand. These have reference more particularly to brickwork in walls as distinguished from those previously held in regard to brickwork in piers, and the Committee hope, in due course, to issue in pamphlet form the results of the whole series of experiments.

The Committee assisted in judging in the draughtsmanship competitions recently held at the Building Trades Exhibition, and are glad to be able to express their satisfaction at the success that has attended the competitions. They desire to record their opinion as to the value of these competitions. There was a marked increase in the number of competitors in each grade, and the quality of the work done was distinctly in advance of the previous competitions.

Referring to the inquiry as to the acoustical properties of different buildings mentioned in

the Committee's last report, a number of questions relating to the subject were issued to members of the Institute in the *Journal* (No. 6, vol. iii., p. 100, January 23, 1896); but the replies that have been received have not at present been sufficient to enable the Committee to deal with the subject.

In connection with the Jubilee celebration, on the motion of Mr. Delissa Joseph, seconded by Mr. H. Heathcote Statham, it was resolved, "That it be recommended to the Council to consider the advisability of holding an exhibition, or issuing a publication dealing with the progress of architecture during the sixty years of the Queen's reign, and report thereon to the general body."

The lists of attendances of members at the several meetings of the Council and Standing Committees during the official year having been submitted and taken as read, the following members were appointed scrutineers to direct the election of the Council and Standing Committees for the ensuing year of office, and report the result thereof to the business general meeting of June 14, namely—*Fellows*: Frederick Todd, R. E. Chisholm, Zeph King, and five other Fellows to be appointed by the Council. *Associates*: E. R. Barrow, Francis Hooper, R. Skeleton Balfour, S. W. Cranfield, H. H. Langston, and H. Vaughan Lancaster.

Messrs. Edmund Woodthorpe and Owen Fleming, to whom a vote of thanks was accorded for their services as auditors, were again nominated to that office for the ensuing year.

The Statutory Board of Examiners were re-appointed as follows—Messrs. Lewis Angell, Francis Chambers, George Elkington, Professor Banister Fletcher, Ebenezer Gregg, F. W. H. Hunt, E. B. T. Anson, Professor Kerr, J. Douglass Mathews, Lacy W. Ridge, Professor T. Roger Smith, Messrs. Benj. Tabberer and T. H. Watson.

In connexion with the statutory examinations, the Chairman announced that an examination had been held on April 29 and 30; that only one candidate attended, and he failed to pass.

The President having introduced to the meeting Mr. William J. Locke, B.A. Cantab., the newly-appointed Secretary of the Institute, the proceedings closed.

THE ARCHITECTURAL ASSOCIATION: THE CLASSIC CORNICICE.

An ordinary fortnightly meeting of this Association was held in the Meeting Room of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street, W., on the 20th ultimo, Mr. Beresford Pite, President, occupying the chair.

The minutes of the last meeting having been read and confirmed, the Chairman announced that the following gentlemen had been reinstated members of the Association, viz., Messrs. E. Duc Drury, S. R. J. Smith, A. H. R. Tension, Keith, D. Young, and H. Gray Robins.

The Chairman also announced that, since the Committee's House List had been published, Messrs. T. W. Aldwinckle and J. Murray had been nominated as Committee-men.

On the motion of Mr. E. Howley Sim, the following gentlemen were appointed scrutineers in the election of officers for the ensuing session, viz., Messrs. Brodie, Garhat, Jones, and Wilkinson.

On the motion of Mr. Sim, a vote of thanks was accorded to Messrs. Legg & Son for allowing the members to visit the Royal Palace Hotel Extension, Kensington, and to Messrs. Banister Fletcher for allowing members to visit No. 27, High-street, Kensington.

The Chairman announced that a Water-colour Class would commence on Saturday, the 8th instant. Mr. A. W. Weedon will conduct the class.

Mr. Hugh Stannus then delivered a lecture entitled "The Classic Cornice," his remarks being limited to the profiling of the cornice; such aspects of the question as enrichments, modulations, &c., not being dealt with. The lecturer exhibited a number of diagrams, and as much of his lecture referred to them it is impossible to give a report of his remarks, though we print a few of his general comments. In the course of his remarks the lecturer said that it was one of the greatest misfortunes for architecture that Palladio ever published the Orders, and gave accurate measurements for every little fillet, and every part about it, for the result had been that the Orders had become stereotyped and canonical. As to the cornice, it was

a collection of mouldings used always in a certain position, and composed of a certain number of members. It had a constructive function and an aesthetic value. In connexion with this part of the subject, a paper, full of information, had been read before that Association by Mr. H. H. Statham on May 14, 1888, which was published in the *Builder* for May 12 and 19 of that year, and he would advise all students to read that address. It was necessary to say a few things about mouldings themselves. There were the ovolo and the ogee. Ordinary people made the ovolo a quadrant, but there was the objection that anything that suggested tangentiality to a horizontal line looked exceedingly bad in a cornice. It was very much better, therefore, to make it rather higher than it was wide; and that applied also to the cyma recta. As to the ogee, it should not have the two halves exactly alike in size. The ogee had a character of its own, and the way to express that character was to make the convex larger than the hollow or concave part. The projection of the ogee in the same way might be varied. He hoped that mouldings would be treated as though they were clay or wax in their hands.

As to the cavetto, the same remark as to horizontality applied to it; the cavetto should not be made merely a quadrant. As to the cyma recta, the essence of it was its hollow part, and he therefore made the hollow part twice or three times as large as the other. In reference to fillets, Mr. Stannus remarked that by the treatment of fillets he would sooner judge of a man's ability in profiling than by his treatment of anything else. They should not be made the same size, but in reference to the functions they had to perform. It was with fillets like chess: the man who took care of his pawns won the game, and the man who looked after the fillets made a good moulding. As to the bead, there was not much value attached to it in profiling, because of its neutral character.

It had the same projection at the top as at the bottom, and it did not influence the profiling of the cornice one way or the other. Beading was put in not because it was necessary, but because it gave an additional line of enrichment and refinement. As to the fascia, or band, that usually projected from the general vertical surface of the building. It was, however, not always vertical, but sometimes battered, the Greeks being the first to introduce battering. Mouldings, when they were placed together for the purpose of supporting anything, formed a group. It might be said that two or more mouldings made a group, and that two or more groups made a cornice. In designing groups, there were certain considerations to be borne in mind. They must distinguish the groups, and separate one from the other; another point was that they must avoid indecision. One very good way of avoiding that was never to have in any moulding, or in any group, more than two curves. There were examples in Greek work with three curves, but the use of three curves had always been a premonitory symptom of the setting in of decadence in all styles. All styles began with a single simple curve; then followed the double curvature, and with the triple curvature came decadence. Another point was to avoid equality of size. The Greeks got over the difficulty admirably, for the equality was destroyed by enrichment. Good profiling was an inheritance of centuries of experiments, and indicated the vast amount of thought that had been bestowed upon the matter.

The Chairman, in inviting discussion, said that the subject which Mr. Stannus had introduced to their notice was a practical one, about which all who had to design found difficulties sooner or later. Mouldings were the measure of a man. Street used to speak of the subject as "the art and science of moulding." One could always tell an architect's capacity, his artistic capacity, his native sense of beauty, as well as the habit of his mind (whether he was industrious, careful, or patient, or whether he was stupid) by an examination of his mouldings. As a rule a client did not interfere with the mouldings an architect designed. The client did not pay him for them, and in many cases he would sooner have a trade stock pattern than one designed by an architect. But the world would not so judge. Mouldings were something more than an architect's handwriting; they were the matter he wrote. Most of them had to design mouldings, even if they were of such simple a character as occurred in bedroom cornices, but they never dreamed for a moment that there was anything like the philosophy,

logic, and science contained in the subject of mouldings until they had heard Mr. Stannus. Architects who were designing cornices as part of their daily work had no idea of the facts that underlay their daily work. There was thus a connection between logic and fancy, although they seemed far apart. Alfred Stevens had the sense of beauty as a divine gift, and he evolved excellent cornices, apparently with that easy certainty of hand and mind that marked genius. What would Mr. Stannus suggest as the best course of study to train the eye and the hand in designing beautiful cornices? The analysis he had given them that night was very interesting and important, but was it a practical method for the student to accept in order to enable him to produce beautiful cornices? He was quite sure that Mr. Stannus felt the importance of freehand-feeling in the cornice, though he had not given expression to that. Street preached the gospel of instinct rather than the gospel of mathematics, and he said that freedom of hand underlaid every Greek moulding. He (the speaker) thought that for every-day students no better advice could be given than to throw away the compasses and to trust to the hand. With regard to the cultivation of a proper sense of beauty in a curved line, there was only one perennial fount to which they all turned with anything like comfort, and that was to the curves of the human figure. If any architect could have some knowledge of what underlay anatomical drawing, even if he had not facility in it himself, he would understand that all curves were not fractions of circles; that there was an underlying beauty of curved composition in either the whole or in part of the human form; any single line of the human form was subtle and beautiful in its curvature, and was absolutely indefinable by a mathematical arrangement. They were bound to draw with the hand, and until they did they could not know what beautiful curves were. The engineers' curves, contrasted with these, were like darkness contrasted with light. Until they were able to understand and appreciate this they would be oblivious of the fundamental necessities of designing a cornice. Let them take the archaic Greek statuary—the marble from Ægina, for instance, where the curves were stiff and hard—and trace the development from the archaic to the fully-developed lines of the Venus of Milo—the Periclean era. In this way they would learn how a sense of these curves gradually laid hold of a really intellectual nation, and if they were to pass from such a high period of Greek art to the Roman revival of Greek art, where these curves became coarse and sensuous, they would notice how a curved line might become debased. At the Renaissance they would find in Michelangelo's work something which even Stevens could only emulate, but not excel—a remarkable squareness of line and angles of a most acute character, all expressed in curves of power and delicacy. Mr. Hamo Thornycroft, in one of the few lectures which he delivered at the Royal Academy some years ago, pointed out that a large curve, or a small section of a large curve, indicated greatness, or strength, or power, because it was a section or a fragment of a great surface, or a great sphere. The eye saw a flat curve and unconsciously continued it until it enclosed a large area. He thought that the remarks of Mr. Stannus would lead them to see that there was a great deal of useful study in the cornice which they had hitherto not been aware of.

Mr. Brodie briefly proposed a vote of thanks to Mr. Stannus.

Mr. Banister F. Fletcher, in seconding the vote of thanks, said that Mr. Stannus had given them a philosophical discourse on the principles which should guide them in designing a cornice, and although they might have had some idea of the principles, still they were in the habit of basing their designs for such features upon what had been done before, without thinking of any practical reason for so doing. He should like to express his agreement with one of the Chairman's remarks, viz., as to the value to architects of drawing from the nude. He, the speaker, went through a two years course, and he fully agreed that until a student had gone to such classes he had really no idea of the beauty and value of curves in any position. He would strongly advise all students to go through a course, and in so doing, not to make laboured studies of the figure, but rather to do rapid studies and to do plenty of them. In that way one got more freedom. He hoped that Mr. Stannus would be prevailed upon to treat Gothic mouldings or strings in the same

way. A similar discourse on the principles of Gothic mouldings would form an equally interesting paper. If Mr. Stannus would publish some of the illustrations with his paper they would be able to study more at leisure the principles which he had enunciated.

Mr. Hampden W. Pratt said that there was certainly no more material for a future lecture by Mr. Stannus. They would like to hear something about the enrichments of cornices, for instance. He would like to ask Mr. Stannus whether, in designing external cornices, Alfred Stevens designed them in profile, as they were seen on the angle? It was more often the practice to design them on the square, and to trust to a certain amount of experience as to what the effect would be. It seemed very necessary that in important positions the design of cornices should be carefully studied, but it was too often noticeable that the matter was overlooked on the part of architects. They, too, frequently omitted to consider the effect projections had on the angle. In the case of chimney-caps, where there was a certain form of cornice, in five cases out of six they were a great deal too heavy, and not at all in proportion to the chimney stack. That was because they had never been studied in relation to their position and in regard to the mitred angle. With regard to the freehand treatment of mouldings, it seemed particularly incorrect to draw them with compasses; to draw them with the hand afforded an excellent training for the eye. It was absurd for any one to draw a full-sized moulding with compasses, though whether it were wrong for young students to do so he was not prepared to say.

The vote of thanks was then put to the meeting and carried unanimously.

Mr. Stannus, in reply, said that as Stevens drawing the profiles with "easy certainty," he could assure them that it was not "easy" certainty at all. In the little drawings by that artist which had been exhibited that evening it would be seen that Stevens tried one feature four or five times over. He (the speaker) possessed sketches which showed that Stevens had tried a feature a hundred and fifty times, on three or four sheets, before he determined the design. After many trials, some of which seemed to an onlooker like accidents, the right "accident" was chosen. Some one had said that all inventions were matters of accident; and he remembered the reply to that remark, "Yes! but some people have more accidents than others." It was so with profiling. All art work consisted in trying over and over again. Probably each of the Stevens sketches would be considered beautiful in our eyes, but they did not satisfy Stevens in the same way. As to the best course of study, there was really no royal road; constant study for many years was all that he knew. The student must study the best examples; copy every bit of Greek moulding, study Stevens' work, and thirteenth-century Gothic, and in so doing he would find that in these three periods the artist worked in the same spirit. There was exactly the same idea running through all their work. In these three periods it would be seen what a parallelism—what a similarity of thought there was. As to freehand work, he had emphasised that over and over again. The bow-compasses should be discarded, and mouldings should be profiled by hand. Street, Barry, Scott, and Sedding did so. Sedding had a theory that even tracery should be drawn by hand. More of our artistic work ought to be done by freehand. As to geometrical curves in Greek profiles: he had taken the opportunity of speaking to Mr. Penrose on the subject. He had said to Mr. Penrose, "You have told us that these mouldings are conic-sections; but may it not be that the people had refined eyes, and had drawn them by mere draughtsmanship—mere subtlety of eye?" Mr. Penrose replied that probably the people drew at first in freehand, by subtlety of eye and perfection of observation, but when they came to make the complete working drawings for the profile then they chose that conic-section, whether a parabola, hyperbola, or other curve, which was nearest in curvature to the freehand sketch; and then they described it by geometrical methods. There, however, he ventured to differ from Mr. Penrose, for he thought they were drawn solely by freehand. At the time the Parthenon was built the Greeks had been making fine vase-profiles for perhaps 150 years. Students should go to the British Museum, draw the vases, and realise what a profundity of knowledge there was in the profiling of them; how they were exactly right and had the quality

of all true art, viz., inevitableness. And yet each curve of each vase had been the result of a great many efforts. The Greeks saw all these excellent results, and people whose eyes were trained to observe beautiful curves in one kind of work could not tolerate bad curves in another; hence their appreciation of the beauty of the restrained curvature in their architectural mouldings. As to studying the nude form, the necessity of drawing from the human figure could not be emphasised too much. If they could draw the human figure they could draw any curve. With regard to the request that he should continue the subject and show the application of his method to Gothic mouldings, he would remark that there was an excellent book on Gothic mouldings by Paley, which was edited by Mr. Fawcett, of Cambridge, and he advised students to get that; and also to read Viollet-le-Duc on the subject in the *Dictionnaire* and the *Entretiens*. As to external cornices, Stevens sketched his cornice in perspective on the mitre. If it looked well on the mitre it was certain to look well at the normal section. He (the speaker) generally sketched it in the normal profile and then projected it to the mitred profile. The effect of the soffit, as seen in perspective, was another point that was not always enough considered. Palladio always showed the section of the soffit in his elevations; and in his (the speaker's) opinion that was the way to draw a cornice.

The Chairman announced that the next ordinary meeting would be held on the 21st inst., when Mr. Hellyer would read a paper on "Plumbing and Sanitary Work," with practical demonstrations and lantern illustrations.

The meeting then terminated.

THE ARCHITECTURAL ASSOCIATION: JUBILEE BANQUET.

THE completion of fifty years of existence of the Architectural Association was celebrated on Wednesday by a banquet at the Trocadero Restaurant, Piccadilly-circus. Mr. Beresford Pite, President, occupied the chair, and there were present amongst others: Viscount Halifax, the Bishop of London, Mr. H. C. Richards, M.P., Professor George Aitchison, A.R.A., Dr. A. S. Murray, Messrs. W. H. St. John Hope, J. Jacob (Master of the Carpenters' Company), W. J. Cloake (Master of the Painters' Company), H. W. Pratt (President-elect), H. Lovegrove, J. M. Brydon, Alex. Graham, W. H. Seth-Smith, T. E. Colcutt, G. H. T. Pryme, Paul Waterhouse, H. Tanner, W. M. Fawcett, F. W. Pomerooy, J. Sulman, and the following Past-Presidents:—Professor Kerr, Messrs. J. Edmeston, T. M. Rickman, J. S. Quiller, J. D. Mathews, T. Norton, R. Plunbe, T. Roger Smith, H. L. Florence, T. Blashill, J. H. Christian, H. C. Boyes, T. H. Watson, Aston Webb, John Slater, Leonard Stokes, H. O. Cresswell, E. W. Mountford, J. A. Gotch, F. T. Baggallay, S. F. Clark, W. D. Caroe, Cole A. Adams, H. D. Scarsle-Wood, and W. White. The following past Hon. Secretaries were also present: J. P. Seddon, J. K. Collins, and T. W. Goodman. The following representatives of provincial societies were also present: Messrs. J. Ely (Manchester), C. Hadfield (Sheffield), W. Henman (Birmingham), S. P. Pick (Leicester), and E. B. Vaughan (Cardiff).

The Royal toast having been honoured the President remarking that the Victorian era was the greatest era of English history, and consequently the greatest era of English architecture).

The President proposed the toast of "The Church." The connexion, he said, that existed between the profession of architecture and the Church was a connexion which had appealed to every enthusiastic architectural student of this land. That connexion was an exceedingly difficult one to define. The enthusiasm which ecclesiastical architecture arouses was due primarily to the magnificent character of our national ecclesiastical art. In asking to what was due the permanent character of this art, they were face to face with a difficulty in definition. He ventured to suggest that what connected Church history and the art of architecture in their minds was their admiration of our national cathedrals and our village churches. No class of architecture aroused their enthusiasm in the manner in which ecclesiastical architecture did. Their sketch-books were full from the time they could draw arches in perspective, with views of our cathedrals. But there were other subjects connected with ecclesiastical architecture

that linked themselves with their minds on that occasion, and they were conscious that where the Church was in a prosperous condition, ecclesiastical architecture was in a prosperous condition also—that the magnificence of the thirteenth century in England was proverbial. We were scarcely yet beyond the reach and glamour of its revival. But whether it was from the thirteenth century to the Elizabethan era, in the heyday of English literature and intellect—in the days of Bacon and Shakespeare—there was being fostered under those influences such life and such work as that of Inigo Jones and of Christopher Wren, which culminated in the architectural masterpieces of the Reformation. In the history of the Association, in the recollection of the Past-Presidents (whom they were delighted to welcome on that occasion) there had been conflicts of taste and opinions and battles of styles: there had been championships of the thirteenth century and other centuries, but we had come to a time when we could look dispassionately upon the works of the past.

The Bishop of London, in replying, said all, to whatever profession they belonged or vocation they pursued, felt under a debt of exceeding gratitude to architects. But there was this difference between the Church and other professions, that whereas everybody else wanted architecture which was adapted simply to household convenience, the Church wanted architecture which was adapted to the expression of ideas. And it was simply and solely, he ventured to think, because the Church stood in that peculiar position to architecture, that it inspired the architect to perform those mighty works to which the President had referred. The dwelling-house was split up for the purposes of convenience into small rooms. Even if they took a mighty block of buildings for municipal and other purposes, that again, however plentiful might be the opportunities for art which it offered in facade and external arrangements, had an interior which was split up again into a number of comparatively small rooms. A church was the only building which directly challenged an architect to do his very best. Outside and inside alike it was one mighty span. It offered space and largeness, things so absolutely necessary for the development of any great art, and for adapting all the various forms of ornament to the point of view from which they had to be seen. It called upon artists, not only in their spiritual and moral nature, which made so large a part of any art, but also in their capacity for simple structural development.

It had given them unrivalled opportunities, of which they had so very worthily made use in the past as in the present. Since he had come to London he had been struck by the exceeding resourcefulness of the modern architect. Before he came to this diocese he used to admire ancient art; he was becoming so far modern that he admired modern architecture. The immense growth of this great city had called for the architect's work in every possible way, and as he walked about his diocese he saw many modern churches which, from their very quality of resourcefulness, called for his warmest admiration. Our modern buildings required, first of all, adaptation to site, which was unknown in ancient times. In old days a man had as much room as he needed, and could do what he chose in it. Nowadays our architects were very often called upon to make use of a site which at first seemed exceedingly unpromising. He was struck by their great capacity for using the opportunities afforded them, and adapting them, as well as they could be adapted, to the purposes for which they were needed. Higher praise than that could not be given to any art. After all, vitality consisted in making use of opportunities. Very often they cast a gloss of romance over the past which they denied to the present. Very often they attributed to the past high imagination and elevated aspirations, and considered the present as somewhat prosaic. He was not quite sure that any one who studied deeply the history of our great cathedrals would come to that conclusion. Those buildings had not been adapted to the needs of a vast population to be provided for in two years. They were built, to begin with, for a very scanty population indeed, almost without any relation whatever to the people who dwelt around it. But, then, it must be remembered that these great cathedrals were built for pilgrims, and were of enormous size and exceeding beauty simply as an advertisement, that they

might draw pilgrims from the other shop, which was not nearly so attractive. A great deal of the history of our cathedrals might really be explained in that way. Very often neighbouring cathedrals consciously competed one against another. They had honoured the toast of "The Church," but as it often stood to them in the relation of an employer, it doubtless embodied reminiscences of a vast amount of unintelligent criticism. But it should be remembered that the clergyman was, after all, subject to those behind him, and had frequently to make bricks without straw in endeavouring to meet the demands of an increasing population.

Lord Halifax, in proposing the toast of the "Architectural Association," spoke of the value of architectural art in ordinary houses, and of the difference between mere edifices to protect the inmates from the rain, and houses which brought to those who lived in them the glow and colour of the sunshine outside. And among the many improvements which the Queen's reign had witnessed he thought there were few in which the advance was more marked than in the architecture of the ordinary house. In the proper education of the young architect he wished that the Association might be successful. The influence of the house upon its inhabitants was very great, and it was important that architects should be trained to construct buildings that would be suitable in every respect. As to the annual excursion of the Association, he noticed that a man for whom he had much respect and admiration used to attend those outings, viz., the late J. D. Sedding. He ventured to suggest that friends of the Association might be permitted, in the capacity of hon. members, to join in those excursions. He hoped that at the end of another fifty years the Association might be celebrating its centenary, and that English art might have progressed even more in that time than it had in the past fifty years.

The President, in response, first drank himself to the prosperity of the Association. They would understand something of the interest of the occasion, something of the memories that underlay their gathering, and something of the hope they had for the future in reflecting that they were gathered to commemorate their fiftieth anniversary. At the outset they were a little group of about a dozen students that during a term of years suffered many vicissitudes, though they never lapsed into apathy; but through the assistance of those who founded their Association and who had, throughout the whole of their lives, given their best interest and power to its work, the Association had survived, developed, and had done its work, and their position now was, that instead of being a little body of architectural draughtsmen, unknown to the world, meeting in offices, kindly lent for the occasion, they now included in their ranks the whole body of architectural students of the country, and some of their students, having been their office bearers and obtained the dignities which the Association had to offer, had, through their works, won the admiration of their generation. The Past-Presidents of the Association, the vice-Presidents, and hon. secretaries included those who were recognised as leaders of the profession. That was a condition to be proud of: the hopes of the founders had been more than realised. Their present meeting was unique, ideal, for they had with them their first President, Prof. Kerr, who was not the momentary representative of the Association, but he was the Association in the sense of Jubilee. Prof. Kerr had maintained his interest in and friendship for the Association, and he had aided with his judgment, and he was present on that occasion to witness the success with which his early efforts had been attended. But Prof. Kerr was not alone in that distinction, for they had with them that evening those who were associated with him in the initiation of the Association. They had with them so distinguished an architectural draughtsman, who was a true friend of artists, viz., Mr. J. R. Collins, who, in the early days of the Association, was one of its important office bearers. There was also present Mr. J. P. Seddon, who, with Mr. Collins, was hon. sec. in the earliest days of the Association. There was something in these facts which made them feel that they were in the presence of the Association as it was fifty years ago, and as it is at the present time. In thinking of the chartered royal body, which took upon itself the official exercise of those duties which devolved upon a representative body of a profession hampered

with the dignity of its golden ornaments, they saw that its leaders were Association men. Mr. Arthur Cates was unable through illness to be present with them that night, but he was the life and spirit of the Association in the days when he was its hon. secretary, and at the time when his educational knowledge foresaw the necessity for some qualifying test for students. The Institute had initiated the examinations, but the Institute without the Association—the examining body without the students to be examined—would have had a very poor chance of conducting its examinations successfully. The Association supplied the material, and while they looked with gratitude to the Institute they were inclined to think that the Institute was the Association—with an important difference. The present condition of the Association was that, though all who joined them did not remain life members—who he wished they did—large numbers who joined did so for the educational facilities which the Association offered in its studio and classes, and for the unrivalled friendships, &c., which could be formed within its ranks; and though some left its ranks when they left London or advanced in life, the Association numbered at the present time 1,200 active members, and there passed through its classes annually about 200 students. If they added to that number those who participated in the educational facilities of the ordinary meetings of the Association, its excursions, &c., it would be realised that the large majority of members were still active members. The Association had few needs: it supplied itself with the teachers and with the taught, but they had one burning need, and one which would appeal to all those who considered the position to which the Association had attained. They greatly needed what it was hoped their Jubilee celebrations would enable them to obtain, some building, some centre, which would be an architectural embodiment of the work of the Association, and of their present class aims. He would like, on behalf of all their past Presidents, on behalf of the present committee, and on behalf of all who were connected with the work, to appeal very earnestly to their successful brethren in the profession, and to their friends at large, to help them provide the means of acquiring suitable premises in which to conduct their work. They had premises now, but they were very much overcrowded, and those who knew their present studio, and knew how they had to conduct their classes and other means of education apart from their premises, and those who knew the generosity with which the Institute had placed its rooms at the disposal of the Association, would see that premises were needed which would provide them with large and suitable studios, classrooms, and library accommodation for their invaluable lending library, which had been the means of providing young architects with indispensable literature.

Professor Kerr, in proposing the toast of "The Royal Academy, the Royal Institute of British Architects and Kindred Societies," asked Mr. Collins and Mr. Seddon to stand with him in memory of old times. He said that the Association, in its connexion with other societies, was on its highest ground. He spoke first of the Institute as their headquarters of organisation, and the Institute had always been very friendly towards the Association and had assisted it in various ways. At the present day it recognised the Association as the junior Institute of the profession more expressly by reserving one seat at its Council for a member of the Association. The Institute represented the profession of architecture throughout the Queen's dominions, and it would be in the recollection of many of them that its operations were divided into four sections: art, science, literature, and practice. In regard to art they claimed connexion with the Royal Academy, which was the representative of art in *cazalis*, and among the young men who constituted a considerable portion of the Association, their aspirations naturally tended in the direction of the Academy, and he did not see why any young man should be discouraged in cherishing that aspiration. One thing he had always ventured to uphold was the encouragement of self-conceit, because he considered that was an important agent founded by nature for the advancement of youth. The Royal Academy cherished three arts, and only three, though he thought the time would soon come when it would cherish others. The reason why the Academy did so was that the system of the three Fine Arts was simply the system of the Italian Renaissance in the sixteenth century

Amongst those three arts, architecture took a prominent place, though not so prominent as it used to do, because artists now were a little inclined to say that architects were a little in the way; but the time was when architects, instead of being in the way, were very much at the head of art. He could not forget Michelangelo, who could not only model David and paint the Sistine Chapel, but he could construct the dome of St. Peter's and fortify Florence. As to science, he thought the Association should do homage to that great institution so peculiarly English, the Institution of Civil Engineers, which represented building science *in excelsis*. He thought that students should be encouraged to study science more profoundly than they did, but as it was they were bound to recognise in the Institution of Civil Engineers that perfection in mathematical science in which no architect ought to be deficient. As to literature, they were allied in that respect to the Society of Antiquaries, which represented at its best, amongst other things, the historic literature of their profession, and no profession in the world, perhaps, had a better history than the architect's. He could not very well say anything about practice at that meeting, but he wanted the young men of the Association to bear in mind that they were allied to all these departments of human intelligence. It had been observed that very seldom indeed were the scientific and the artistic intellects combined in one individual. There was Goethe and Michaelangelo, but an architect combined all their characteristics, though, of course, not to the same brilliant extent. But at all events architects should bear in mind that they had to some extent to combine in their work both art and science. The public required plain, practical, common-sense and good workmanship, and architects could not do better than study the apparently rival elements of their profession as a means of satisfying the English public. The function of the Architectural Association was education, and during the whole of the fifty years of their existence they had that one end in view.

Professor Aitchison, A.R.A., who responded for the Royal Academy and the Institute of Architects, said that the Academy was one of the first bodies that gave instruction to young architects, and this was due to an architect, Sir William Chambers. But this was at the end of the Renaissance period when the revival of Gothic had hardly been thought of—although it had been thought of, for in so popular a book as "Tom Jones" there was reference to a house, "a Gothic structure which almost rivals the beauties of Greek architecture." The Renaissance architects—if he might call them that, for they were not architects at all, and had no idea of what architecture meant—they were very accomplished men, almost all having been goldsmiths, while some had risen to be sculptors and painters, and what they conferred upon architecture was no doubt one of the greatest boons that had ever been conferred upon it. The Royal Academy had adhered to their old belief that if a man could draw the human figure and was nimble with his fingers he might do any artistic work. In the present day we were taking unfortunately a different view of architecture, and thought that this was not the best way to produce men of the greatest excellence in the art. As to the Institute, of which he had again, by the kindness of his fellow architects, been appointed President, that body had done what it could for architects and architecture, and with the Association a more practical view was adopted in teaching young men of the profession the necessary knowledge of their art. He hoped that Professor Kerr's words would be remembered, viz., that architecture is a constructive art, and that without a knowledge, and a very good knowledge, of construction, architecture could not be expected to make the progress that it once did. He (the speaker) was a member of the Association at the time of Professor Kerr's presidency. They were all of them looking forward not to the resurrection of any old or bygone style but the creation of a modern style. He did not see why architecture should not become again a progressive art, as it was at one time, if they once turned their attention to pursuing it in a proper way. Religion had been a great stimulus to all the Fine Art of the world. It was upon temples, mosques, and churches that architecture had lavished its greatest skill and shown its greatest power. This, however, was not wholly due to the religious feeling of the people, for there was something of a more

mundane character to account for the erection of buildings for purposes of public worship. The temples of the ancients were also banks of deposit, and there was no doubt that a very fine temple of elegant proportions and impressive appearance caused more people to bank their money there than did temples of a less important appearance. What architects had to do was to cultivate their faculties and study those things which were necessary in the progress of their profession, and he had no doubt that if the attention of the Association was sufficiently directed to those matters which were absolutely necessary for architects to study, there would, as a result, be a new style that was fitted to the taste of the present day. He did not think that the powers that be had a proper idea of the importance of architecture to a nation. Almost all the other triumphs of the human intellect were movable, or they could be absorbed by other nations, as the work of poets, for instance, but with architecture this was not so, though the work of the architect would remain to point out the character of the people who lived at the time of his work. Badly as architects were recompensed, they were paid still worse in gratitude and honour. There was little admiration for architecture in this country. A successful painter was sought after, but few people thought much of a successful architect; that was not the way to encourage an art which was of so much importance to a nation.

Mr. J. Ely (Manchester Society of Architects) responded for the allied societies, and said that the provincial architectural societies were kindred societies to the Association in name, profession, and in the objects they had in view. The Institute was concerned more in the professional side of the architect's work and the Association with the educational, but in the kindred societies these two branches were combined. The objects of the societies allied to the Institute were uniformity of practice, professional integrity, the advance of architecture, friendly communications, mutual advice and assistance in cases of disputes or professional jealousies, educational facilities for students, and the formation of libraries. All these aims had been intensified, and their achievement had been rendered more certain by the alliance with the central body in London. The examinations of the Institute had been of great use to students in guiding them, not only in the course of study they ought to pursue, but in showing them their shortcomings. The Institute, in bringing the examinations into the provinces, had afforded great assistance in guiding students. There were sixteen kindred societies allied to the Institute, and the total number of members of all of them was a little over 1,000—a considerable number considering that they were scattered all over the country. Dr. Murray then proposed "Literature," and in doing so referred to the solace to busy men which books afforded. He had recently read a book by Mr. Palgrave on "Landscape in Poetry," and he wondered why there had not been done a similar work on "Architecture in Poetry."

Mr. J. A. Gotch, in reply, said that he sometimes hoped that some one might, one day, write about architecture in such colours as would appeal even to the ordinary employer, though to do that the ordinary architectural literature would have to some extent to be avoided, for it was no use offering the ordinary public technical terms. Architecture was something more than drains; there was a poetry about it, and there was something higher than piling bricks upon bricks or stones upon stones. He rejoiced that there was a more catholic spirit now in regard to the different styles. In his opinion this was due to literature, and he looked forward to the time, so great was our catholicity now, when a book would be written about the architecture of Gower-street. He trusted that they would avoid clinging too firmly to the past. The future must be something different, and on different lines to the past, and it was one of the functions of literature to bring that state of things about. He objected to London holding the whole architectural genius of the nation, and one of the ambitions of the Association should be to send educated architects into all parts of the country, so that in all parts of the land buildings which had the mark of culture upon them might be put up.

Mr. John Slater then proposed "The Visitors," and, in doing so, remarked that the Association

had always done its work in an unassuming manner, and had never strained after publicity. He wished that there were more opportunities of friendly intercourse between architects and other branches of the profession and the general public, because meetings of that kind would go a long way to remove the misconceptions which existed as to the duties of an architect, his method of conducting business, and his charges. It had been the practice of the Association to have an annual dinner, and as a rule the guests had been members of the profession of architecture. In future, could not their invitations be extended? Architecture was, he was afraid, *caviare* to the general, but he was glad to say that there had been some enlightenment in this respect. One of the most interesting signs in the past few years had been the action of the Universities of Cambridge and London in including architecture in their course of lectures in their Extension schemes. He had been engaged as Examiner for the two Universities, and he had been struck with the interest shown in architecture by the non-professional students who had attended the lectures, though, no doubt, their interest had related to architecture of the past. He was glad that the Bishop of London was beginning to be interested in the architecture of the present, but the Bishop would have a great deal to do if he wished to imbue the whole of his diocese with that view. He was told that at the Royal Academy the other day, when the galleries were crowded, the architectural room had one occupant—an old gentleman who had gone there to take a nap.

The name of Mr. H. C. Richards, M.P., Chairman of the Society for the Protection of City Churches, was coupled with the toast, and Mr. Richards briefly replied.

Mr. Aston Webb gave the concluding toast: "The President-elect," remarking that the work of the President of the Association was now of a very different character from what it was in previous years. In regard to the matter of new premises, no doubt the past Presidents and others would be ready and anxious to do what they could to properly house the Association.

Mr. Pratt, in response, said that there was much to encourage the Association in regard to its future work. They could learn a lesson from the past in what to avoid and what to imitate.

The proceedings then terminated.

THE ARCHITECTURAL ASSOCIATION SPRING VISITS:

PARK HOSPITAL, LEWISHAM.

The sixth and last Spring Visit of the current session was paid to the Park Hospital, Hither Green, Lewisham, by kind permission of the architect, Mr. Edwin T. Hall, who conducted the party of some fifty members over the building.

The hospital was visited by the Association at an earlier period in its construction, and a full description of the building appeared in the *Builder* of July 18, 1896. It is the largest fever hospital in the kingdom: it occupies twenty acres of ground, and provides accommodation for 530 beds and a staff of 380.

Some of the sanitary details were of especial interest, including the arrangement of man-holes with solid hrcley bottom cast in one piece, and the stop-slips, with a special apparatus for cleansing utensils invented by the architect.

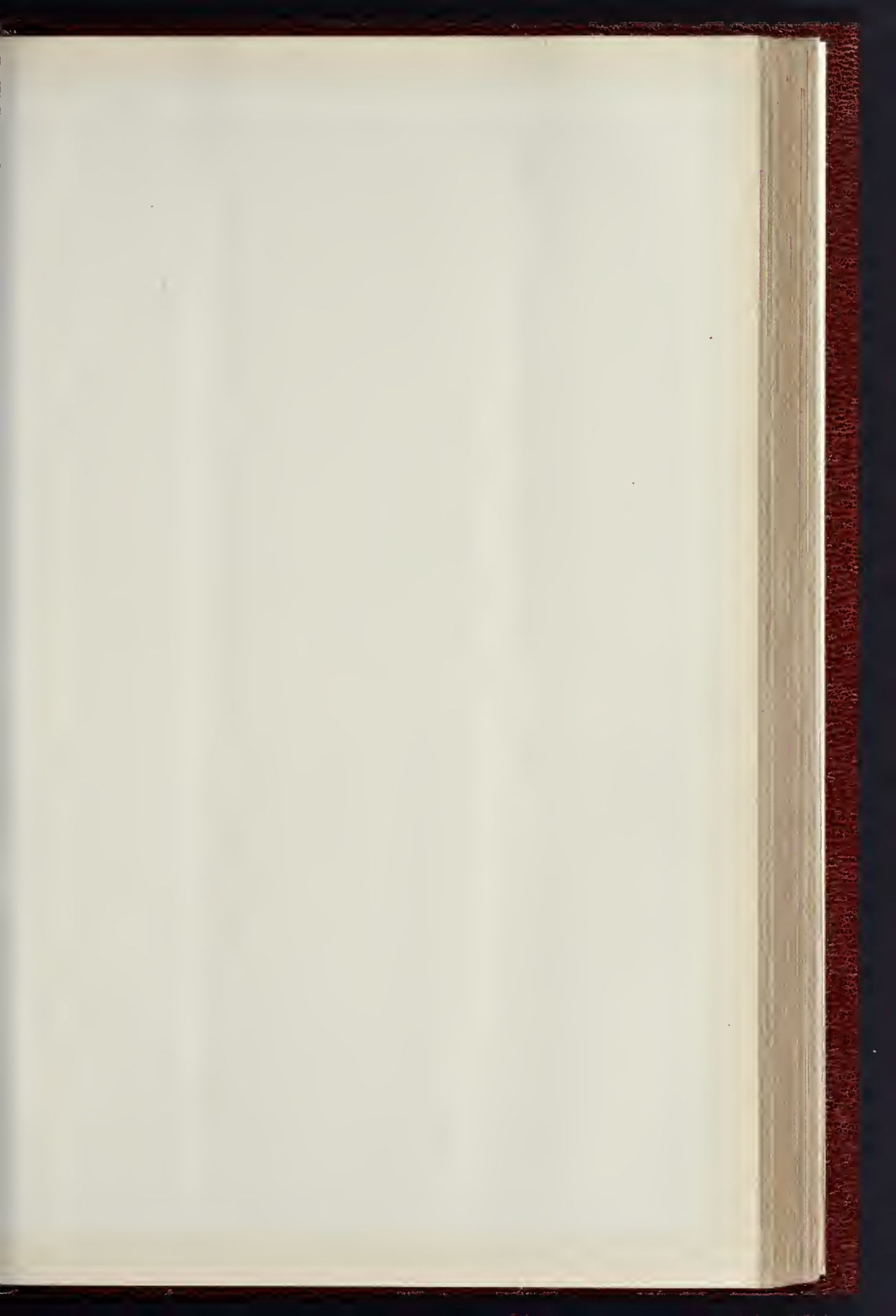
The ward chimney-stacks also attracted attention, being covered with faience, giving a bright effect, and being so arranged that all sweeping is done from the basement.

The heating is with hot-water radiators treated by steam, and the ventilation entirely natural, no mechanical means being used. Electric light is fitted throughout.

After having inspected the building, the members were hospitably entertained by Mr. Hall, to whom was accorded a hearty vote of thanks.

BROMPTON AND PICCADILLY-CIRCUS RAILWAY.—The Bill for this line was read a third time in the House of Commons on April 29. The projected line will have terminal stations at Air-street, Piccadilly, and the south end of Exhibition-road, Brompton, with subways and foot-passages beneath Piccadilly at Air-street and Dover-street. It is to be worked by electricity or such other motive-power as the Board of Trade may sanction; if by the former, by cables or wires, with a generating station at Swan Wharf, Chelsea Creek.

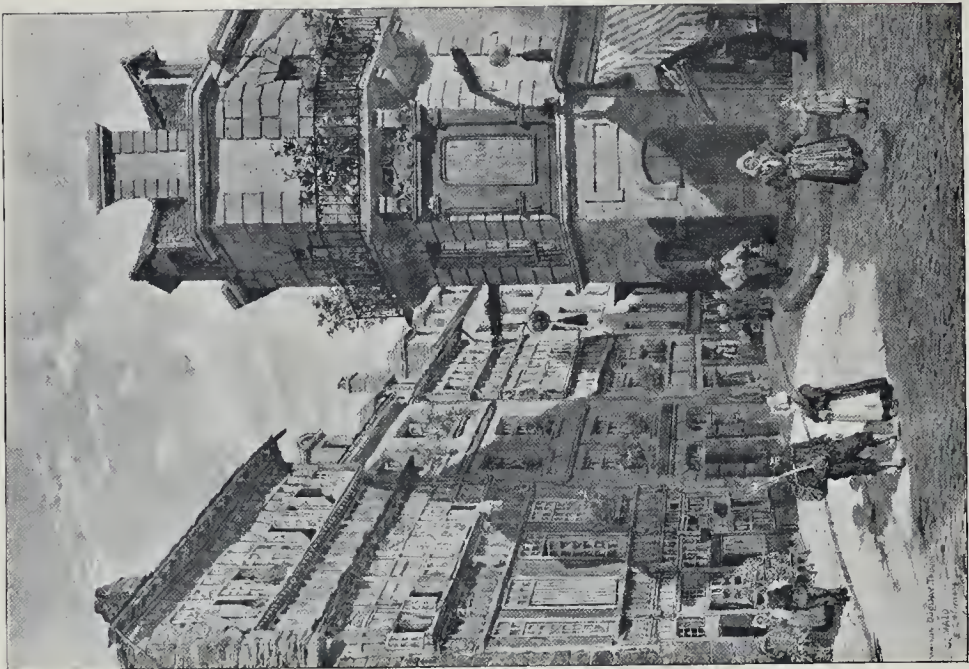
* A series of articles on this subject, with numerous quotations, appeared in the *Builder* a good many years ago.—Ed.



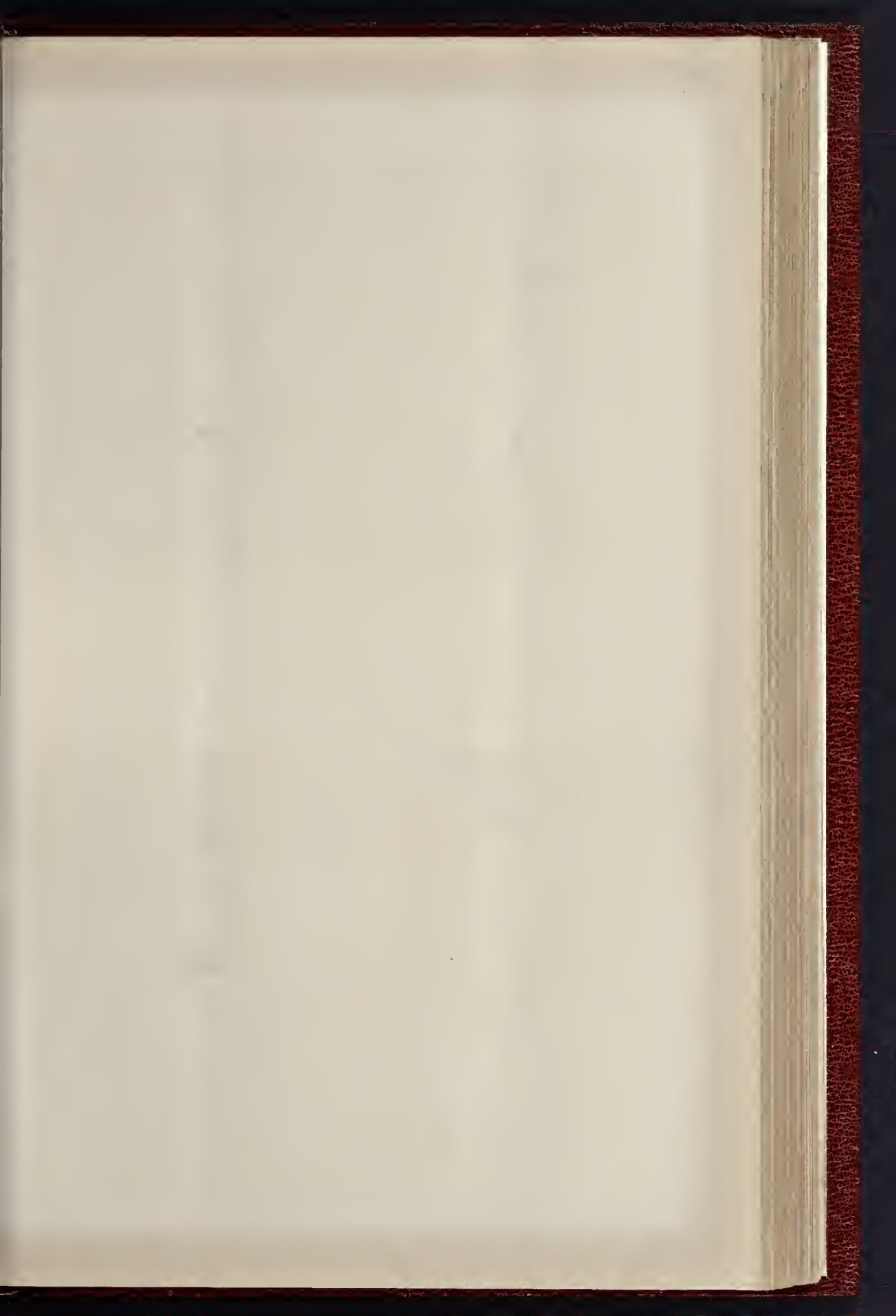
THE BUILDER, MAY 8, 1897.



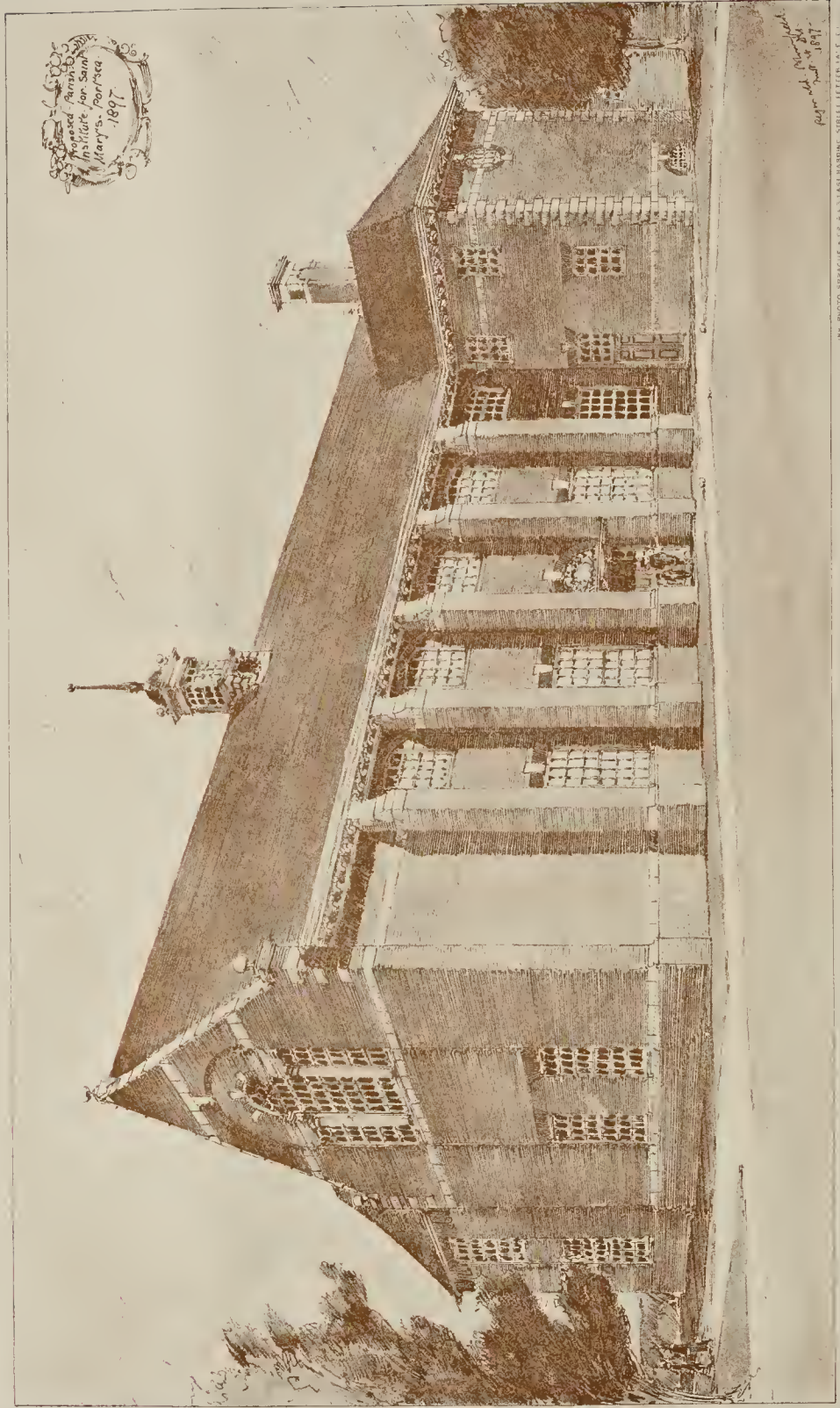
STREET, ST. MALO.



MAISON DUCUAY TROUIN, ST. MALO.



THE BUILDER, MAY 8, 1897.



Proposed Plans for
Institute for Saint
Mary's Parishes
1897

Photograph by
H. J. ...
1897



THE BUILDER, MAY 8, 1897.





NEW PHOTO BRACCA & CO. 24 & 25 EAST HARDING STREET LIVERPOOL, E.C.

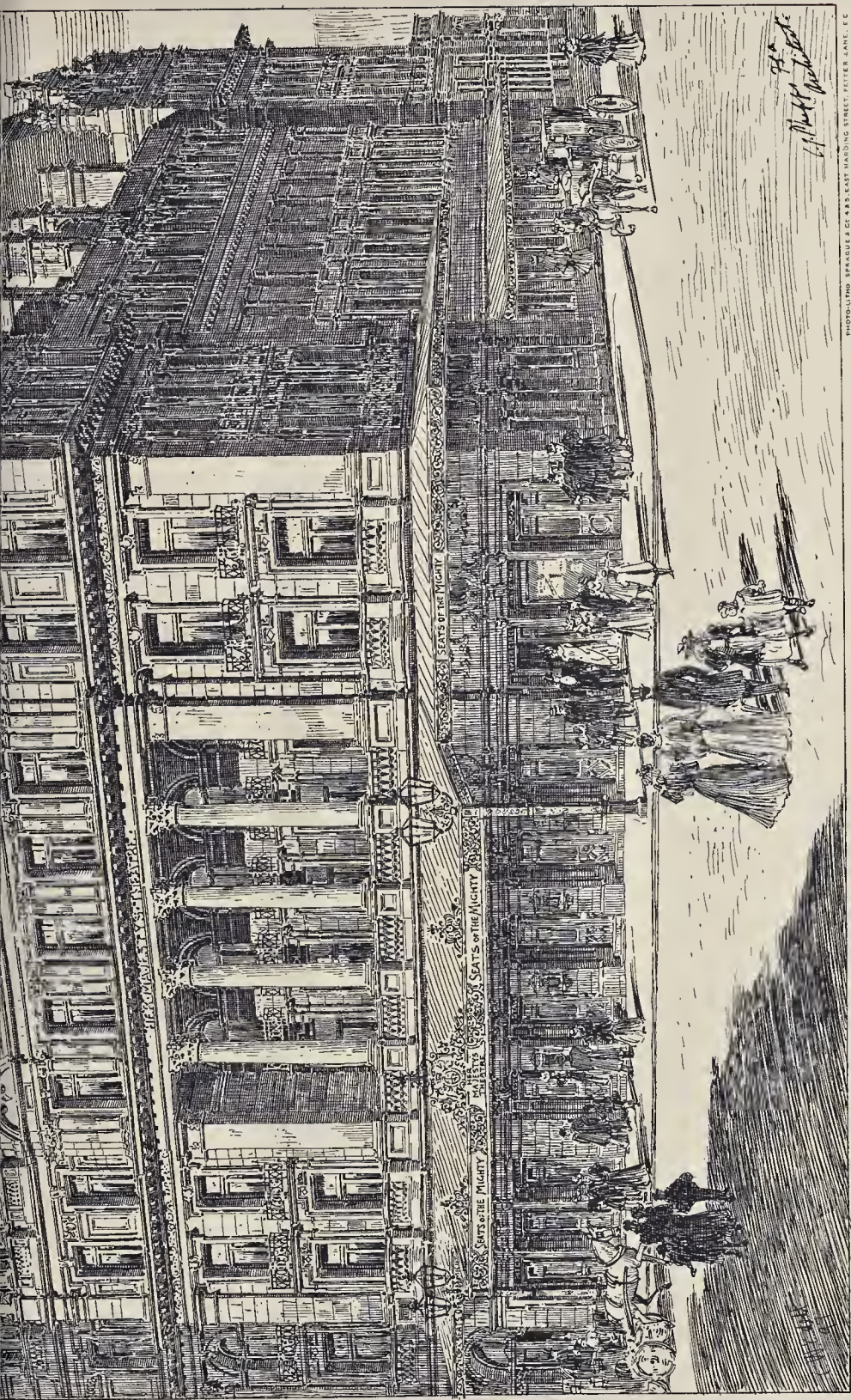
NEW BUILDINGS, LIVERPOOL.—MESSRS. R. NORMAN SHAW, R.A., AND J. F. DOYLE, JOINT ARCHITECTS.





THE BUILDER, MAY 6, 1897.



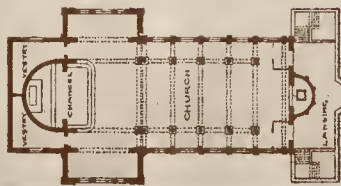


HER MAJESTY'S THEATRE, HAYMARKET.—Mr. C. J. Phipps, F.R.I.B.A., ARCHITECT.

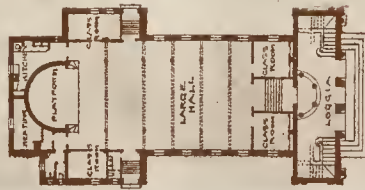
PHOTO-LITHO SPANGHUS & CO. 495, EAST HANING STREET, LONDON, E.C.



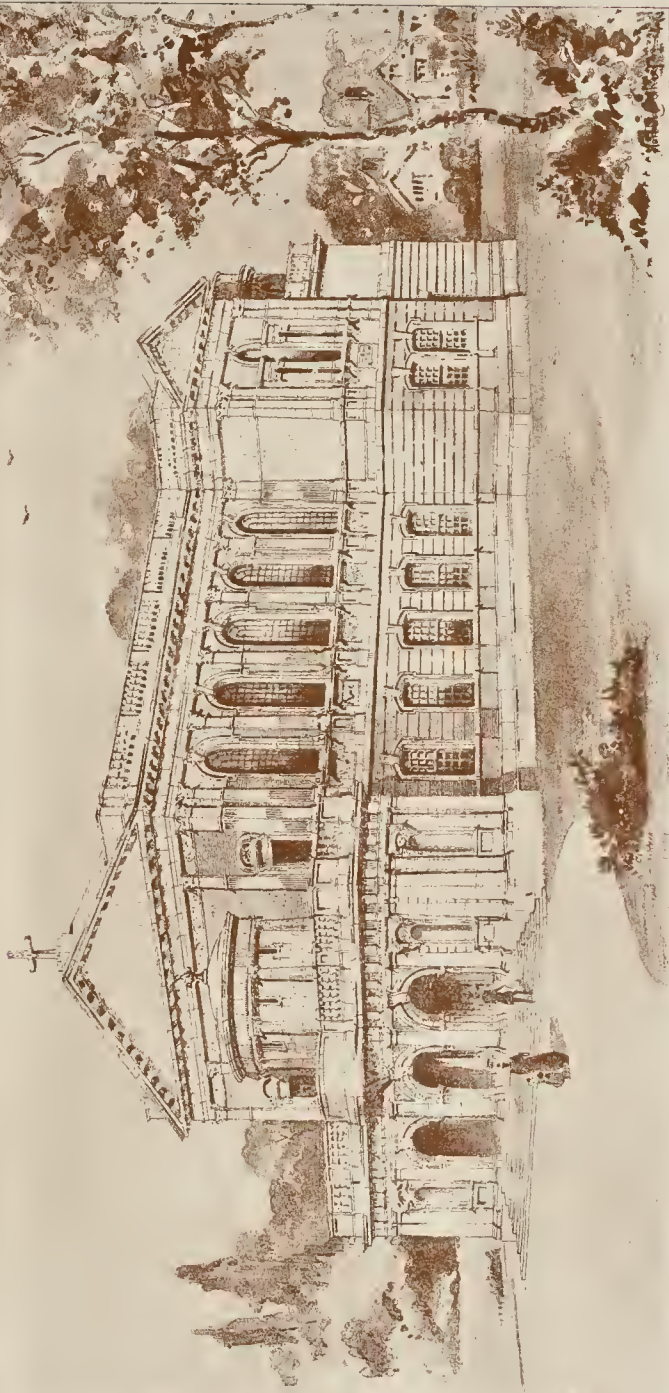
S. Mark's Church
 Plumstead Common.
 Mr R. J. Lovell, Architect.



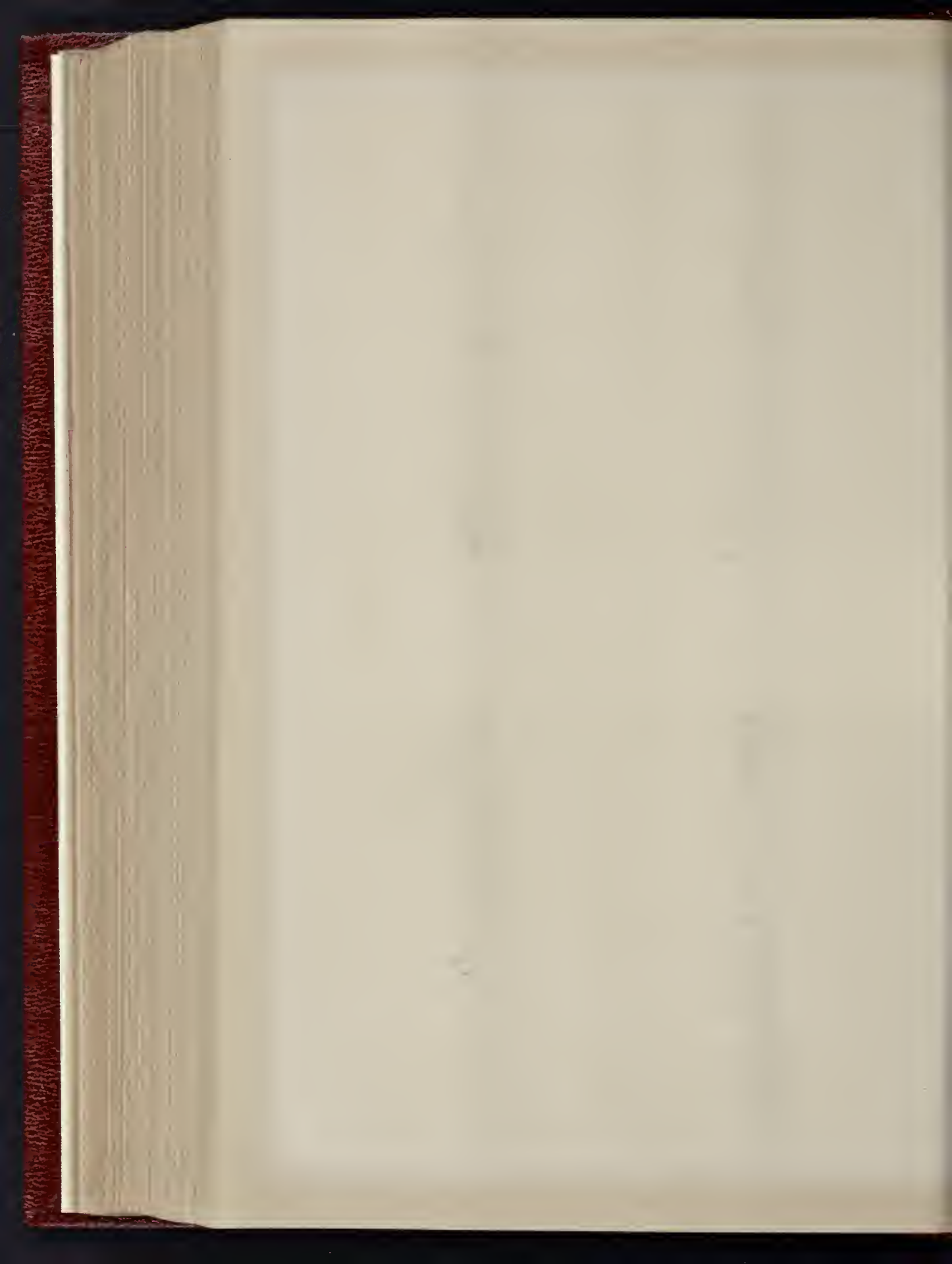
PLAN OF CHURCH.
1st FLOOR.



GROUND PLAN.

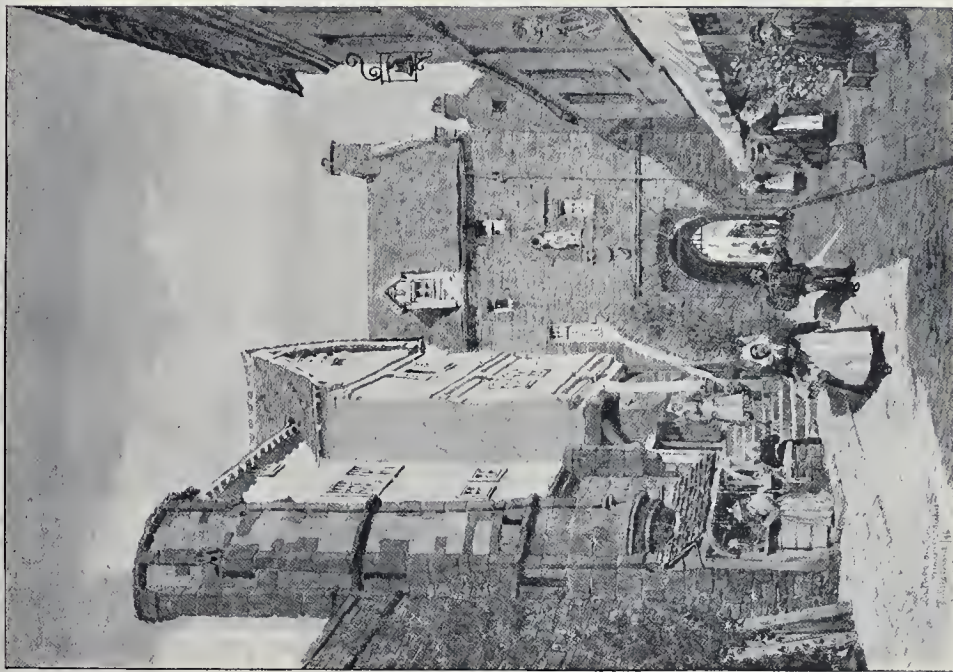


INT. PHOTO. SPRAQUE & CO. 44 EAST HANDED STREET, LONDON, E.C.





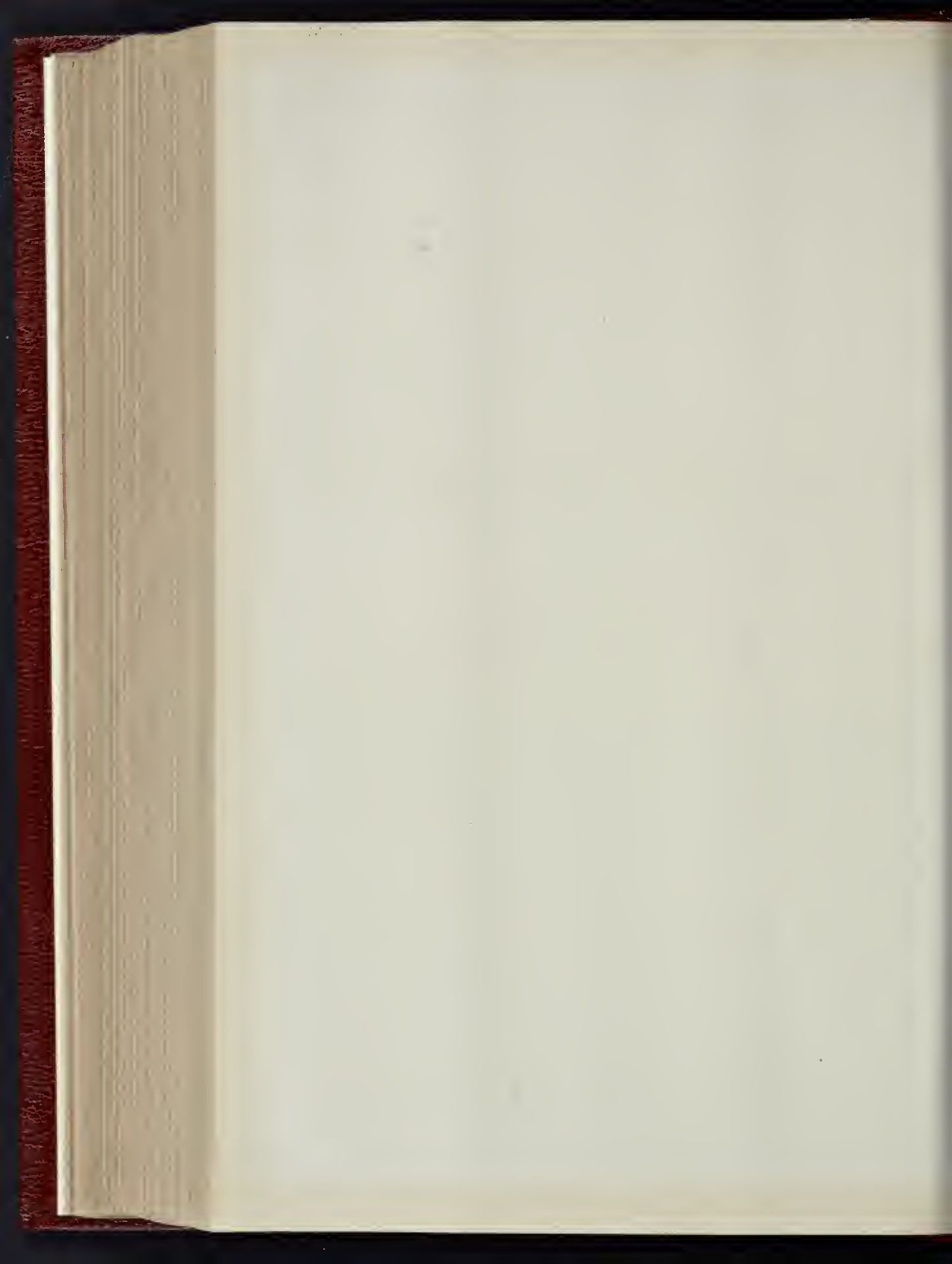
OLD HOUSES, MORLAIN.

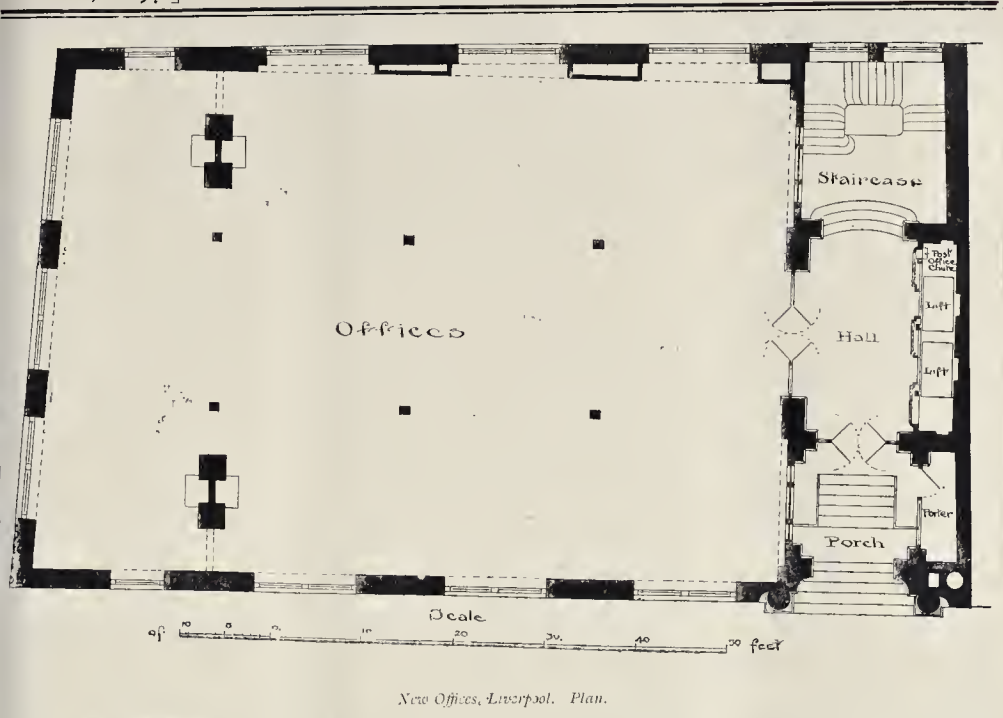


LA PORTE DU ROI, MONT ST. MICHEL.

SKETCHES IN FRANCE. BY MR. E. SALOMONS, F.R.I.B.A.

Exhibited at the New Gallery.





New Offices, Liverpool. Plan.

Illustrations.

NEW BUILDINGS, LIVERPOOL.

THESE buildings are being built for Mr. Thos. H. Ismay, and are intended to be occupied, in part, by the well-known White Star Steamship Company.

The site, at the bottom of James-street and fronting to the Goree Piazza, has a commanding view of the River Mersey, from which the building is an object of considerable importance, owing to its boldness of parts and its great height above the surrounding buildings.

The materials are Aberdeen granite for the base, red Ruabon brick facings, Portland stone dressings, and green roofing slates from Lord Penrhyn's slate quarries, at Bethesda, near Bangor.

The floors are fireproof throughout on Messrs. Mark Fawcett & Co.'s system. The entrance-hall and staircase are faced with polished grey granite, and form a worthy entrance to the various offices. There are two electric elevators, and arrangements are made for a mail chute with a letter-box on each floor.

There are spacious vaults in the sub-basement, and on the upper floors there are toilet arrangements for both males and females on separate floors, with keeper's residence on the upper floor.

The works have been executed by Messrs. J. Henshaw & Sons, of Liverpool, under the supervision of Mr. Allen Lloyd, clerk of works. The architects are Mr. R. Norman Shaw, R.A., and Mr. J. F. Doyle. The drawing is exhibited at the Royal Academy.

HER MAJESTY'S THEATRE, HAY-MARKET.

WE give a view of the exterior of this theatre, reproduced from the drawing at present hung in the architectural room at the Royal Academy. We should have preferred to have added the plan and section, which are, of course, of much importance in a theatre, but the architect objects to their publication.

The theatre is arranged for an audience divided into five different classes. On the ground floor, level with the street, are the orchestra stalls, pit stalls, and the pit; the first floor will be devoted to the dress circle and family circle; the second tier consists of the

upper circle, amphitheatre, and the gallery behind.

The five doorways in the centre of the Haymarket façade underneath the loggia open into a vestibule exclusively for the use of the two classes of the stalls and the dress and family circles, and the stalls have a third way out, level with the pavement in Charles-street; the pit has one entrance in the Haymarket and another in Charles-street; the upper circle and the gallery have the same; that is to say, five classes of audience have each two distinct ways out, opening into different streets.

Every division of the audience has cloak-room accommodation and refreshment saloons. The staircases to the upper tiers are of the uniform width of 4 ft. 6 in., those to stalls and dress circle 6 ft., formed of concrete, with a rise of only 6 in., no flight having more than twelve steps.

The stage and auditorium are entirely separate, there being two party walls, and an open space between them 9 ft. wide. There is a fire-resisting curtain covering the whole of the proscenium opening, which can be taken up without rolling. Water is laid on from high-pressure mains, and hydrants are placed on either side of the theatre on each level.

The theatre and annexes are lighted by electric light from three centres, so that should one fail the other systems are always available.

The style adopted for the auditorium is that of Louis XIV. There are private boxes on each of the tiers adjoining the proscenium, separated from it and other parts of the house by marble columns.

In arranging the warming and ventilation it is intended that the theatre should be kept at a uniform temperature of 62 deg. all through summer and winter. In the basement is a large chamber containing a very powerful fan, which pumps air into the theatre after passing round hot-water coils. From this hot chamber pipes and ducts are conveyed to every part of the auditorium, and from openings in the higher portion of the ceiling shafts are taken directly up to the roof, where exhaust fans are placed. It is computed that 10,000 cubic feet of fresh air will pass through the theatre every minute, warm in winter and cold in summer.

Radiators warmed by hot water are constructed on every tier and every corridor leading to the auditorium, especially with a view to prevent cold currents of air entering in from

the different doorways. The fans are worked by electric motors.

The theatre has been constructed from the designs and under the direction of Mr. C. J. Phipps, F.S.A., architect.

For the internal decorations and scheme of colour Mr. R. Walker has been associated with Mr. Phipps.

The various firms who have done work are as follows:—Mr. H. Lovatt, the general builder's work; Messrs. R. Moreland & Sons, the steel and iron construction; Messrs. Jackson & Sons, the fibrous plaster ornamentation of the interior; Mr. Edward Bell, the painting, papering, and gilding; Mr. Black, the figure panels on the ceiling; Messrs. Waring, the upholstery, curtains, and carpets; Mr. Wadman, the arm-chairs in the stalls and dress circle; Messrs. Platt & Son, the pit seats; Messrs. Lyon, the upper circle seats; Mr. E. A. Beer, the hot-water appliances, warming and ventilating; Mr. Starkie Gardiner, the wrought iron shelter; Messrs. Bellman, Ivey & Carter, the scagliola marble; Messrs. E. & E. Taylor, the iron curtain; Mr. Duffy, the parquet wood-block flooring; Mr. Davison, the marble flooring and mosaic; Messrs. Ewart, the copper work on dome; Mr. White has superintended the construction of the stage; Messrs. Merryweather & Co., fire mains and hydrants. The whole of the electrical work has been under the direction of Mr. E. Wingfield Bowles, and executed by the following firms:—Messrs. Johnson & Phillips; Cox, Walker, & Co.; Rashleigh, Phipps, & Co.; the Chlorite Electrical Storage Co.; B. Verity & Sons. The chandelier and brackets were made in Paris. Messrs. G. R. Tasker & Sons have been the quantity surveyors and measurers. Mr. J. Emblin Walker has been clerk of the works.

NEW PARISH INSTITUTE FOR ST. MARY'S PORTSEA.

THE plan of this building includes, on the ground floor three large class-rooms, two capable of subdivision, and a smaller class-room at the back; kitchen, scullery, and larder for teas only; lavatories, and two staircases. On the basement are lavatories for men, a boiler-room, and coal-cellar. The upper floor is to include a hall, 102 ft. by 40 ft. internal measurements, with a raised stage at the north end, 19 ft. by 15 ft. 6 in., with a dressing-room and serving-room on either side, and a smaller

class-room at the back. The hall is to have a semicircular barrel ceiling with intersecting vaults for the windows, and will be carried on steel principals. The floor will be fireproof. The materials will be dark local bricks with gauged red brick and stone dressings, tiled roof with a wood modillion cornice projecting 2 ft. 9 in. to the outer edge of the eaves gutter. The height to the ridge from the ground line is to be 34 ft., and to the final ball of the cupola 70 ft. Mr. Reginald Blomfield is the architect. The drawing is exhibited at the Royal Academy.

ST. MARK'S CHURCH, PLUMSTEAD COMMON, S.E.

This church is somewhat unusual in plan inasmuch as the church is on the first floor with a large hall under, capable of seating 550 persons, a form of plan which the architect has successfully adopted in other churches which he has built.

The church itself is designed to seat about 650 people. It is approached from a loggia by two wide, open, stone staircases, and a feature on the landing is the outside projecting pulpit.

The building is well sited on very high ground, and has an ample site on which it is intended to build a vicarage. The materials are red bricks and Portland stone dressings.

The church, when finished, will cost upwards of 12,000*l.*, exclusive of interior decorations.

The architect is Mr. Richard J. Lovell London, and the builders, Messrs. L. H. & R. Roberts, of Islington.

SKETCHES IN FRANCE.

THE illustrations of that most picturesque French province, Brittany, are selected from a number of sketches made last autumn. St. Malo is a most interesting old town both architecturally and historically. At one time it must have been a very rich town, evidence of which remains in the large old Renaissance houses with their wonderfully massive chimneys, once inhabited by the rich Indian merchants. Tradition says their money was principally made in privateering. The cathedral is an interesting and in many respects a fine building, particularly the spire, built a few years ago. Some of the most picturesque streets are so narrow and the houses so high that it is impossible to get a satisfactory sketch of them. The Maison Duguay-Trouin being opposite a street with a small open place, I was fortunate in being able to get a good view of it. There was nothing interesting in the interior. The house is inhabited by a number of the lowest and poorest class. There are some beautiful lead lights in the upper portion of the windows of the top stories, varied in design. The other view in St. Malo I selected simply for its general picturesque quality. The only point of historical interest connected with it, that I know of, is that I had luncheon in the restaurant on the first floor.

Morlaix is another of those old towns full of interest and picturesque architecture, but with the exception of two lovely François I. oak staircases there is little or no really good art.

A dominant feature, which can be seen from all over the town, is the railway viaduct, 180 ft. high, built on two tiers of arches. It is simple in design, and (as the French usually do) they have put the right thing in the right place.

In late years the inhabitants appear to have awakened to the fact of the picturesque and attractiveness of their town, and have carefully restored several old houses, more particularly by stripping the façades of a covering of small states which I presume were put on to keep the weather out, perhaps some time last century.

The old house in the illustration is now covered in this way, and I took the liberty of divesting it of its waterproof coat and restoring it (in anticipation) to its original state. The old projecting timbers and windows have not been disturbed, so I had only to put in the woodwork, and from evidence I had from similar work about (the adjoining house remains in its original state) I feel pretty sure that we see it as it was originally designed. The other sketch is from Mont St. Michel, that most unique spot full of absorbing interest. The sketch is taken in the main and almost only street in the Rock, and close to the entrance gates.

The sketches were done on the spot. The original drawings are now being exhibited at the New Gallery. E. S.

COMPETITIONS.

HIGHER GRADE SCHOOLS, WOOD GREEN.—The assessor, Mr. E. R. Robson, has awarded the first place in this competition to the designs submitted by Mr. A. M. Butler, of 16, Finsbury-circus, E.C. The Tottenham School Board has agreed to accept the award, subject to some necessary conditions.

GRAMMAR SCHOOL, KNARESBOROUGH.—We understand that Mr. W. D. Carde has placed first the plans submitted by Mr. George H. Barrowcliff, architect, of Loughborough, in public competition for the Knaresborough Grammar School, designed to accommodate 100 scholars, thirty boarders, with head master's house and a complete technical school.

ARCHITECTURAL SOCIETIES.

LIVERPOOL ARCHITECTURAL SOCIETY.—The annual general meeting of the Liverpool Architectural Society was held at the Law Library, Union-court, on the 3rd inst. The annual report, presented by Professor Simpson (Hon. Secretary), and Arnold Thornely (Assistant Hon. Secretary), stated that the number of members was 121, and included 52 Fellows, 22 Associates, 29 students, and 18 honorary members. The ordinary meetings had been much better attended than in previous years. The Council regretted the retirement of Mr. H. L. Beckwith from the position of Honorary Secretary, which he had held for a period of seven years. It was hoped by the Council that they would be able to suitably celebrate the jubilee of the Society during the next session, and to establish a travelling studentship to be awarded at the end of each session. The statement of accounts presented by the Treasurer, Mr. James Dod, showed cash in hand 26*l.* 3*s.* 3*d.* on the general account, and 36*l.* 19*s.* 5*d.* on the library account. The following Officers and Council were elected for the fifth session:—President, Mr. W. E. Willink; Vice-Presidents, Messrs. E. A. Ould and J. Woolfall; Hon. Secretary, Professor Simpson; Assistant Hon. Secretary, Mr. Arnold Thornely; Hon. Treasurer, Mr. James Dod; Hon. Librarian, Mr. J. W. Blakey; Council—Messrs. H. L. Beckwith, G. Bradbury, T. E. Eccles, H. Hartley, H. A. Mearns, E. A. Ould, and J. Woolfall (Fellows), and J. W. Blakey and F. E. P. Edwards (Associates). Mr. George Bradbury, in a short address, said that as a mark of the jubilee year of their Society, which was the oldest of the kind in the kingdom, a special effort should be made during the next session to increase their membership, and thereby increase the importance of their Society, whilst endeavours should also be made to increase the usefulness of the Society to its members. On the motion of Mr. W. E. Willink, a cordial vote of thanks was awarded Mr. Bradbury for the great services rendered by him to the Society during the past year as President.

ARCHÆOLOGICAL SOCIETIES.

DURHAM AND NORTHUMBERLAND ARCHÆOLOGICAL AND ARCHITECTURAL SOCIETY.—The annual meeting of the members of the Archæological and Architectural Society of Durham and Northumberland was held in one of the University Lecture Rooms, Durham, on the 26th ult., the President (the Rev. Dr. Greenwell) in the chair. The Treasurer (Mr. J. G. Gradon) presented the annual balance-sheet, which was adopted. The officers were re-elected, with the addition of Lord Barnard and the Dean of Durham to the committee. The President suggested that the Society visit the following places during the ensuing summer:—Day meetings—1. Streatham and Barnard Castle. 2. Loughorsley, Brinkburn Priory, and Long Framlington. 3. Catterick Church and Easby Abbey. 4. Haughton Castle, Chipchase Castle, and Simonhurn Church. 5. Two days' meeting, Lincoln. The programme was approved. The President afterwards delivered his annual address. He congratulated the Society upon the issue of another part of their "Transactions," which contained some very interesting and valuable papers. There was one by Mr. Wilson on the recent discoveries at the east end of the cathedral. He might say that the same gentleman had been making careful and extensive measurements of the cathedral, principally with regard to the vaulting. In this respect Durham Cathedral occupied a very exalted position indeed. Mr. Wilson had made a careful study of the matter,

and he was satisfied that the vaulting of the choir was of the year 1104, the date they had hitherto assigned to it. Proceeding, the President referred to the additions which had been made to the collection of pre-Conquest monumental stones in the Library from Gainford, Darlington, and other places. After giving a survey of the outdoor meetings of last year, the President referred to the Norman gallery of Durham Castle. He had hoped that by this time it would have been cleared of students, but the authorities had been obliged, on account of the lack of accommodation, to use the gallery for rooms. He still held the same view—that it was in danger of being burned down—and, of course, they laughed at him. He could not help thinking that the Norman gallery, constructed as it was entirely of wood, if the present use of it was continued, would sooner or later take fire, and in that event nothing could save the castle from absolute destruction. All men of culture must be actuated by feelings of great regard for a building of such importance. He hoped the University authorities would take steps to preserve the Norman gallery from such a catastrophe as fire. A vote of thanks to the President closed the proceedings.

ENGINEERING SOCIETIES.

SOCIETY OF ENGINEERS.—At a meeting of the Society of Engineers, held at the Royal United Service Institution, Whitehall, on Monday, the 3rd inst., Mr. G. Maxwell Lawford, President, in the chair, a paper was read by Mr. Henry O'Connor (Vice-President), entitled "Automatic Gas Station Governors." The author first explained the need for the station governor in a gasworks, and pointed out that the pattern now in use, and being manufactured by many firms, was practically the same as that made fifty years ago. He then described the working and the method of finding the weights necessary for throwing certain pressures, and proceeded to explain the necessity of the parabolic form of cone. He then described the most notable of the suggestions made from time to time to improve the working of the governors, such as the double cone governor, the equilibrium single cone governor, the governor with a separate loading bell worked at a distance from the cone bell, water loaded governors, the double bell and cone equilibrium governor, the throttle-valve governor, and governors with parallel side valves. The use of clockwork for the purpose of regulating the time of the loading and unloading of the bell was noticed, and also the loss due to uneven pressures. A new method of automatically loading governors according to the absolute requirements of the district was described, with details of several ways in which that might be carried out. The advantages of this system were pointed out, and a method of approximately registering the output of gas by the variations in pressure was suggested.

ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

The Association of Municipal and County Engineers held a Yorkshire district meeting at Ripon, on the 1st inst. The meeting brought together a large number of members representing towns in the north of England. Mr. E. R. S. Escott, C.E., of Halifax, presided in the unavoidable absence of the President (Mr. May, of Brighton), and amongst those present were Messrs. J. Curtwright, Bury; S. S. Platt, Rochdale; A. Creer, York; Wike, Sheffield; Stead, Harrogate; T. Cole, Westminster (secretary); Hopkinson, Keighley; W. Edson, Ripon; Roundthwaite, Sunderland; Howcroft, Redcar; T. W. Stainthorpe, Eton; Baker, Middlesbrough; Spencer, Newcastle-on-Tyne.

The Mayor (Mr. T. Williamson) offered the Association a hearty welcome to Ripon. He said the city had the long Municipal life of 1,000 years, but they boasted that that antiquity had led to no loss of vitality.

On the proposition of Mr. Creer, York, seconded by Mr. Wike, Sheffield, Mr. T. W. Stainthorpe, of Eton, was unanimously re-elected as honorary secretary for the Yorkshire district.

Mr. H. A. Johnson, Engineer to the City Council, read a paper on the Ripon City Sewerage and Sewage Disposal Works. Mr. Johnson said that although a general scheme of sewerage and sewage disposal was only now being completed, the Council had not been supine in respect to sanitary matters, as the first steps in

mexion with the sewerage of the city on modern principles were taken upwards of twenty years ago. The scheme prepared at that time did not commend itself to the Council, and was timely abandoned; the difficulty of devising a satisfactory scheme being chiefly caused by a low-lying portion of the city near the railway station. For some years the matter lay dormant, and the Council constructed the works necessitated by the growth of the city and paid for them out of revenue. These conditions, however, did not long survive the establishment of the West Riding County Council, and at a very early stage of that authority's existence, they gave a somewhat preliminary notice to the City Council that they had adopted measures for the purification of the sewage, which was then passing direct into the river Ure. The Sanitary Committee had paid considerable attention to the subject, and in visiting many sewage disposal works at other localities had come to the conclusion that the sewage of Ripon could be satisfactorily purified by land filtration only. The sewage of the city was almost entirely domestic, there being only the trade refuse water from one brewery and one or two tannery works to be considered, and the purification was, therefore, a much simpler matter than in many of the small manufacturing towns. Early in 1894 the Council commissioned Mr. E. Preston, C.E., with whom he (Mr. Johnson) was engaged as managing assistant, and the scheme now being carried out was presented to the Council and adopted by them. The Local Government Board assented to the borrowing of 10,000*l.* for the purpose, and the works were immediately put in hand. The city boundary embraced 1,500 acres, and the present population was estimated at about 5,500; but as the census returns during the last two decades showed a very slow rate of increase—less than 1 per cent. per annum—the disposal works were designed to deal with an assumed population of 10,000 persons. The city was chiefly built on rising ground, and the configuration of the town necessitated two main intercepting sewers. These sewers had been constructed with the flattest gradients allowable—consistent with their being self-cleansing—in order to collect the sewage from as large an area as possible, and deliver it by gravitation, and thus reduce the amount of sewage which had to be pumped. The main outfall sewer was a 24-in. diameter barrel sewer with a gradient of 1 in 750, this form being adopted owing to the shallow depth of sewer available, and had a discharging capacity which, in addition to the ordinary flow of domestic sewage, would allow for one-third of an inch of rainfall per day for an area of 375 acres. This area was about 10 per cent. in excess of the present area built upon, and the provision made was sufficient to ensure the sewage being delivered at the disposal works, and the storm overflows not to come into use until very large dilution had taken place. The southern intercepting sewer followed the course of the River Skiff, and in the lower part of its length was laid in duplicate on both banks, but for a distance of some 100 yards at its upper end it was found advisable to lay the sewer in the river bed, on account of the numerous branch drains which were to be connected. Most of this work was completed during last summer, the river being conveyed in wooden shoots for 100 yards at a time, and the river bed laid bare between baffle dams built across its course. The whole of the intercepting sewers had been completed, and when the contracts now in hand were completed, practically the whole of the sewage of the city would have been diverted from the river, and dealt with at the filtration works. The sewage from the low-lying portion of the city, which came from about 250 houses, was taken by two main sewers to a pump well constructed in the gas-works yard, and was to be lifted into the northern intercepting sewer by means of a Gwynne's 14-in. invincible centrifugal pumping-engine. The height of the lift was only 20ft., and as the pump would be supplied by the existing boiler, the cost of pumping would be a very small additional expense. They had a total area of 30 acres of land available for sewage purification purposes. The cost of the land was 14*l.* per acre, and easements had been obtained at a cost of 2*s.* 7*d.* per yard. The sewage was delivered direct on to the land without any treatment beyond passing through a small catch-pit, where the heavier matter was deposited, and pumped by hand into sludge-pits

Twelve acres had been levelled and under-drained; the subsoil was proved to be well suited for the purpose of filtration, and a working depth of 6 ft. was available above the ordinary level of the River Ure, into which the main subsoil drains discharged. The sewage was distributed by means of underground carriers provided with distributing manholes, and could be turned on to any one or all the plots. The area laid out had been leased to a firm of willow-growers for a term of ten years, at a rental of 1*l.* per acre; the Council undertaking to dispose of the sludge from the catch-pits, and the lessees being under stringent conditions as to the distribution of the sewage. The total expenditure to date was about 10,000*l.* for works, and 3,000*l.* for land.

Mr. Escott, Halifax, opened the discussion on the paper. He said he had no doubt a fall of 1 in 750 was a cleansing fall, but in other towns they would think twice before they made a sewer with that gradient, unless they had a very good force of water to keep the sewer clean. Then, again, he noticed that provision was made for only one-third of an inch of rainfall per day to pass through the sewers, which was not a very liberal amount. He regarded the leasing of the land to willow-growers as a very good proceeding.

Mr. Platt, Rochdale, said he thought it was quite possible to make a sewer with a gradient of 1 in 750 self-cleansing. He had one laid at a gradient of 1 in 2,000, and there had been no trouble with it. He congratulated the town upon the cheapness with which the easements had been obtained; also upon the cost of the works, which they could not expect to carry out at the same rate per head as larger towns. They had acquired more land than was usual in proportion to population, but that was a good provision. He did not agree with the idea of willow-growing on the land. His experience of it was unsatisfactory. It was too early to ask how it was working, but he was afraid the roots of the willows would get into the drains.

Mr. Roundthwaite, Sunderland, said he agreed with Mr. Escott that the gradient of the sewer under such conditions was utterly unsatisfactory. Perhaps Mr. Johnson would give them some idea of the storm-water overflows. He only made provision for one-third of an inch of rainfall in twenty-four hours, which seemed very little unless the storm overflows were very capacious.

Mr. Spencer, Newcastle-on-Tyne, remarked that in this instance the County Council appeared to have been of some use. It was generally considered that the only attainment of County Councils was to raise the rates, but they now appeared to have turned their attention to the purification of the streams and rivers of the country, and were doing a useful work. With regard to the gradient of the sewers, he thought if the sewers were well looked after the gradient would be found practically workable. He thought the Authorities were to be congratulated that such a small sum was to be paid for easements, and the land-owners must also be congratulated upon the liberal spirit in which they had met the Authorities.

Mr. Wike, Sheffield, said he would like to know whether they had any difficulty with the West Riding Conservancy Board as to the admission of water from the storm overflows into the river. He had recently been fixing a number of storm overflows in Sheffield, and the medical officer for the county had been very much on the alert, and he was afraid they would have some trouble, although the sewage, when it got into the river, would be very largely diluted. As to the gradient of the sewer, he had laid sewers at gradients varying from 1 in 6 to 1 in 880, and was now putting one down at 1 in 1,500. He had not the slightest fear of its being ineffective.

Mr. Baker, Middlesbrough, said he was of opinion that the land laid out would be found insufficient in a few years.

A vote of thanks having been accorded to Mr. Johnson for his paper, that gentleman replied to the various questions raised in the discussion. He explained, with reference to the gradient, that it was impossible to have any other gradient unless they were going to pump the whole of the sewage. He explained, with reference to the limited provision for storm water, that the old sewers were left in and were being used to take storm water.

Mr. W. Edson, City Surveyor, presented a paper on "Twenty-five Years of Municipal Work in Ripon." He first described the water works which are situate at Lumley Moor, about

six miles west of the city, and which comprise a drainage area of over 600 acres. The capacity of the reservoir, when full, was 94 million gallons, with a depth of 35 ft. The Corporation were bound to supply 100,000 gallons of water per day as compensation to the various mill owners and other parties interested along the stream. The filter-beds were situated in the valley a little below the reservoir embankment. They had an area of 8,712 ft., and were constructed of cement concrete. The reservoir was elliptical, constructed of cement concrete; it had a holding capacity of 780,000 gallons. It was estimated that with an average rainfall of 32 in. there would be an available daily supply of 554,000 gallons, which was more than ample for present requirements, leaving a good margin for the future growth of the district within the supply area. With regard to street improvements, nearly all the works under this heading had been carried out during the last twenty-five years, and although the amount expended might seem small, yet, considering the comparatively small population and rateable value of the city, it would compare favourably with larger and more prosperous centres. It was obvious that a large number of these improvements were of themselves not very extensive, nor requiring a large amount of engineering skill to carry them out, but they had all contributed to the improvement of the city and to the convenience and comfort of the citizens. In 1890 a bathing pavilion was erected on the bank of the River Ure, at a cost of 440*l.* There were nineteen dressing-boxes with wood partitions, seats, doors, &c. The river banks had been piled the length of pavilion, and a platform constructed about 12 in. above the summer level of the river, which was approached by three flights of steps from the dressing-boxes. In 1865 the City Council purchased the gas-works from a private company for the sum of 9,614*l.*, and had since expended a further sum of 8,386 in extensions and improvements. Very great improvements had been made in the sanitary condition of the city within the last twenty years, and now that a new sewerage and sewage disposal scheme was on the point of completion, the city might be considered up-to-date, at any rate so far as its drainage and water supply were concerned, which were two of the most important from a health point of view.

The Mayor entertained the members to light refreshments, and the afternoon was occupied with visits to Fountains Abbey, the Cathedral, and other places of interest.

SANITARY INSPECTORS' ASSOCIATION.

At the meeting of this Association held on the 1st inst. a paper on "The Proposed Drainage By-laws for the Metropolis" was read by Mr. W. H. Grigg (Fulham), Vice-Chairman of the Association.

The lecturer remarked that since the chaotic state of the drainage by-laws as administered in the metropolis had been pointed out to the members of the Association by their Hon. Secretary, Mr. E. Tidman, in a paper read by him in 1880, but little improvement had taken place, notwithstanding the passing, since that time, of the "Public Health Act of 1891" and the promulgation in 1893 of new drainage regulations under the Act by the London County Council. Certain doubtful provisions, some defects, and a long series of omissions were pointed out in the paper for the purpose of eliciting the opinions of the practical men who formed the majority at the meeting. Among doubtful points was the imperative requirement by By-law 4 of an interceptor, or syphon trap, in all cases between the sewer and the house drain. It was a matter for very serious consideration whether this should be insisted on, because it was found that stoppages in the drains almost invariably occurred at the interceptor, and because every house with an interceptor was increasing the volume of the exhalations from main sewer gratings. Another doubtful provision was that of By-law 9, which compelled the use of drawn lead for soil pipes in all new buildings. Every inspector knew that in certain cases heavy iron for pipes was to be preferred.

Upon this point, as the discussion eventually proved, there was much diversity of opinion among sanitary inspectors. Mr. Fairchild (Wandsbury) and Mr. Young (Battersea) agreed in the opinion that, certainly for

indoor pipes, lead was preferable to iron. It had been found that iron, even of great thickness, used as pipes, had been eaten almost away in a few years. The inside of a lead pipe, it was claimed, was always smooth, while the inside of an iron pipe was always more or less rough, and would, therefore, be more likely to retain the germs of disease. Mr. Pettit (Kensington), on the other hand, contended that soil pipes should not be inside, but outside houses in all cases, and that for outside pipes iron was quite as good as lead.

On other points raised by the paper there was no difference of opinion. All agreed that there should be an uniform code of by-laws, and that the evil should be made impossible which arose from the contradictory decisions of magistrates—sometimes given even in the same court and within a few days of each other. There was nothing in the existing by-laws to prohibit rain-water pipes or waste-pipes from baths or certain sinks from being connected to ventilating pipes. This was an omission that ought to be rectified. The definitions of materials, their weights, and the methods of jointing were insufficient, and there was a lack of continuity in methods and requirements which was a cause of many difficulties in the case of unsympathetic owners. In such cases the retort was too obvious where sanitary inspectors had to call upon owners to perform certain necessary works. What guarantee have we that in a year's time some one will not come and condemn this work after it has been done, on account of some new "fad"? According to By-law 12 the regulations only applied to existing buildings in respect of new work. It was from defective drainage in old houses that the greatest dangers to public health were found, and the absence of regulations controlling repairs and reconstructions of existing premises caused an enormous waste of effort. There was no provision for the submission of plans, sections, and elevations for approval by the Local Authority before commencing any work; the fall of drains was left unspecified; there was no penalty for covering up work before it was approved by officers of the Local Authority; no compulsory provision was made for inspection chambers, and the construction of gulches, traps, &c., was not specified.

A cordial vote of thanks was afterwards given to Mr. Grigg on the motion of the Chairman (Mr. W. W. West), supported by Messrs. Fairchild, Young, Bush, Pettit, and other members. During the proceedings ten new members were elected.

TRIBUNAL OF APPEAL.

A SITTING of the Tribunal of Appeal, the members of which are Mr. Arthur Cates (President), Mr. J. W. Penfold and Mr. A. A. Hudson, was held at the temporary offices, Savoy Hill, on the 5th inst., to hear two appeals made by Mr. W. T. Read, owner of property in Highgate-road, against decisions of the London County Council.

The appellant was represented by Mr. Glen, the London County Council by Mr. Seager Berry, and Mr. W. W. Blair, C.E., attended to watch the case on behalf of the Local Authority, the St. Pancras Vestry.

In the first case, Mr. W. T. Read, an owner of property on the south-western side of Highgate-road, between Greenwood-place and Lady Somerset-road, upon which he was desirous of erecting buildings for residential flats, to be let at moderate rentals, appealed against the certificate of the superintending architect of the L.C.C. given in answer to the statutory application made by the appellant on February 20 last. The superintending architect had taken for his definition of the general line of buildings, the fronts of the houses measured at the height of the first floor and in only one portion of the road—and upon this datum gave his certificate, provided that the clear width of 21 ft. was maintained from the centre of the roadway. The appellant now produced plans to show that at No. 37 on the south side of Greenwood-place, the clear width at the ground floor, where projecting shops existed, was 15 ft. 6 in., and on the left 17 ft. 9 in.

Mr. Glen, on behalf of the owner, contended that there was no real reason in the present case to set back the line of the ground floor. It would be a hardship for the owner of the property in this particular section to be bound by the proposed definition, while in another portion—perhaps merely on the other side of the road—people would be allowed in some cases to build right up to the line of the road.

The President of the Tribunal said they had that morning inspected portions of Highgate-road, and had found great differences in the line of front in different portions of the road.

Mr. Glen: Therefore, the line is very irregular, and I respectfully ask the Tribunal to say that the line suggested by the plans more correctly repre-

sents the general line of buildings than that adopted by the superintending architect.

Mr. W. T. Read having been sworn, said, in answer to Mr. Glen, that the certificate from the superintending architect, dated March 8, laid down a line that would prevent him from carrying out the plans which he put in, and which showed, as required, the distance of the general line of existing buildings. They proposed to throw 2 ft. into the public way, beyond that which would be required if the narrowest portions of the road were considered.

The President: You show the line setting back 13 ft., and the superintending architect demands 21 ft.

Witness: Yes, but there is a slight error. The distance we propose is really 15 ft. 6 in.

Mr. Berry: How old is the property?

Witness: The houses themselves are very old, but the shops (which project) are new.

Mr. Blair (Engineer, St. Pancras Vestry) here stated that application had been made to the Vestry in the usual form, and, in view of the particular site, the Committee which considered the application was of opinion that the line might be approved. The Committee, therefore, did not object to the scheme submitted, and they said so to the County Council.

Mr. Berry, for the County Council, said the difficulty raised by the claim to take in the projecting shops was a point for the Tribunal to decide. The most important question was what general consideration should determine the portion of the street that should be taken, in defining the general line. What evidence should be brought before the Tribunal to enable it to decide what portion of the road ought to be taken? He would have to point out that this road on the other side of Lady Somerset-road was 47 ft. or 48 ft. wide. He submitted that it would be necessary to take into consideration the character of the road.

The President: The certificate does not specify any particular block, but only Highgate-road. I should like to know exactly the particulars with regard to the portion from Nos. 55 to 71 shops.

Mr. Berry: They were built as additions, and he could not say what were the particulars.

The President: The superintending architect has adopted the line existing before the shops were built. It appears to have been the view taken by him since 1890, that shops were mere projections. The question is of extreme—of pressing—importance, but whether it should be decided upon the present case is a matter for consideration. I suggest that you should confer with Mr. Glen on the subject. Speaking as individuals only, we think the proposal to give two feet to the public way is reasonable. It is a question of law which the Tribunal would rather not decide. What we want is to get the best terms for the public advantage.

Mr. Berry: As the point whether the shops or the house fronts should be considered the general line of buildings has been raised, I ask the Tribunal to adjourn the case. It is possible that the Council has not had its attention drawn to that point. I ask for an adjournment, in order to see whether any arrangement can be made, and, in the meantime, I will ask the Council to reconsider whether the appeal should be opposed.

Mr. Glen: I accept the adjournment if the decision of the Council be arrived at forthwith.

Appeal adjourned accordingly.

The second appeal was by the same owner against the decision of the London County Council, in the matter of the erection of proposed residential flats on the west side of Highgate-road, between Greenwood-place and Carker's-lane. The same council were engaged in the case, and Mr. Blair again appeared on behalf of the St. Pancras Vestry.

Mr. Glen, after citing Sub-section 5 and other portions of the London Building Act, stated that, although in this case his client had paid all the fees required, the District Surveyor still withheld the certificate. Mr. Read was the owner of all the land between Greenwood-place and Carker's-lane on both sides of the road, the Midland Railway Company having a right of passage. Carker's-lane had been stopped up from a certain point since the railway was made, but another portion had been retained by the Vestry. Mr. Read was of opinion that, whether the road was held to be public or private property, the Vestry would be satisfied if the road were entirely stopped up, and his client believed he had the right to build upon it.

Mr. Berry: Until the road is closed the County Council has rights over it.

Mr. Glen: All my client desires is to make an area for the purpose of getting light and air, which he cannot do unless he is allowed to take this road. Mr. Read, he added, desired to substitute on the south side of Carker's-lane an area for the boarded fence, the existing boundary of the lane, which was previously a brick wall, the foundation portion of the wall still remaining. If he obtained the certificate of the District Surveyor his client would be entitled to make the alterations, which were necessary, because Carker's-lane went out from the main road with a rising incline, and unless the proposed area were constructed, the light would be blocked out. The question for the Tribunal was whether permission should be withheld.

Mr. Read was sworn, and in answer to questions from Mr. Glen, the particulars given were proved.

No portion of the work would be less than 20 ft. from the centre of the road, and he wished to do nothing without the full concurrence of the County Council. A letter from Mr. Blinshill, dated March 20, was produced, in which he withheld consent, stating that the County Council could see no reason why the boundary should not be set back.

Mr. Glen: What would be the effect of setting back the boundary?—It would curtail the air space, because the blocks would be nearer together.

Mr. Berry: You want the County Council to do something that the Act will not allow, or you cannot carry out your plans. The witness explained that the boundary wall was 8 ft. or 9 ft. from the pavement, that his plot had a frontage of 40 ft. close to the lane, and a depth of 150 ft. That the road led to nowhere except the witness's stables and the Midland Railway Company's property, and that the whole question of the proprietorship of the road was in doubt.

Mr. Blair stated that the St. Pancras authorities made no objection to Mr. Read's proposal, which they considered a wise one.

Mr. Berry maintained that whether a boundary wall entitled Mr. Read to retain the land or not, it did not give any such right under Sub-section 5 of the Act. A boundary wall could not be a structure. The point was that if the wall was not a structure it could give no right to the road.

Mr. Glen agreed that Sub-section 5 was intended to prevent encroachment on streets, but they were only proposing to put up something where a building was before, and there was no reason in this case for the County Council's opposition. What his client asked was only reasonable.

The President eventually announced that the Tribunal would consider its decision and declare it in due course.

The proceedings then closed.

Correspondence.

To the Editor of THE BUILDER.

ROYAL ACADEMY ARCHITECTURAL DRAWINGS.

SIR—I should be delighted to be the author of the actual drawing of the east end of the private chapel, Douglas Castle, but it happens to be Mr. Whall's own drawing, and you will allow me to say it deserves more praise than has commonly been given to it.

H. WILSON.

** We beg Mr. Whall's pardon; the general style of execution being very similar to Mr. Wilson's, and the drawing hung with his, we were under the impression that he had made a drawing of Mr. Whall's credos.—E.D.

The Student's Column.

SPECIFICATIONS.—XIX.

PLUMBER.

Internal Work (continued).

COMPANY'S REGULATIONS.—The internal plumbing work is to be carried out in accordance with the regulations of the Water Company, and is to be completed to the satisfaction of their inspector.

Connexion with Main.—Give the necessary notices to the Water Company, and pay their charges for making connexion with main, and make good roads and footways to the satisfaction of the Local Authorities.

Stop-cocks. Supply and fix where directed in main from company's pipe, 1-in. heavy brass high-pressure screw-down stop-cock, with tee key, and 6-in. stone-ware pipe as boxing, carried up to surface of ground and closed with screw cap fitted in with Russian tallow. Supply and fix to each supply-pipe from cistern full-way brass high-pressure screw-down stop-cock of the size of pipe in which it occurs.

Rising Main.—Lay 1-in. pipe from company's main to cistern in , and fit same with 1-in. brass high-pressure equilibrium ball valve with copper ball. (If there is more than one cistern, the size of the rising main to each with its ball valve, must of course be specified.)

Cisterns.—Supply and fix in roof over a galvanised wrought-iron riveted cistern, 6 ft. by 3 ft. by 3 ft. with angle iron stiffeners round bottom, top, and angles and wrought-iron cross-stay, and all necessary perforations for supplies and waste. Supply to this cistern 1 in. deal cross-tongued and ledged cistern cover in two pieces, on 2½ in. by 2 in. bearers. Fit to the cistern 1½ in. overflow, with brass cistern connector (or 1½ in. boiler screw union). The overflow to be taken out through the roof to discharge on front with 5 lbs. lead soaker where pipe passes through roof.

Draw-off Tap for Emptying.—At foot of rising air supply and fix $\frac{3}{4}$ in. brass screw-down high-pressure bib cock, with square-headed handle and loose spanner for emptying rising main, same to discharge over gulvy.

Supply Pipes.—Run supply pipes from cistern follows:—(Give a list of the supplies, stating the size, from a cistern to various points of supply) bath, lavatories, water-closets, &c.) The supply pipes to be connected to cistern with brass washer and waste with fly nut and union full way" of the size of the respective pipes.

Lavatory.—Fit up the lavatory with Messrs. Lavatory fittings as No. in their catalogue p.c. with hot and cold supply taps, the price of which is included in the p.c. already quoted. Supply and fix $\frac{1}{2}$ in. waste pipe from lavatory with drawn lead syphon trap below same, fitted with brass screw cap for cleaning. This waste is to be taken to discharge into slipper shown on plan.

Bath.—Supply and fix where shown on plans Messrs. tinned copper bath (or other as may be selected) No. in their catalogue p.c. The hot, cold, and waste valves and fittings of this bath to be of Messrs. manufacture, as No. in their catalogue p.c.

Run $\frac{1}{2}$ in. waste pipe from bath, with drawn lead syphon trap below same fitted with screw cap for cleaning. This waste is to discharge into slipper shown on plan.

Housemaid's Sink.—Supply and fix where shown on plan Messrs. housemaid's sink as No. in their catalogue, &c.

Run 2 in. waste pipe from housemaid's sink with drawn lead syphon trap below same, fitted with screw cap for cleaning, which waste is to discharge into a slipper shown on plan. (Or as an alternative may be specified thus.) The housemaid's sink to be of $1\frac{1}{2}$ in. cross-tongued deal sides and bottom dovetailed at angles, the angles filled in with splayed lead, the angles filled in with splayed lead, the sink to be lined with 6 lbs. lead with soldered angles and copper nailed over top. The waste to have $\frac{1}{2}$ in. brass plug and chain and cohweb grating with brass washer and waste.

Water-Closets.—The water-closet on first floor to be fitted with Messrs. water-closet apparatus as No. in their catalogue p.c. with polished mahogany seat and strong galvanised wrought-iron bearers fixed to brickwork. The price of water-closet, already quoted, includes the seat and bearers (or does not include the seat and bearers as the case may be). The water supply to this water-closet to be laid on with $\frac{1}{4}$ in. lead pipe from water waste-preventer on iron brackets fitted 7 ft. above the seat of water-closet. The water waste-preventer to be Messrs. manufactured as No. in their list p.c.

Run $\frac{3}{4}$ in. lead pipe from water waste-preventer through wall to overflow. The water-closet apparatus to be connected with the vertical soil-pipe by 4 in. drawn lead soil-pipe, weight 10 lbs. per foot run. Similarly describe the other water-closet apparatus.

Safes.—Put beneath each water-closet apparatus on first floor, also beneath bath and housemaid's sink, a safe of $\frac{1}{2}$ lbs. lead, that under water-closet to be on floor, that under housemaid's sink by , and that under bath by , each to be turned up 4 in. at back and each end and in front to rest over $\frac{3}{4}$ in. by 3 in. splayed fillet and nailed with copper nails. Each safe to have 14 in. lead waste carried 6 in. through outer wall and finished with 14 in. brass flap soldered in.

Butler's Sink.—Supply and fix where shown on plan in butler's pantry, a lead-lined sink similar to that already described for housemaid's sink, the size being 2 ft. 6 in. by 1 ft. 6 in. by 1 ft. The waste from this to be as described for housemaid's sink.

Soil Pipes.—The soil pipes to be 4-in. drawn lead soil pipes, weight 10 lbs. per foot, secured to wall with tacks soldered on and to be carried up 2 ft. above eaves in a perfectly straight line, and finished with copper wire globular grating 5 in. diameter soldered in (or if desired one of the numerous forms of ventilators in the market may be specified to be fitted at head of soil pipe). The lower end of soil pipe to be soldered to brass flanged collar and cemented to socket of drain pipe.

Iron Soil Pipes.—The soil pipes from water-closets to be 4-in. heavy cast-iron socketed pipes of Messrs. Macfarlane's manufacture, enamelled inside, the joints made with oakum and run with lead and caulked. Y junctions to be

put for connexion of lead soil pipes from water-closets, and the upper portion to be continued and carried up to a height of 3 ft. above the cornices in a straight line, and finished with copper wire globular cover. (N.B.—Where there is a series of water-closets on different floors connected with the same soil pipe, it is necessary to specify a light lead 14-in. air pipe to trap in order to prevent same from being siphoned).

Hydrants.—Lay on water-supply to hydrants direct from main with $2\frac{1}{2}$ in. cast-iron pipe, weight 30 lbs. per 6 ft. length. Put together with lead-caulked joints. Provide the sum of £ p.c. to be paid to Messrs. for hydrant fittings, hose, nozzle, &c.

Testing.—The whole of the plumber's work to be tested at completion, to the satisfaction of the architect, all pipes being filled with water, and to stand without loss for six hours.

OBITUARY.

MR. W. FORSTER.—Mr. William Forster, architect to the Marquis of Londonderry at Seaham Harbour, Major in the 2nd Durham Volunteer Artillery, died on the 26th ult., at the age of sixty-four years.

GENERAL BUILDING NEWS.

CATHOLIC CHURCH, TECCONAUGHT, CROSSGAR, CO. DOW.—On the 25th ult. the Rev. Dr. Henry laid the foundation-stone of a new church at Tecconought, in the parish of Kilmore, near Crossgar. The site upon which the church is being erected is at the junction of two roads—the new and old roads to Ballynahinch. The style adopted by the architect (Mr. J. J. McDonnell) is Gothic of a late period, and on plan the church shows a nave 32 ft. wide by 80 ft. long; the east end is spanned by a chancel arch, and the sanctuary projects beyond this 16 ft. A sacristy, 15 ft. by 12 ft., is in communication with the latter. A gallery to accommodate one hundred people, in addition to the choir space, is placed in the west end, approached by a staircase entered direct from the entrance porch—the latter, semi-octagonal in form, besides serving as a porch, is made to receive the baptismal font without encroaching on floor space. The side-walls, which are 25 ft. high to eave course, are divided into five bays on each side by projecting buttresses, and each bay has a two light window; the west gable is pierced with one two-light, and having a single light window on each side, while the east end has three single light windows, and each will be glazed with lead lights. The main entrance is in the west end, through a projecting gabled airway. The roof will be wagon-shaped. The contractors for the work are Messrs. Fitzpatrick Brothers, Limited, Belfast.

LIBERAL CLUB, KEIGHLEY.—The directors of the Keighley Liberal Club Company, Limited, met recently to further consider the competitive plans for a new club-house, to be erected on the site in Devonshire-street and Scott-street. The work was done by Messrs. John Judson & Moore, of Keighley, were appointed architects for the new premises. The club-house will be of two stories except for a large billiard-room, which will be only one story. On the ground floor a news-room, smoke-room, card-room, conversation-room, library, &c., will be provided. The first floor will be mainly devoted to an assembly-room, but on this floor accommodation will also be found for the Women's Liberal Association. Curator's premises and offices for letting will be erected on the frontage to Scott-street. The entrance to the club will be at the junction of Scott-street and Devonshire-street.

FORESTERS' HALL, RYDE, ISLE OF WIGHT.—The memorial stones were laid recently by the Mayor of Ryde and Miss Brigstocke of the new Foresters' hall, which is in course of erection in Warwick-street by Mr. Isaac Barton, from designs by Mr. John I. Barton. The elevation is in red brick with Bath stone dressings. On either side of the large entrance-hall are ante-rooms, with lavatories, &c. The gallery is over the ante-rooms and is reached by a staircase from the entrance-hall. The hall is 60 ft. long, clear of the gallery, and 32 ft. wide. Under the hall there are a large kitchen, scullery, &c., and heating-chamber. The hall and gallery will seat 800.

NEW BOARD SCHOOL, NOTTINGHAM.—The Mayor of Nottingham (Ald. E. H. Fraser, J.P.) recently opened the new Board School which has been erected in St. Leonards-street. The building will accommodate 364 boys and girls in the rooms on the two floors, and provision has been made for future enlargement, if necessary, to the extent of 240 places. In addition to the class-rooms and central halls, which latter will be used as assembly-rooms, the school is provided with a swimming bath in the basement, and there are playgrounds for both boys and girls, provided with play-sheds. The contractor is Mr. William Maule, who has erected the buildings under the superintendence of Mr. A. H. Goodall, architect, and Mr. W. H. Price was the clerk of the works. It is estimated that the total cost of the school will be a little over 6,000.

CHURCH, DOLPHINHOLME, NEAR LANCASTER.—It is intended to rebuild St. Mark's Church, Dolphinholme, near Lancaster, and Messrs. Austin & Paley, architects, of Lancaster, have prepared plans for the proposed new structure.

SCIENCE AND ART BUILDINGS, LYDNEY, GLOUCESTERSHIRE.—New Science and Art buildings have been erected at Lydney, from plans prepared by Mr. Howard Howells, architect, of Lydney. Messrs. Moses Kear & Sons, of Coleford, were the contractors. The front elevation is towards the High-street, and in extent the building is 54 ft. by 53 ft. and there is a custodian's cottage in the rear. On the ground floor there is a main hall, billiard-room, reading-room, library, smoking-room, and offices. This floor is the Lydney Institute section. The first floor, which will be used purely for science and art teaching, consists of an elementary art room, an advanced art room, modelling room, and lecture theatre, chemical laboratory, and offices. The walls of the building are of Forest red stone, with Bath stone dressings, and tiled with Broseley tiles. The cost of the building has been 2,300.

PRIMITIVE METHODIST CHURCH, LYMM.—The foundation stone has just been laid of a new building for the Primitive Methodists of Lymm. The interior of the new chapel will be 49 ft. long by 20 ft. wide, and 29 ft. high to the ceiling. There will be a vestibule at the front, and the rear of the building will be semi-circular, with space for the choir, organ, communion table, &c. A vestry is placed over the heating chamber. The floor of the chapel will be 9 ft. above the roadway, and will be approached by twelve steps. The architect is Mr. J. D. Mould, of Manchester and Bury, and the contractor, Mr. Henry Thomason, of Lymm.

BUILDING IN BLACKPOOL.—At the last meeting of the Building Plans Committee, Blackpool, eighty-one plans came under consideration, and of these fifty were approved and thirty-one disapproved.

ST. ANDREWS UNIVERSITY MEDICAL SCHOOL, N.B.—A medical school is to be erected for St. Andrew's University. The site of the buildings is within St. Mary's College grounds, adjoining Queens-terrace and West Bury-lane. The building is in the Elizabethan style, and there will be accommodation for four professors, viz., physiology, anatomy, materia medica, and botany. There will also be two lecture-rooms, open to all students, besides museums, workrooms, and private rooms for the use of the professors. The tower is not to be erected in the meantime. Mr. Gillespie, St. Andrews, is the architect.

BUILDINGS IN HIGH-STREET, SHEFFIELD.—The contract has now been accepted for the largest block of buildings in High-street, Mr. John Walsh having made arrangements with Messrs. George Longden & Son, contractors, for the erection of his new buildings. The amount exceeds 61,000. The frontage will extend not only along High-street, but also along Mulberry-street. Messrs. Flockton & Gibbs are the architects.—*Sheffield Independent.*

BOYS' SCHOOL, BENTHAM.—New boys' schools have just been opened at High Bentham. The old boys' school has been transformed into a master's house, and the new school immediately adjoins it. The architects are Messrs. Harrison, Hall, & Moore, Lancaster. Accommodation is provided for eighty boys.

METHODIST CHAPEL, YARM, YORKSHIRE.—On the 29th ult. the foundation stone was laid at Yarm of a new Primitive Methodist Chapel. The new structure is to be 45 ft. long, 32 ft. wide, and 21 ft. high, and will accommodate 200 worshippers. The old building will now be used as a schoolroom. Messrs. Perks & Co. of Stockton, are the principal contractors for the new building. The total cost, inclusive of land, will be about 1,260. Mr. T. W. T. Richardson, Stockton, is the architect.

CONGREGATIONAL CHURCH, LIVERPOOL.—The new Congregational Church in Hartington-road, Liverpool, has just been opened. The church consists of nave and transepts, with tower and spire at the narrow extremity of the site. The other end is finished with a short apse. The church at present will accommodate about 500 worshippers, with provision for future enlargement by means of a large end gallery and two smaller ones in the transepts to accommodate about 200 more. The church is heated by hot-water apparatus supplied by Messrs. Dargen, Williams, & Co. The whole of the work has been carried out from the designs and under the supervision of Messrs. W. & J. Hay, architects, by Messrs. J. Paterson & Son, the general contractors; the others being Mr. Tyson, for brickwork; Mr. George Parker, mason; Mr. Johnstone, slater and plasterer; Mr. Thomas Lea, joiner and plumber; and Messrs. Williams & Watson, glaziers.

ALTERATIONS TO ABERDEEN THEATRE.—Her Majesty's Theatre, Aberdeen, is to undergo structural alterations and improvements. The plans will be prepared by Mr. Frank Matcham, and the carrying out of the work will be superintended by Mr. Alexander Brown.

SCHOOL, QUORN, LEICESTERSHIRE.—On the 28th ult. new buildings at Rawlins' Grammar School were opened at Quorn. The material used in the construction was Mountsorrel granite, with cream terra-cotta dressings, and lined on the inside with brickwork. The master's house contains dining and drawing-rooms, study, and five bedrooms, boys' dormitory, and dining hall. Kitchen

accommodation has been made so as to provide for boys attending the school from adjacent parishes. The master's house and the school-room are connected by a corridor. The main schoolroom is 41 ft. by 21 ft., and 19 ft. high to the ceiling, with a pine principal. There is a class-room, with boys' entrance, and cloak-room. At a distance of 50 ft. from the main building to the rear is a technical school. The sloyd-room is 50 ft. by 13 ft., and has been fitted with ten benches. On the first floor is the physical and chemical laboratory, with demonstrating-room. Messrs. Messenger & Company, Loughborough, carried out the heating work of the buildings, which is by hot-water apparatus, supplemented by open fireplaces. The general contractors were Messrs. W. Moss & Son, Loughborough; the joiner's work being in the hands of Mr. John Sanders, of Quorn. The fitting up of the technical school was carried out by Mr. C. A. Dobson, of Loughborough; and the whole work was under the supervision of and from plans by Mr. G. H. Barrowcliff, Loughborough.

HOTEL, TROON, Ayr.—The Duchess of Portland recently opened a new hotel at Troon. The building contains about seventy rooms. The architects were Messrs. James Salmon & Son, of Glasgow.

SCHOOL BUILDINGS, PORTMADOC.—New intermediate schools have just been opened at Portmadoc. The buildings are arranged with boys' and girls' entrances at either end, with cloak-rooms and lavatories adjoining each entrance. There are three ordinary class-rooms provided for the boys on the eastern side of the front, and two for the girls on the western side, with a large assembly hall, to accommodate all the students, in the centre. Chemical and physical laboratories, with a preparation and balance room, are provided for the use of both sexes. At the end of the girls' north corridor is placed a cookery kitchen, with scullery, &c., and a laundry. Playfields in both playgrounds are provided, and a large workshop for mechanical instruction is built. The class-rooms are planned to accommodate twenty students in each. The buildings are built of local stone. The architect is Mr. W. H. Dashwood Caple, of Cardiff, and the buildings have been built by Messrs. William Jones & Evan Humphreys, of Portmadoc, the amount of whose contract was 2,676l. Mr. Robert Roberts has acted as clerk of the works.

MUSIC HALL, BRIXTON.—Brixton is to have a music hall. A site has been acquired opposite the Turkish Baths in the Carlton-grove, and plans for the new building, which will be styled "The Empress," have been prepared by Messrs. Wydon & Long. The hall, which will be capable of seating nearly 3,000 people, will necessitate an outlay of between 17,000l. and 18,000l.—*South London Press.*

EASTLEIGH BOARD SCHOOL, SOUTHAMPTON.—The new Board school in Chamberlayne-road, Eastleigh, has just been opened. It has been erected from plans prepared by Messrs. Mitchell, Son, & Gutteridge. The school is planned on the central hall system.

CHURCH, KILKENNY.—The foundation-stone of St. John's Church, Kilkenny, has just been laid. The architect of the building is Mr. Wm. Hague, of Dublin. The church will be 168 ft. in length, and 72 ft. wide, having, in the interior, nave, aisles, side chapels, apse, and sacristy. A special external feature is a tower rising from the floor level to the height of 238 ft.

NEW CATHEDRAL LIBRARY, HEREFORD.—On the 30th ult. the Archbishop of Canterbury opened the new library and meeting-room attached to the Hereford Cathedral. The Archbishop also unveiled a memorial to the late Bishop Hampden (1848-1868) in the south transept of the cathedral. The cathedral library is erected on the original site of the medieval library, which stood from 1480 to 1830. The site was occupied from 1760 to 1834 by a brick building used for the grammar school, and for the triennial meetings of the Three Choirs. It is at the western end of the Bishop's cloisters, and forms a commencement of the south cloisters, which formerly extended up to the old west end of the cathedral. The plans were drawn by Sir Arthur Blomfield, and the work has been carried out by Mr. John Thompson, of Peterborough. The room is rectangular in shape. The three bays in the south cloisters have been restored, too, in memory of the late Canon Philpot and the late Rev. F. T. Havergal respectively, and the third is associated with the commemoration of the Diamond Jubilee.

LIBERAL CLUB, ALLERTON, YORKSHIRE.—The memorial-stone of a new Liberal Club was laid at Allerton by Mr. J. C. Horsfall recently. The contracts for the various works required have been let to the following firms:—Mason, Mr. Thomas Haigh; Joiner, Mr. John Foster; plumbers, Messrs. Haigh & Slater; plasterer, Mr. James Drake; slaters, Messrs. Hill & Nelson; painter, Mr. Walker Priestley. The architects are Messrs. Fairbank & Wall, of Bradford.

LADIES' GOLF HOUSE, TROON, Ayr.—A ladies' golf house, Troon, has just been opened by the Duchess of Portland. Accommodation is provided for ladies, girls, and boys. The ground story is built of red freestone, and the upper story will be rough cast on face with timber work forming panels. The roofs are to be covered with green slates and red ridge tiling. The cost will be about 1,000l. Mr. H. Clifford, Glasgow, is the architect.

SANITARY AND ENGINEERING NEWS.

SEWAGE SCHEME, DROFIELD, DERBYSHIRE.—Messrs. T. Margerison & Son, Dronfield, have obtained the tender for carrying out the Drofield sewage scheme. Mr. G. White, Mexborough, is the engineer.

NEW WATER SUPPLY, WORTHING.—The Duke of Cambridge visited Worthing on the 26th ult. for the purpose of inaugurating the new water supply, the works connected with which have been carried out by the town authorities, together with other sanitary improvements, at a total cost of over 100,000l. The water is drawn from a well at the foot of the South Downs. The well is 115 ft. deep from the original ground surface, and it is sunk through 60 ft. of loamy clay and sand and 50 ft. of solid chalk. The engines and pumps used for raising the water are in duplicate, each being capable of doing the work required for the supply of the town. When running at their ordinary speed each will raise 1,000 gallons per minute from the bottom of the well to the main reservoir on the Downs, the reservoir itself being capable of holding 2,000,000 gallons. The yield has been tested, and an average of 1,500,000 gallons a day, it is stated, can be depended upon, which, at the rate of thirty gallons per head per day, will be sufficient for the supply of 50,000 persons. The resident population of the town is now about 10,000. The walls of the reservoir are constructed of layers of concrete asphalt and hard brick. The engineer for the water-supply works has been Mr. James Mansergh.

DRY DOCK, SWANSEA.—The construction of the new graving docks at the Prince of Wales's Dock, Swansea, by the representatives of the late Mr. T. A. Walker, contractor, was commenced on the 26th ult., it being arranged to construct two docks—one of 450 ft. in length. The contractor is Mr. Nott, and the engineer Mr. A. P. Dix.

FOLESHILL SEWERAGE AND SEWAGE DISPOSAL.—The scheme of sewerage and sewage disposal, prepared by Mr. H. Bertram Nicholls, C.E., of Birmingham, for the parish of Foleshill, has been approved and adopted at the hands of the Rural District Council of Foleshill. The estimated cost of the engineering work is 24,010l.

WATERWORKS, TROON.—The Duchess of Portland opened the new waterworks at Troon on the 30th ult. The new supply is derived from the western and southern slopes of the Dundonald hills. The storage reservoir has been constructed in The Glen. The area of land draining directly into the reservoir is 88 acres, and it is estimated that the area will yield, during a dry year, 28 million gallons of water, while the area of the catchwater conduit is 183 acres, and it is calculated that 20 million gallons of water per annum will be got from it. By an extension of the catchwater conduit, an additional quantity of 15 million gallons of water can be got when necessary. The water level of the reservoir when full will be 108 ft. above the sea, and the maximum depth 31 ft., the area covered by water being 11 acres. The reservoir will contain 48 million gallons of water, or sufficient to give a supply of 240,000 gallons per day to Troon during a period of 200 days. The embankment of the reservoir is 800 ft. in length, with a height of 30 ft. at the centre, and is composed of 75,000 tons of earthwork, puddle clay, and stone pitching. The filters are two in number, each 60 ft. in length by 54 ft. in width, and are capable of filtering 240,000 gallons of water per day. The water passes from the filters into a circular clear-water tank 70 ft. in diameter and 11 ft. in depth, the storage capacity of this tank being 250,000 gallons. The cope level at the filters and tank is 107 ft. above the sea. The piping to Troon measures 4,410 yards, or 2½ miles, and is capable of providing a supply at the rate of 30,000 gallons per hour. Mr. W. R. Copland was engineer of the works.

CASTLE EDEN COLLIERY WATER SUPPLY.—At a meeting of the Easington Rural District Council a scheme for the supply of water for Castle Eden was submitted by the Engineer, Mr. D. Halfour, M.Inst.C.E., of Newcastle and Edinburgh. The work consists in pumping water from a duplicate well or staple at the colliery to service tanks situate near Dean Leazes Farm at sufficient altitude to give an excellent pressure, and from thence the water will be distributed in cast-iron mains for supplying the inhabitants. The scheme was adopted subject to a satisfactory arrangement being come to with the owner of the staple.

STAINED GLASS AND DECORATION.

WINDOWS, MORLEY CHURCH.—On Easter-day a new east window was dedicated in St. Andrew's Church, Morley. The subject is taken from the "Te Deum." The window is by Messrs. Burlison & Grylls.

WINDOW, WHITLEY CHURCH, YORKSHIRE.—The Bishop of Ripon recently dedicated a window at the Church of the Ascension, Whitley, which has been erected by the parishioners to the memory of the late vicar, the Rev. William Valentine, M.A. The work has been carried out by Messrs. James Powell & Sons, of London. The window consists of five lights.

WINDOW, BABY CHURCH.—The chancel window of Baby Church, near Doncaster, has been filled with a memorial window with the Crucifixion and

figures of the Virgin and St. John, and the south window of the chancel and window near the pulpit with figures of Our Lord as "The Good Shepherd" and as "The Light of the World." They are from the studio of Mr. T. W. Cann, Smeethwick, near Birmingham.

WINDOW, EYE CHURCH.—A new stained glass memorial window has been placed in Eye Church. The subject is "Christ blessing children." The work has been executed by Mr. H. A. Hymers, of Chelsea.

FOREIGN.

FRANCE.—The monument erected by public subscription to the memory of Charlet was inaugurated last Sunday. This monument, which is the work of Alexandre Charpentier, sculptor, is erected in the Square Denfert Rochereau. It consists of a stone column surmounted by the Gallic cock in bronze, and ornamented by a medallion of Charlet, also in bronze. An old Grenadier of the First Empire leans against the column, looking at a child who kneels at the foot of the monument, and personifies a popular type constantly met with in this artist's work. The two figures are in stone.—This week the 10th annual exhibition of the "Acadellistes Français" has been inaugurated.—The destruction of the central dome in the Champs de Mars is soon to be begun.—A monument in honour of Adolphe Adam, the musical composer, is shortly to be inaugurated at Longjumeau. The monument, the work of Paul Fournier (who was also the author of the statue of Shakespeare in the Boulevard Haussmann), consists of a pedestal surmounted by a bust of Adam. A figure representing the "Postillon de Longjumeau" from Adam's well-known opera, leans against the pedestal, which is decorated with a cartouche of a palm and lyre.—From June 1 to 7 an Exhibition of Fine Arts will be held at Amiens. A similar exhibition will be held at Rouen from the 10th to the 20th.—The Government are executing some important works in the Maritime Alps for the collecting of the water in the mountainous districts. The expense of the work is estimated at 1,450,000 francs.—An electric and funicular tramway is shortly to be made between Clermont-Ferrand and the summit of Puy de Pôme.—The death of the sculptor Emile Lambert has been announced. He was a pupil of Franceschi, and author of the "Voltaire" which decorates the court of the Mairie of the IXth arrondissement. He received honourable mentions in 1883, 1885, and 1886, and the Legion of Honour in 1866.—The death of M. Claude Marie Giron, architect, in Paris, is also announced. He was born in 1862. He entered the Ecole des Beaux-Arts in 1884, after having worked with M. Paul Blondel. He received the diploma of architect in 1891.—We have heard of the sudden death of M. Gaston Hénard, architect, at the age of 54. He was the pupil of his father and of the Ecole des Beaux-Arts. During the exhibition of 1889 he filled the post of first Inspector.—The death of M. Forthgott, for the works of the Palais des Beaux-Arts and the Arts Libéraux at the Champ de Mars. He received the Cross of the Legion of Honour. He was a brother of Eugène Hénard, who is commissioned to build the Palais de l'Electricité in the 1900 Exhibition.

GERMANY.—The historical Sternthor at Bonn is to be taken down and reconstructed.—There is to be considerable alterations at the old Pfister Castle at Oppeln, which is to be turned into a block of modern offices for Government purposes.—The Bellevue street, near Berlin, has decided on the erection of a Memorial Tower in memory of the late Emperor William, and the design will be by Bauarth Schwichten. The height of the tower will be 56 metres, and it will stand on a hill known as the Karlsberg.—A large terminus station at Berlin belonging to the Stettin Railway is to be rebuilt. A large provisional station is being erected, and will be used from May 1. The building operations will spread over three years.—A Schiller Museum is to be erected at Marbach on lines not dissimilar to those of the museum in connexion with the Memorial Theatre to Shakespeare at Stratford-on-Avon. Some 100,000 marks have already been collected, or nearly 9,500l.—We understand that the archaeological research party at Worms has been making considerable progress of late in the excavation of Roman remains.

AUSTRIA.—A Memorial Church is to be erected at Vienna on the occasion of the anniversary of the Emperor's reign, and the foundation-stone has been laid with some ceremony. The cost of this memorial church will be 130,000 florins, and the spire will be 56 metres high. The architects are Messrs. Bach & Schoene.—A special committee has been appointed by the Municipality at Vienna to consider the advisability of constructing two new electric tramways, running respectively from the city to the Prater Park, and from the city to the Central Cemetery; perhaps the most important feature about this work will be its execution by a Municipal building department.

SYDNEY.—A new industry, it is stated the first large undertaking of the kind in New South Wales, is about being started in Tamworth for the malting of colonial barley. The works are being built by

essrs. Britten & Co, from designs by Messrs. Kinder & Sons, architects, London.
CALCUTTA.—We observe that the Lieutenant-governor has appointed a Committee to inquire into and report as to the necessity of a Building Act for Calcutta. The Commission will be presided over by Mr. Justice Trevelyan, and the members include Messrs. H. H. Risley, J. H. Glass, H. C. Williams, A. J. Hughes, W. Banks-Gwyther, Dr. Lyon, and Babus Kalinath Mitter and Nalin Chait Sircar.—*Capital.*

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.
 —The partnership between Mr. Samuel Walker and Mr. Ernest Runtz is dissolved, and Mr. Runtz has moved to 10, 11, and 12, Walbrook, E.C.

CLAYTON OLD HALL, NEAR MANCHESTER.—On 26th ult. a number of members of the Lancashire and Cheshire Antiquarian Society paid a visit to Clayton Old Hall, the ancient residence of Humphrey the Great, near Manchester. After the moat, the grounds, and the exterior of the old mansion had been inspected, a meeting was held indoors, when a paper was read by Mr. E. Williams on the connexion of the Chetham family with the hall and the earlier history of the place.—In the discussion which followed, Mr. R. Marsden said there secured an inclination of the part of some members of the City Council to demolish the hall, and he thought they should express an opinion on the subject.—Mr. Williams said he was a member of the Council for nine years, and he induced the Parks Committee to become the purchasers of the building and its surroundings. He believed it was their intention to buy out the land, to clear the ground and public objects, to remove the influence of the various learned societies of Manchester would be brought to bear to prevent, if possible, the destruction and removal of the hall.—Mr. Albert Nicholson moved the adoption of a resolution in which the meeting expressed the opinion that Clayton Old Hall, with its moat and bridge, should be preserved, and requested the Council to arrange for proper repairs to be carried out, and for the building to be used, if possible, as a permanent museum and picture gallery. Mr. Thomas Letherbrow seconded the resolution, and it was adopted.

THE SCOTTISH BUILDING TRADES' FEDERATION.
 —The half-yearly meeting of the Scottish Building Trades' Federation was held in Lamb's Hotel, Dundee, on the 29th ult. Mr. John Adam, Glasgow, the President, occupied the chair. Mr. James L. Selkirk, Glasgow, the Secretary and Treasurer, read the Executive's half-yearly report, in the course of which it was stated that the Committee charged with the question of the general form of contracts having, in accordance with the instructions of the annual meeting in October last, issued to each of the various local Associations for their consideration and report a copy of the draft form prepared by them, it was found that the general opinion was in favour of a shorter and more equitable form; and it was intimated to the Executive that the Dundee Association had resolved to prepare such a document, the Executive resolved to await its completion before taking any further steps in the matter.

The general working by-laws would receive the early attention of the Executive. There was urgent need for a clear and satisfactory set of rules applicable to the whole country. On the whole, the Executive considered that the progress of the Federation during the short period of its existence had been exceedingly satisfactory. Employers all over the country had come to realise more fully than ever the urgent necessity for thorough organisation, and were heartily co-operating in this important work. Other matters falling within the scope of the Federation's objects will continue to receive the best attention of the Executive.—The President, in moving the adoption of the report, remarked with regard to the general form of contract that different parts of the country had different modes of working, and consequently this matter would require careful consideration. They would try to embody the best parts of all suggestions into the general form. With regard to the reports on the state of trade, he thought it would be much better if these were made quarterly. Employers, if they needed men, could not know in what locality to go to get them.—Mr. Farquhar said they should try and remove all differences between builders and the smaller trades. They in Aberdeen were all federated, and he had urged upon his branch the desirability of having frequent interchange of opinions.—The President said there was a feeling in Glasgow that the different trades were about as big organisations as could be properly worked. Although these Associations were working independently as far as their own trades were concerned, he did not think it was from a feeling of jealousy that they were not joined together, but just from a feeling that each Association was quite big enough to work properly. He might point out that in Glasgow, having the Building Trades' Exchange, the building trades really acted in amalgamation. The Exchange included, not only members of the building trades, but also architects and measurers, manufacturers and merchants.—Mr. McGillivray, Glasgow, said the Exchange was of great benefit to all connected with the building trade in Glasgow.—Mr. D. R. Calder

Arbroath, remarked that they were met there as a Federation, and it seemed to him that Glasgow should stick to the Federation. The Building Exchange was a grand thing, no doubt, but they were desirous that the Federation should be a grander thing than the Exchange, for it was a national institution.—A draft of a general form of contract was submitted, and the clauses were gone over *seriatim*. Several alterations were made, and the matter was ultimately remitted to a Committee to further consider and bring up a report at next meeting. It was unanimously agreed, under the form to have a neutral arbiter appointed to decide any difference between architect and contractor, and to have a fixed system of settling accounts. In case of any department of work in course of execution being suspended in consequence of a strike on the part of the workmen or general lock-out connected with such department of work, it is provided that the period fixed for the completion of the work shall be extended by a further working period corresponding to the time during which the work had been delayed by the strike, and during such extended period a penalty shall not be exigible.—It was decided to hold the next meeting of the Federation in Glasgow. This was all the business, and the delegates were afterwards entertained at luncheon by the Dundee Builders' Association.

TECHNICAL EDUCATION AND THE BUILDING TRADES.—The Technical Education Board has decided to form a special sub-committee to inquire into the best method of developing technical education in connexion with the building trades. As the building trades embrace a considerable portion of the population of London, it is felt to be of special importance that all possible steps should be taken to extend the work of technical education among members of the trades, and to seek their advice and co-operation in the matter. The National Association of Operative Plasterers has shown its anxiety to work in conjunction with the Board in providing instruction for the younger members of the trade, and it is hoped that a class for plasterers at New Cross will be started before long upon the same lines as the class which has recently been inaugurated at Hammersmith. The children of members of the building trades achieve a marked success in the competition for the Board's junior county scholarships. As many as seventy-one out of the 600 scholarships awarded during last year, *ie.* 11.8 per cent, fell to the building trades; no other group of manual trades obtained more than thirty-one scholarships, or 5.2 per cent. The great majority of the parents or scholars are journeymen; this fact is due to the operation of the Board's income limit.—*Technical Education Gazette.*

EXETER CATHEDRAL.—Messrs. T. B. Worth & Co., photographers, send us specimens of the large and very fine collotypes of Exeter Cathedral, an exterior and an interior, which are among the best photographic illustrations of cathedrals that we have seen.

THE REGISTRATION OF PLUMBERS.—A deputation of representatives of the National Registration of Plumbers' movement from the principal towns of Scotland, including Edinburgh, Glasgow, Aberdeen, Dundee, Inverness, and Dumfries, waited on the Scottish members of Parliament in the House of Commons recently to urge them to use their influence to obtain the passing of the Bill for the Registration of Plumbers now before Parliament. Mr. Crawford, in introducing the deputation, said that the movement had caught on, that it was supported by public opinion and the trade, and that there was a great necessity for legislation of this kind which would enable the public to distinguish between qualified and unqualified men. Other speakers pointed out that the towns of Edinburgh and Glasgow had petitioned in favour of the Bill.

INTERNATIONAL CONGRESS ON TECHNICAL EDUCATION.—An International Congress on Technical Education will be held in London during the month of June. The Congress will be opened on June 15, and will close on Friday, June 18. The Congress has been invited by the Society of Arts to meet in this country, and the meetings will be held in the Society's large hall. The Congress will be opened at 11 a.m. on Tuesday, June 15, by an address from the President, the Duke of Devonshire, K.G., and from the President of the last Congress, M. le Professeur Leo Saignat. The subjects for discussion at the Congress will include—1. Advanced technical education, 2. Secondary technical education, 3. Advanced commercial education, 4. Secondary commercial education.

HOULEY'S ELECTRO-CHEMICAL FLUE AND STOVE CLEANER.—This is a wonderful firework, which generates a gas, charged with electricity, that decomposes the soot, destroy all combustible matter, and causes it to pass out with the draught, leaving the pipe both free and clean. All this for sixpence, and without the intervention of the sweep. The prospect is an alluring one, but, alas, the instrument proved to be a sort of large cartridge, containing a core of zinc, and a dilute sulphuric acid, crystalline mixture, in which sulphur largely predominated. When used as directed there was a good deal of fizz and splutter, but the mysterious gas "charged with electricity" ignored the soot most obstinately, and passed away, to add, doubtless, to the burdens of our ill-used atmosphere. As a sort of mild squib for use on Guy Fawkes' Day, or in the "jubilee" bonfires, the "Electro-Chemical Flue and

Stove Cleaner" may find its vocation, but it cannot be regarded as a serious means of dealing with the great soot problem.—*Chimney-sweeping as a profitable vocation has a long lease of life before it yet.*

A NEW TAP.—The Lambeth Brass and Iron Company send us a specimen of a gun metal tap containing some important improvements in regard to qualities of strength and endurance. There is a substantial square, working thread cut upon the spindle, and the cover is dropped to receive several worms of the thread when the valve is shut off, as the severe strain happens at its closing. The disc is made to revolve upon the spindle, and thus is not weakened at the connexion; and the asbestos disc is capped to prevent its spreading out and being cut through by the seating. The handle is of black buffalo-horn as a non-conductor of heat, and is attached to the spindle by a special mechanism invented by the manufacturers. The whole, except the handle, is of gun-metal, and appears to be a very strong and efficient tap. The inventors have distinguished it under the name of the "Unicus" tap.

GERMAN HORTICULTURAL BUILDINGS.—The new Botanical Gardens for Berlin are to be laid out in the suburb of Dahlem, and all the modern requirements have been most carefully considered. Some horticultural buildings which have been erected at the Botanical Gardens in Magdeburg, also call for attention, for though there is no doubt that England has long taken the lead in construction of this class of work, our neighbours, by dint of copying and improvement in detail, are making rapid progress. Magdeburg buildings are the subject of an illustrated article in the *Zeitschrift für Bauesen*, and from the particulars we observe that over 10,000,000 were expended on the block, which is very cleverly planned and picturesquely laid out. The Palm-house is the most important, and occupies the central position, and on either side there is a gallery for ferneries. There are separate wings for the different classes of flowers, each of which is kept in a separate gallery. Messrs. Peters & Jansen, of the Municipal Building Department, were the architects. At Berlin, besides the gardens and the new hothouses, there is to be a Botanical School and accommodation for a Pharmaceutical Institute, with 240 students. The public hothouses alone will cost 75,000, and the Botanical Museum 40,000. The principal hothouses will be divided into fourteen sections, covering a superficial area of nearly 6,000 square metres, while some special houses for purposes of scientific research will cover 1,700 square metres.

CAPITAL AND LABOUR.

THE LONDON BUILDING TRADE.—The Central Association of Master Builders of London on Tuesday received at their offices in Bedford-street, Strand, a deputation of representatives of the various societies of labourers when the questions of wages and a new code of working rules were discussed. It was agreed, it is stated, that from June 1 next the wages of labourers should be increased by 1/2d. per hour, and that the new code of working rules should come into operation from the same date.

STRIKE OF CARPENTERS AT DUDLEY.—A meeting of the carpenters and joiners on strike in Dudley and district was held recently at the Windmill Inn, Stafford-street. It was stated by the various speakers that the members of the Dudley Branch of the Amalgamated Society of Carpenters and Joiners gave three months' notice for an advance in wages of 1d. per hour, but the concession was not granted by the employers, and a strike was commenced on April 5. Prior to the decision to come out on strike the employers offered to advance the pay from 7d. to 7 1/2d. per hour, and eventually the men's deputation agreed to compromise the matter at 7 3/4d. to come into operation at once, but the masters declined to exceed their previous offer. Advances had taken place all round the district, the Wolverhampton rate now being 8 1/2d., West Bromwich 8 1/2d., Walsall 8 1/2d. It was suggested that pickets should be appointed to watch the works and the railway station. A resolution was unanimously carried to the effect that they still adhered to their demands of 8d. per day and the adoption of a new code of rules.

STRIKE OF BUILDERS' LABOURERS, WINCHESTER.—The strike of builders' labourers which took place recently has been settled, the men resuming work after receiving 1/2d. per hour advance.

STONEMASONS' WAGES, LANCASTER.—At a conference between master builders and representatives of the stonemasons at Lancaster it was decided to grant the latter an increase of wages at the rate of 1/2d. per hour. Some other concessions were granted. The employers gave notice of their demand six months ago.

LEGAL.

A DISTRICT COUNCIL AND ITS BY-LAWS.

IN the Queen's Bench Division, on the 1st inst., Mr. Justice Wright and Mr. Justice Bruce, sitting as a Divisional Court, had before them the case of the Wetherby District Council v. Hewling.

Mr. Scott Fox and Mr. Hobson appeared as counsel for the District Council, and Mr. Compton for Mr. Hewling.

Mr. Compton said that the case came before their Lordships on January 12 last upon a case stated by Magistrates, arising out of an information for the

COMPETITION, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITION.

Table with columns: Nature of Work, By whom Advertised, Premiums, Designs to be delivered.

CONTRACTS—Continued.

Table with columns: Nature of Work or Material, By whom Required, Forms of Tender, &c., Tenders to be delivered.

CONTRACTS.

Table with columns: Nature of Work or Materials, By whom Required, Forms of Tender, &c., Tenders to be delivered.

PUBLIC APPOINTMENTS.

Table with columns: Nature of Appointment, By whom Advertised, Salary, Applications to be in.

Those marked with an asterisk (*) are advertised in this Number. Competition, iv. Contracts, pp. iv. vi. viii. & xxi. Public Appointments, pp. xviii. & xxi.

alleged laying out of a new street within the district of the Wetherby District Council and contrary to its by-laws. The Court sent the case back to the Magistrates, directing that only so much of the information was retained as alleged the laying out of a new street. They further said that the Justices were bound by a former conviction if, after hearing counsel, they thought that former conviction involved the decision that this was the laying out of a new street, but if the former decision did not bind them the question was whether under all the circumstances of the case they thought, as a matter of fact, that the respondent when he began to execute a building plan which would, when finished, constitute the road a street. The matter again went before the Magistrates on February 4, both parties being represented by counsel, and after a very long hearing the Justices found that the former conviction did not involve the finding that this was a new street, and they saw no reason to alter their previous decision that it was not a new street. The learned counsel therefore asked that the appeal of the District Council should be dismissed with the usual costs. Mr. Scott Fox said that at the end of a long hearing the Magistrates expressly said they made no order as to costs. It was obvious that the case was one of complication in which the original hearing was not satisfactory, and it was necessary that there should be further investigation. He therefore asked, under the circumstances, that no order should be given against the District Council.

Mr. Justice Wright: We think the respondent is entitled to have the appeal dismissed with costs, but that he ought to have no costs of the rehearing below. Order accordingly.

ACTION BY CONTRACTORS IN THE QUEEN'S BENCH DIVISION.

THE case of Jones v. the Earl's Court Arcade, Limited, came before Mr. Justice Grantham and a common jury on the 20th ult., it being an action by Messrs. Walter Jones & Sons, engineers and contractors at Bow, to recover from the defendants 265l. 17s. 6d., the balance alleged to be due in respect of the building of a bridge at Earl's Court. The defendants, by their pleadings, admitted the claim to the extent of 137l. 48s., but they counter-claimed for 600l. penalties incurred in consequence of six weeks' delay in completing the work contracted for. Mr. Robson, Q.C., and Mr. Lynden Bell were

counsel for the plaintiffs, and Mr. Bucknill, Q.C., and Mr. Acland for the defendants.

The plaintiffs' case was that in November, 1895, Mr. Inure Kirairy wished a bridge to be constructed at Earl's Court, and asked the plaintiffs if they would tender for it. The bridge was to cross the Midland Railway Company's line, and it was to connect the Western Gardens with the Imperial Gardens. The plaintiffs were willing to do this; the price was to be 3,400l., and the work was to be completed by April 15, 1896. Owing to a variety of things the contract was not signed by the defendants until February 6, 1896, and then it transpired that the plans for the bridge were not accurate, and the bridge had to be altered in various ways, it being lengthened to the extent of 10ft. 10in. The plaintiffs did not get the amended plans of defendant's engineer until February 18, and the last tracings were not supplied until the 21st. Then, again, there was delay in the defendants' getting permission from the Midland Railway Company to cross their line, so that the plaintiffs could not commence work on the bridge until February 24, 1896. Subsequently to this the defendants required various alterations to be made in the construction of the bridge, and the plaintiffs contended that those various circumstances relieved them from the penalties imposed by the contract for delay in the completion of the work. It was added that what had happened rendered it impossible to complete the bridge in time, though the plaintiffs did their utmost to attain that object.

After hearing the evidence the learned Judge intimated that in his opinion the defendants could not recover in respect of the penalties.

A verdict was entered for the plaintiffs for 210l. and also for the plaintiffs upon a counter-claim for 280l. in respect of loss of rent for shops upon the bridge.

Judgment accordingly.

MEETINGS.

- FRIDAY, MAY 7. Institution of Junior Engineers.—Mr. L. G. Ferreira on "Electrical Railway Signalling." 8 p.m. SATURDAY, MAY 8. Royal Institution.—The Rev. J. P. Mahaffy on "The Greek Theatre according to Recent Discoveries."—II. 3 p.m. Edinburgh Architectural Association.—Visit to Hopewell House Policies.

MONDAY, MAY 10.

- Society of Arts (Cantor Lectures).—Mr. Lewis F. Day on "Design in Lettering."—II. 8 p.m. Surveyor's Institute.—Discussion on Mr. J. H. Redman's paper entitled "Some Legal Incidents of Tenancies of Urban Property, as Illustrated by Recent Decisions." 8 p.m.

TUESDAY, MAY 11.

- Society of Arts (Applied Art Section).—Mr. G. Clulow on "A Half Century of Line Engraving, 1820-1820." 8 p.m.

WEDNESDAY, MAY 12.

- Institute of Builders.—Annual Dinner, to be held at the "Troadero," Piccadilly Circus, W. 6 p.m. Carpenters' Company Lectures (Carpenters' Hall, London Wall).—Lectures on Carpentry and Joinery. Mr. Thomas Blashill on "Shoring." 8 p.m. Society of Arts.—Sir David Salmons on "Motor Traffic: Technical Considerations." 8 p.m. Edinburgh Architectural Association.—Annual General Meeting and Valeriotto Address by the President, Dr. Rowland Anderson. 8 p.m.

THURSDAY, MAY 13.

- Society of Antiquaries.—8.30 p.m. Society for the Encouragement of the Fine Arts.—Dr. Karl Leitner on "Some Aspects of Art." Institution of Electrical Engineers.—(1) Discussion on Mr. J. S. Raworth's paper on "The Generation of Electrical Energy for Tramways," (2) Mr. A. P. Trotter on "Disturbances of Submarine Cable Working by Electric Tramways." 8 p.m.

FRIDAY, MAY 14.

- Royal Institution.—Professor H. Dixon on "Explosion Flames." 9 p.m. Architects' Institute.—Annual Dinner, Hotel Cecil. 6.30 p.m.

SATURDAY, MAY 15.

- Royal Institution.—The Rev. J. P. Mahaffy on "The Greek Theatre according to Recent Discoveries."—III. 3 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

- 7,295.—DRAIN TESTS: J. W. Conding.—This invention consists in a tubular vessel of metal, glass, &c., closed at end by metal discs and a ball of indiarubber, drawn together by string, fitted with external spring of indiarubber, &c., said constituents being held in position by wire, and hermetically sealed in tinfall or other substance. Invention to be used thus:—Unwind string and lay vessel in trap, lay back the tin or wire, holding string while pouring pan of water into trap, which passes vessel into drain, when seal is broken and contents evacuated. 17,229.—SCREW ADAPTED FOR STONE, BRICKS, &c.: H. Schwartzenhauer.—In order to produce a screw which shall screw into stone, brick, &c., as readily as into wood, inventor provides on a screw bolt, as in the ordinary wood

deep threads, the ribs of which are of prismatic sec-
On the ribs are formed, by means of which the
edges are produced. At place where screw is to be
a hole is drilled, preferably with a stone drill,
screw is introduced into this it cuts its way.

BRIDGES FOR USE IN CORNERS, ANGLES,
By M. H. T. This invention consists in a brace,
a V-gulde, substantially right-angled, and mechanism
therein for driving a bit so arranged that the
of the handle may turn in a corner without
the face of the blade surface is used.

MATERIALS FOR FLOORS, PLASTERING, CELL-
WALLS, &c. O. K. VANNER—This invention consists
in the composition of a material called by inventor "Pep-
Pep" the composition of which is a general rule—1
part of chloride of magnesium, 20 per cent. paper or
residue, and 30 per cent. water. In the mixing, a
quantity of chloride of magnesium is placed in a
of oil and diluted with water after which solution is
with the paper or asbestos lathing.

DOOR HINGES: H. THUER—In order to insure
oil and permit lifting of the door, inventors
hinge hangers into two portions, and provides an
point of junction.

GLAZED BRICKS: W. D. CHIFF—Invention
consists in (a) glazed bricks, characterized by having, in
to the glaze on the face, a glaze about 1/2 in. to
to wide on the edges or sides of the bricks, and ends
the glazed face; and (b) in the manufacture: the
the first glazing, the face of the brick is colouring
then scraping body of adjoining edge, and after
ing face of brick for about 1/2 in. to 3/4 in. below
of the glaze bath, so as to leave a coating on sides
of the brick.

DOOR HINGES OR STOPS: E. A. HAUSER—
invention consists in the combination of a semicircular
a trough, a spiral spring, and a buffer of india-
rubber. The hinge, because of its weight, remains
ive under tension, located at a dead centre. But
the trough be depressed by a foot or other means,
spring immediately asserts itself, and brings the rubber
stiff the floor of the room.

NEW APPLICATIONS FOR LETTERS PATENT.
No. 9343, N. Simmons, Flushing Cisterns and
Waterworks, F. C. Whitaker & Co.,
for Bricks, &c.—9,924, A. Bouli, Cutting or Saw-
ing, &c.—9,924, D. Feulerischer, Corrugated Carton-
ing for Roofing.

No. 9423, J. Makinson, Pivoted Window Sashes,
No. 9424, O. Kabut, Construction of Plank Floors—10,021,
Tewitt, Apparatus for the Manufacture of Tiles—
10,022, G. Fisher, Catches or Fastenings for Sash
and Windows.

No. 10,147, T. Holford, Window Sash Fasteners,
No. 10,148, F. Marienfeld, Stoves and Fireplaces—10,149, A.
Johnson, Fireplaces—10,150, G. Askin, Gate Pastening
for Windows—10,151, J. Sisk, Brick for Building Purposes,
No. 10,152, H. Henderson, Fixing Slates.

PROVISIONAL SPECIFICATIONS ACCEPTED.
No. 72, W. Webb, Window Sash Cord Clip—8,828, J.
Bell, Jointing Collars for Earthenware and other
jointed Pipes or Conduits—8,837, J. Shanks, Water-
taps—8,903, C. Luce, Clamping Devices—9,075, J.
Garday, Wood-Cutting and Working Machinery.

OPEN TO OPPOSITION FOR TWO MONTHS.
No. 14, P. Davies, Water-closet Traps and Moulds con-
taining Sinks—13,577, H. Sutcliffe, Kitchen, Pantry,
or Wash-house—13,578, W. Macrae, Production of
various, Stained Glass or Imitations thereof—15,823,
Hatters and J. Radford, Cutter for Glazed Earthen-
ware—15,824, C. L. Fowler, Pack-overs, Stone-
grinding Machines—24,528, W. Cox, Chimney Covers.

RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

April 27—By C. C. & T. MOORE.
No. 41, Fair-st., 30 yrs., g.r. £600
No. 22, Fair-st., 22 yrs. g.r. £8. 0d.
No. 23, Fair-st., 37, 33, and 35, Chapman-rd.,
No. 70, 73, &c., 324. 500
By E. SIMPSON.
No. 146, Hollyday-rd., 76½ yrs., g.r.
No. 128, 128, 128, &c., 71 yrs., 280
No. 128, 128, &c., 71 yrs., 280
No. 128, 128, &c., 71 yrs., 280
By NEWBORN, EDWARDS, & SHEPARD.
No. 36, Thornhill-st., 41½ yrs., g.r. 7½
No. 15, Elm-st., 82 yrs., g.r. 12
No. 12, 12, &c., 82 yrs., g.r. 12
No. 21, 21, &c., 82 yrs., g.r. 12
No. 15, Elm-st., 82 yrs., g.r. 12
No. 12, 12, &c., 82 yrs., g.r. 12
By BEAN, BURNETT, & LEDRIDGE.
No. 10 (even), Bury-rd., 6½ yrs., 1,480
No. 75, 75, &c., 71 yrs., g.r. 12
No. 77, Church-st., 42 yrs., 350
No. 54, 42½, 42½, 42½, 42½, 42½, 42½, 42½,
No. 54, 42½, 42½, 42½, 42½, 42½, 42½, 42½,
No. 61A, Portland-rd., 62 yrs., 850
No. 25, 25, 25, &c., 72 yrs., 850
No. 25, 25, 25, &c., 72 yrs., 850
No. 25, 25, 25, &c., 72 yrs., 850
No. 25, 25, 25, &c., 72 yrs., 850
By J. H. HERRIS, of East Ham.
No. 14, 14, &c., 107 plots of building and
No. 14, 14, &c., 107 plots of building and
By J. W. TRUMBLE, of Mason's Hall
No. 14, 14, &c., 107 plots of building and
No. 14, 14, &c., 107 plots of building and
No. 14, 14, &c., 107 plots of building and

By C. M. STANFORD (at Manningtree).
Branharn, Essex.—A freehold farm, comprising
75 a. r. 10 p. 7. £530
Seven freehold cottage tenements 150
Laford, Essex.—A freehold cottage tenement 115
By J. ELLIS & SON.
Croydon.—Canterbury-rd., fig. 36½, reversion in
55 yrs. £1,000
Chesh.—Stadium-st., fig. 102, ul. 92 yrs., g.r. 7.
Hackney.—110 2½, Essex-st., g.r. 23½, 216.
By MATTHEWS & MATTHEWS.
Kenington—47, Emperor's Gate, f., g.r. 2,200
By WILLIAMS, SON, & WELCH (at Brighton).
Hove, Sussex—53, Lansdown-pl., f., 1,260
By BRACKETT & SONS (at Tunbridge Wells).
Tunbridge Wells, Kent.—High-st., fig. 84½,
reversion in 20 yrs. 7½
Upper Grosvenor-rd., fig. 85½, reversion in
68 yrs. 7½
Greenover-rd., fig. 100, reversion in 20 yrs. 3,400
320, Consolidated "B" stock 300
440, Consolidated "C" stock 700
500, 4½ per Cent Debentures 700
April 26—By WEATHERALL & GREEN.
Crouch End.—4, The Broadway, f., 120. 2,250
By NOKES & NOKES.
Kensish Town.—Willingham-ter., fig. 22, 10s.,
ul. 42½ yrs., g.r. 12. 380
Brecknock, Sec. fig. 42, 78, 78, ul. 42½ yrs.,
g.r. 5½. 350
Stoke Newington—17, King Henry's Walk, f.,
g.r. 30. 310
Hawell.—11, 12, 13, 14, 15, 16, 17, 18, 19, f.,
g.r. 54, 128. 600
By ORGILL, MARKS, & ORGILL.
Paddington.—London-st., "The Devon Hotel," f.,
g.r. 30. 4,050
Margate, Kent.—Zion-pl., "The Randolph Hotel";
Ethelbert-rd., "The Ethelbert" p-h., f., r.
2001. 4,490

Contractions used in these lists.—F.g.r. for freehold
ground-rent; l.g.r. for leasehold ground-rent; f. r. for
improved ground-rent; g.r. for ground-rent; r. for rent;
f. for freehold; c. for copyhold; l. for leasehold; p.e.r. for
estimated rental; u.t. for unexpired term; p.a. for per
annum yrs. for years; st. for street; rd. for road; sq.
square p.l. for piece; ter. for terrace; cres. for crescent;
yd. for yard, &c.

PRICES CURRENT OF MATERIALS.

Table with columns for TIMBER, METALS, and various materials like Iron-Pig, Sheet, English, etc.

TENDERS.

[Communications for insertion under this heading
should be addressed to "The Editor", and must reach us
not later than 10 a.m. on Thursdays. N. B.—We cannot
publish Tenders unless accompanied by the name and
address of the sender; and we cannot publish announce-
ments of Tenders accepted unless the amount of the Tender
is given, nor any list in which the lowest Tender is
shown, unless in some exceptional cases and for special
reasons.]

ADDITIONS TO PREMISES FOR THE ARCUS PRINTING COM-
PANY.—In reference to the list of tenders for the work, which
published in our last issue, it appears that the premises will
be situated in Temple-avenue, and not Tudor-street. We omitted
to state that the quantities were by Mr. Charles Robson, of
Lewisham.

ADDESTONE.—For laddings, &c., to Mountain Ash and 1.
Richmond Villas, Station-rd., for Mr. Clark, Mr. Albert Veness,
architect, Brighton-road, and 14 East Ham.
Rayne & Winckworth, Kingston—£295 Mountain Ash
Greenfield, Waybridge 426 Richmond Villa
368 Richmond Villa

BATH.—For the extension of electric light buildings, Ducher-
street, for the Corporation. Mr. R. Hammond, engineer. Mr.
J. W. Wilcox, architect. £1,750
Buck & Westall, Kingston—£1,750 Jacob Long & Sons £2,200
Stephen Ambrose 2,800 Hayward & Wooster 3,300
W. Webb 2,600

BATTEN (Plymouth).—For new factory for the South Coast Fish
Cure and Oil Company, limited. Mr. B. Priestley Shires, archi-
tect, Central Exchange, Plymouth.

BUILDINGS.

Coles £1,095
Wabham Bros. 947
Leadbright & Son 885
Goad & Co. 897

BELPER.—For the erection of shops, Derby-road, for the Park
Foundry Company. Mr. Maurice Huxley, engineer. Quantities
by engineer.—

General Contractor's Work, including glazing in roof, by
Messrs. Atkinson & Co.
H. Weldon £9,352 10 9
H. Jordan £6,590 0 0
Ford & Co. 9,145 0 0
Walker & Slater 5,055 0 0
W. Walker & Son 8,993 0 0
Groom & Co. 8,870 0 0
A. Hingley 8,218 0 0

BOVEY TRACEY (Devon).—For the erection of a dwelling house,
for Mr. J. B. Fuller. Mr. Samuel Street, architect, Newton
Abbey.

F. E. Tracey £2,000
H. Mills 873 10 0
R. Yebo 893 0 0

BRENTWOOD.—For the erection of a detached villa residence
at Brentwood, Messrs. Dale & Giddons, architects, & 1, 100
Court, Old Broad-street, E.C. 1.

House & Son £1,930
Rogers & Robinson 1,200

BROMLEY (Kent).—For the erection of cottages and shops at
Platteston for Sir Samuel Scott, Bart. Mr. A. J. Hardwick, architect,
14, Ravensbourne-road, Bromley, Kent. Quantities by Mr. W.
James Pamphilon, 22, Wellington-street, Strand, W.C. 1.

Wood £5,988
Smyth & Duncan 2,321
Crosley & Son 2,837

BUCKHURST HILL (Essex).—For the erection of two pair
semi-detached villa residences at Buckhurst Hill, Mr. Alfred
Gardner, architect. Quantities by Messrs. W. A. Water, 7, John-
street, Adelphi, W.C. 2.

C. E. F. Davies £6,840
Wells & Sons 4,985
W. H. Tavenor 4,752

BUNTON (Derbyshire).—For the erection of a residence,
"Maison Rouge" for Mr. Fred Smallman, Messrs. W. Sugden &
Sons, architects, Holey-staffs. Quantities by the architect—
Groom & Co., Ltd., Bakewell.

CHATHAM.—For Municipal Offices and Town Hall. Mr. G. E.
Rood, architect, Rochester. Quantities by the architect—

Richard Award £2,290
Walls & Sons 26,263
J. & M. Patrick 24,173

CHELMSFORD.—Accepted for the erection of a pair of villa
residences, Filkins Hill, for Mr. E. Smith, Chelmsford. Mr.
F. Whitmore, architect, 7, Duke-street, Chelmsford—

Hy. Potter, Chelmsford £450

DENTON.—For the erection of a residence on Manchester-road,
Mr. J. H. Burton, architect, 2, Guide-lane, Hooley-0.

T. Dear £2,000
E. H. Mearns 1,415
Fitton & Bowersness 920
J. Clayton 837

DEVONPORT.—For alterations, Granby Cellars, Granby Hall.
Mr. B. Priestley Shires, architect, Plymouth.—

Leadbright & Son £290
Coles 1,415
Stevenson 1,068
Wakeham Bros. 971

FARNHAM.—For the erection of casual wards for the Union
Guardians. Mr. S. Stapley, architect, West-street, Farnham.—

Building Co. £2,120
G. Simons £298
Gerrard 4,900

GRIMSBY.—For the construction of streets, Littlefield Estate,
for the Corporation and Enrolled Freeman. Mr. A. E. Skill, C. E.,
7, Macaulay-terrace, Great Grimsby.

G. Simons £298
Hevins & Goodhand 248 0 0

ILFORD.—New banking premises for the London and County
Banking Company, limited, Messrs. Cheston & Perkin, archi-
tects. Quantities by Mr. W. Conway Pegge—

Hammond & Son £8,848
Downing & Davis 6,600
Lawrence & Sons 6,561

INGHURTHOROUGH.—For erecting villa residence at 14th
Borough-road, for Mr. W. Shortland. Mr. H. Adair, architect,
Rushden.—

T. Taylor £1,420
A. Willmet 1,075
C. & C. Berrell 1,255

LONDON.—For alterations to No. 6, Warwick-street, Belgravia,
S.W. 8, for Mr. A. J. Palmer. Mr. A. Howard, surveyor, The Outer
Temple, Strand.—

Coleman Johnson & Co. £295
L. E. Smith 275

LONDON.—For erecting the Grand Jubilee Pavilion in St. Paul's
Churchyard, for Mr. S. N. Maskelyne. Mr. J. G. Buckle, architect,
Quantities supplied—

Coleman Johnson & Co. £4,023
W. G. Minter 3,881

LONDON.—Accepted for the erection of lavatories at Albion House, 325, City-road, for the Central Finsbury Liberal and Radical Club. J. Milton, Brixton.....£103 8

MALDON (Essex).—For the erection of two pairs of cottages, Heybridge Basin, for Mr. Cusney. Mr. P. M. Beaumont, architect, Maldon.— £200 Thomas Widding, Maldon* £200 Ernest West..... £200 * Accepted for one pair of cottages for £200.

MIDDLESBROUGH.—For additions, &c., to shop premises, Albert-road, for Mr. Holness. Mr. W. G. Roberts, architect, 61, Albert-road, Middlesbrough:—

Table with columns for contractor names and amounts. Includes entries for Hudson Bros., Perks & Son, Allison Bros., Baker Bros., Lambert & Son, and Walton & Gartwalte.

PENRITH.—For the construction of sewerage works, Threlfold, for the Rural District Council of Penrith. Mr. C. A. Sandford Fawcett, engineer, 1, Victoria-street, Westminster:— J. Graham, Lazonby, N.S.O., Cumberland.....£487

PLYMOUTH.—For re-building the "North Ark," Inn, Salish-street, Mr. B. F. Shires, architect, Central Exchange, Plymouth:— Jno. Goad & Co.....£2,800 Andrews.....£4,100 Laphone & Co.....£4,700 Blake.....£4,980 Trevena.....£4,241 Kerwill.....£3,985 Palmer.....£4,120 Cole, A. N., Stonehouse* £3,795 * Freeman accepted. £500 Extra decorative work.....£500

PURLEY.—For the erection of a detached villa residence and billiard-room at Purley, Messrs. Dale & Gaddson, architects, 8, Union-court, Old Broad-street, E.C.4.— Cultit & Co.....£5,850 Marriage.....£5,975 Hoare & Sons.....£5,334 Walls.....£4,925 West.....£5,334 Bullock & Co.....£4,884 * Accepted.

REDRUTH.—For the erection of Laboratory, &c., for the Committee of the Science and Art Schools, Mr. S. Hill, architect, Redruth:—

Table with columns for contractor names and amounts. Includes entries for W. H. Gray, R. Jacob, E. Salter, J. Roberts, and T. Willoughby.

REDRUTH.—For the erection of the first section of the Infirmary buildings at the workhouse, for the Union Guardians. Mr. Sampson Hill, architect, Redruth. Quantities by architect:— Moyle & Mitchell.....£2,847 0 0 Ope & Hodge, Red. Jno. Odgers.....£2,924 0 0 sub (accepted) £2,656 0 0 A. Cusick.....£2,793 0 0 White & Thomas.....£2,598 0 0 Ope & Roberts.....£2,598 0 0 Crowan (withdrawn) 2,456 rs 8 [Architect's estimate, £2,600]

STONEHOUSE (Plymouth).—Accepted for housing seven 30-gallon spout vats and twelve 50-gallon spout vats, wine bins, office, &c., at the West India House. Mr. B. Prestley Shires, architect, Central Exchange, Plymouth:— Jno. Goad & Co., Plymouth.....£146

STRATFORD.—For new business premises, Stratford Broadway, for Mr. G. H. Leavey. Mr. George E. Bond, architect, Redcote:— Fearnley & Farrow.....£3,168 C. E. Skinner.....£5,950 Perry & Co.....£2,207 H. L. Holloway, Deptford* 6,950 * Accepted.

TUNBRIDGE WELLS.—For the erection of swimming and slipper baths, for the Corporation. Mr. T. E. W. Mellor, C.E., Town Hall, Tunbridge Wells. Quantities by Mr. G. Norroo, Tunbridge Wells:— Davis & Leamy.....£2,447 Longley & Co., Crawley* 7,985 Award.....£2,625 * Accepted.

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SWILLAND near IPSWICH.—Accepted for rebuilding the tower, Swilland Church. Mr. J. S. Corder, architect, Tower-street, Ipswich:— English, Coddanham.....£270

TONBRIDGE (Kent).—For the execution of street works, Barden and North-cote-roads, &c., for the Urban District Council. Mr. W. L. Bradley, engineer, 83, High-street, Tonbridge:—

Table with columns for contractor names and amounts. Includes entries for R. Langridge, C. Brothwood, and R. Langridge.

WAKEFIELD.—For the erection of dwelling house, Stanley road, for Mr. David Stephenson, Jun. Mr. W. Wildge, architect, 10, Wood-street, Wakefield. Quantities by architect:— Westgate Common, Wakefield.....£175 0 0 Slating—J. Hingworth, Bank-street.....17 17 6 Plastering—T. C. Fattersall, Trinity Church Gates.....23 14 8 Tiling—J. Lacey, Eastmoor, Wakefield.....72 17 0 Plumbing and Gasfitting—F. E. Mosley, Northgate.....47 0 0 Painting—B. Hayner & Son, Southgate.....5 0 0 £241 9 2

WITHAM (Essex).—For the erection of an infirmary at South Metropolitan District School, for the managers. Mr. F. Whitmore, architect, Chelmsford. Quantities by Mr. J. L. Parmenter, Ipswich:— Everett & Son.....£3,975 Geo. Gilwood & Sons.....£3,737 Sims Parmenter.....3,974 Frost West, Chelms. Robt. Gilling.....3,842 Ford* 3,700 J. B. Smith & Sons.....3,792 * Accepted.

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ILLUSTRATIONS.

Presbyterian College, Cambridge.—Mr. H. T. Hare, A.R.I.B.A., Architect	Extra Large Page Photo-Litho.
Sculpture for the Town Hall, Oxford; "Industry" and "Sloth"—Mr. F. E. E. Scheuck, Sculptor.....	Two Single-Page Ink-Photos.
New Bonded Stores, Vauxhall.—Mr. A. F. Vigers, Architect	Single-Page Photo-Litho.
French Protestant School, London.—Mr. Aston Webb, F.R.I.B.A., Architect.....	Single-Page Photo-Litho.
J.P. Church, St. Vincent street, Glasgow (Alexander Thomson Travelling Studentship Drawings).—By Mr. G. A. Paterson	Two Single-Page Photo-Lithos.

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The Workmen's Compensation Bill.



E have already briefly noted the cardinal principle of this Bill, but we must revert to it again before considering some of its more important details. What is the leading principle of English law by reason of which one man is entitled to recover damages from another if the former has been injured? It is that the person who has caused the injury has been guilty of some act of negligence: in other words, a man is not liable to pay damages in respect of what is popularly called an "accident," that is to say, an injury not caused by negligence. In the first instance this principle was confined within narrow limits: it has since been extended so that if the servant of A is guilty of a negligent act, A has to pay damages. What has been a constant defence to such actions for personal injuries is, that the injured person has been guilty of "contributory negligence"; that is to say, has himself helped, so to speak, to bring about the act causing the injury. Another well-known defence has also been recognised, that the injury was caused by the act of a fellow servant, and that, consequently, by reason of what is known as the doctrine of "common employment," the injured person could not recover damages from his employer. There is said to be an implied understanding, which is a pure legal fiction, that when a workman enters on some kind of employment, he takes the risk of injury from his fellow workmen. It is this legal doctrine which has for some time past been in a tottering state.

What is the change of principle to be produced by the Bill recently introduced by the Home Secretary? It is that an employer is to be liable for all injuries received by a workman in the course of his work, whether these injuries have been caused with or without negligence on the part of the person who has caused them, and with or without contributory negligence on the part of the workman. If this Bill becomes law a workman will not in the future have to show that there is evidence of negligence, he will simply have to show that he has been injured. This is

a most important change, and one exceedingly favourable to the working classes. Nor do we think that the extension of the employer's liability to cases of pure accident is likely to be injurious to masters. The doctrine of "common employment" was doomed. It will add but little to the employer's financial liability if he has also to pay compensation for pure accident. It is the public who is really the body upon whom the cost of these liabilities falls. Any extra expense in the nature of insurance premiums which an employer may have to pay, whether he insures with a third party or whether he has an insurance fund of his own, must ultimately be borne by the public, that is by the buyer, in the shape of some increased cost in the article or work done.

On the other hand, a great mass of litigation, necessarily on the whole costly, both to employer and workman, has been caused by the necessity of proving negligence in order to obtain compensation. This litigation will now be unnecessary, and in the aggregate the saving of legal costs will go far to pay insurance premiums. It has been said that the Bill does not touch the doctrine of common employment. It does not in so many words, but when it makes an employer liable for any injury caused to a workman, it abolishes it in principle.

But it must be borne in mind that the action of this Bill is confined to certain trades. It is only a limited Bill, it applies "only to employment on, in, or about a railway, factory, mine, quarry, or engineering work." To the readers of the *Builder*, the words "engineering work" are of the utmost importance—what is their definition? It is to be found in Sec. 2, Sub-Sec. 2. It "means any work of construction of a railroad, harbour, dock, canal, or sewer, and includes any building or other work in which machinery driven by steam, water, or other mechanical power is used for the purpose of the construction thereof." It is obvious that this definition must give rise to considerable debate in Parliament, and we think it will have to be made wider. For example, as it at present stands it would appear that if a house is being built and a steam crane is used for raising materials, a workman employed on the spot would be within the Act; if, on the other hand, there is no steam crane, but one worked by manual power, then the workman will not be within the Act. Is it statesmanlike to bring in a

measure which is, in this respect, so obviously one which cannot be at all a final measure, and in regard to which there will be continual agitation? We do not believe it is. If there is to be this wide change in the law, it should be made applicable to all trades in which there is the smallest risk—as shown by experience—to life or limb.

It is next desirable to refer to the question of compensation. In the first place it is to be noted that an employer is not to be liable unless a workman is disabled for at least two weeks from earning full wages. If he has satisfied this condition, then he becomes entitled to a weekly payment during incapacity, not exceeding 50 per cent. of his weekly earnings, such weekly payment not to exceed 1*l*. In other words, the workman receives not a lump sum as is now the case, but a weekly pension. There is a good deal to be said on this point. One objection to it appears to be that it may cause in the aggregate a considerable trouble to employers in case of removal, illness, and so forth, and we are inclined to think that it might be desirable to add some machinery for capitalising these weekly sums, under proper safeguards. The question also arises whether the Bill refers sufficiently clearly to cases where a man may be so injured as to be unable to follow his ordinary occupation, but is yet capable of earning a small weekly wage. For the words of the Bill are "in case of incapacity for work," a phrase which appears to refer only to total incapacity. If the amount of the pension cannot be agreed upon between the employer and workman, then it must be referred to arbitration.

We must now come to the case of the death of a workman; if he leaves dependents the amount of compensation shall be "a sum equal to the earnings during the three years next preceding the injury, or the sum of 150*l*., whichever of those sums is the larger, but not exceeding in any case 300*l*." We fail to see any reason for the introduction of the sum of 150*l*. The aggregate of three years' wages seems a reasonable solution of the point, and if this sum does not reach 150*l*., why increase it to this amount? If, however, a workman leaves no dependents, all that the employer has to pay is "the reasonable expenses of his medical attendance and burial, not exceeding 10*l*." No Bill or Act is ever without ambiguity, and it is doubtful, according to the phraseology, whether the 10*l*. is limited to the expenses

of burial only. We presume that is the intention. The particular sub-section appears to suggest that all employers should be anxious to have unmarried workmen, especially if they are also orphans. But it is not—as it stands—quite a satisfactory section. If a man dies after lying ill for three weeks, is nothing to be paid for nursing and lodging, or is he to receive his £1 a week in respect of this time? More clearness is required on this point.

It is sufficient to add to what has already been said in regard to this question of compensation, that there is to be no litigation in the ordinary sense. Differences are to be referred to a committee of employers and workmen, if such committee exists capable of settling such disputes. If either party objects or there is no such committee, the parties may agree on a single arbitrator, and in default of such agreement the case may be settled by a County Court Judge or by a person nominated by him. Here, again, the question arises whether expense and delay would not be saved if a local arbitrator for particular trades were appointed for special districts by each County Court Judge.

We have, in conclusion, only to remark that a workman may contract himself out of this Act if the Registrar of Friendly Societies certifies that the scheme of compensation agreed on by the master and workmen is not less favourable to the workmen than that under the provisions of the Act, which, it may be well to add, does not take away the injured workman's legal right to bring an action in case of negligence against an employer, though he may not proceed both under the Act and in the Law Courts. But if workmen are to be given in the future the great advantage of compensation for all injuries, whether caused by negligence or not, should they be allowed to harass masters by actions in the Law Courts? If this Act is passed in its present form a workman may, in the case of an injury caused without negligence, obtain compensation under the Act. He may, on another occasion, if he again receives an injury, but this time through the negligence, say, of his employer's foreman, sue his master in a law court. It would be to the advantage of all parties to take away the workman's right to proceed to litigation in return for the benefit of compensation for accident without negligence, and where he himself has contributed, by his own want of care, to the injury.

PICTURES AT THE PARIS SALONS.



As has been before observed in our columns, this is the last year that the Old Salon will be held in the building which it has occupied for so many years; and as a portion of the Palais de l'Industrie is already in process of demolition, the exhibition this year, the pictorial portion of it at least, is confined within narrower limits than before, and the number of pictures proportionately reduced. One might have expected to find, accordingly, that the standard of work would be proportionately higher than usual, but unfortunately the reverse is the case; as far as paintings are concerned it is the worst Salon for a good many years back, and this appears to be the general opinion in Paris itself. One hardly knows what French painting is coming to, when one contemplates not only the number of commonplace paintings which, though respectably good, are of little in-

terest, but also the alarming number of those which are positively bad and vulgar, and which one wonders that any jury of artists could consent to hang. The New Salon is better; the proportion of interesting works is larger, and there is nothing so violently bad as some of those at the Old Salon; but the sad reflection of Parisian critics is that so many of the best pictures there are by foreign artists.

Still, among the best pictures of the year we do find something beyond what we can see in England. Such figure painting as we see in M. Gervais' "Titania and Bottom," such a combination of learned drawing and splendid colouring of the nude figure, is not to be found out of France at present. The drawback to it is that it is entirely out of keeping with the feeling of Shakspeare's poetic play; the figures are not fairies, the scene in no way belongs to the Midsummer Night's Dream; it is the perfection of execution without the imaginative faculty. On the other hand, M. Henri Martin, in "Vers l'Abime," has carried his fancy past the region of the imaginative into that of the grotesque: a motley crowd of scraggy-looking figures, all mixed up in a kind of "hash" together, stumble and slide down a bare desert hill after a sinister figure in diaphanous black drapery who probably personifies Vice, and in that light is a striking conception enough, but the effect of the whole is rather ludicrous than impressive, and for M. Martin the picture is on the whole a catastrophe.

Among the figure pictures which are completely successful in action, drawing, and composition nothing takes a higher place than M^{me}. Demont-Breton's "A l'Eau," a sturdy half-clad peasant woman carrying one child and dragging along another resisting urchin by the hand towards the sea-margin; a painting of truly masculine power and energy, totally without sentiment, which impresses one at once both with its power of drawing and of the representation of action, and the consummate skill shown in the composition of the group. After Rosa Bonheur, M^{me}. Demont-Breton is certainly the first lady artist of the day, and in fact cannot be grouped with lady artists; she takes her place quite irrespective of any question of sex. There is in fact far more of feminine character in M. Bouguereau's sentimental picture entitled "Compassion," a figure of Christ on the Cross grouped with another figure of a man who places his head with an expression of love and sympathy against the body of the crucified figure; there is a good deal of pathos in the head, but somehow the picture strikes one as theatrical in conception and not prompted by genuine feeling; it draws a great deal of attention from the crowd, which is probably the kind of success which the painter aimed at.

As usual, decorative paintings on a large scale are tolerably frequent, and remind one of the great advantages which French artists enjoy in living under a Government which gives them commissions and opportunities of this kind. But we do not find any such striking works in this category as we have seen in some previous years. Curiously enough, by far the most successful is in the shape of that usually doubtful kind of production a decorative landscape, "Le Lauraguais," by M. Jean Paul Laurens. This is a remarkable painting of a hilly undulating pastoral landscape, with oxen ploughing near

the foreground; it may be called "decorative" only in the sense that it is painted in a rather hard conventional manner, with little attempt at atmospheric effect, and one result of this is that the middle distance hill, rising like a great billow in the middle of the picture, does not seem to recede sufficiently from the foreground, and has too flat and upright effect; but for all that there is a grandeur of style and design about the work which takes it quite out of the ordinary category of decorative landscape, and it is one of the most powerful things of the year, and we may again observe, one of a kind of paintings which are not to be had in this country. M. Arus has attempted a decorative view of a town, an immense long canvas, only decorative in the sense of presenting a flat fresco-like style in light colours; it is a panoramic view of the town of Alfortville, and is intended to decorate the Mairie of the same place; but what is the value, in any sense, of a flat imitation on the walls of the Mairie of the town which can be seen outside, it is difficult to understand. Among the figure pictures intended as decoration the largest and most ambitious is M. Ehrmann's "La Renaissance," intended for execution as a tapestry at the Gobelins, for the decoration of the Salle de Mazarin at the Bibliothèque Nationale; a "robustious" kind of work with a number of portrait figures of Renaissance artists in the foreground, and some stout and solid allegorical female figures enthroned or floating in the rear; the Château of Chambord appears on the right of the composition. Its destination as a cartoon for tapestry may account for a rather forced scheme of colour, and no doubt it would look better in tapestry than in painting, but it is on the whole a huge piece of commonplace. M. Marioton exhibits a ceiling painting, "L'Art Évoquant la Beauté," one of the ceiling pictures with an upward perspective: "Art" bestriding a white horse seen foreshortened and with its heels kicking out of the picture; but it has the merit of being a real ceiling painting, and would look better in its proper position than it does on the wall. One requirement in a ceiling picture is that it should not have any distinctly "this-side-up" quality in the composition, otherwise the spectator is puzzled as to how to look at it; hence floating or flying figures are more in place than standing ones; this at least M. Marioton clearly recognises. M. Roussel's "Maternité," a picture for the decoration of the Salle de Mariage of the Mairie at Charenton, is a pretty and pleasing family group with a decorative border of ornament.

As usual, the Salon includes a certain proportion of those large ceremonial pictures which are commissioned by the Government as records of important events or ceremonies. M. Detaille has been laid hold of for one of these works, the funeral ceremony of Pasteur, with the President in the centre receiving the cortège, and he has made as much of it, perhaps, as can well be made of such a subject. M. Béroud has a large work representing the visit of the Russian Emperor to Napoleon's tomb in the Invalides, which, if not "commandé," is evidently a bid for a State order; and M. Brouillet has painted the scene of the reception of the same monarch at the French Academy, which is interesting for the portraits it includes, and also as showing the interior of a rather celebrated

room. But these are rather works of business than art.

M. Gerôme has not added to his great reputation much by his picture of Christ's entry into Jerusalem, a scene without the walls of the city, showing a crowd coming out to meet the Saviour, and the path laid with clothes and branches as described in the Bible. It gives the old subject from a new point of view, perhaps, a new *mise-en-scène* one may say, but after all the most striking figures in the picture are the white ass and the foal, and one has rather the idea that it was painted for the sake of these. His other picture is also a Biblical one, the "Flight into Egypt," a moonlight scene in the desert, with the well-known group limply discerned in the foreground. M. Bonnat's principal work is a painting, rather hard, of an eagle preying on a hare; it is not an interesting work. M. Raphaël Collin again is disappointing, his "Biblis" being a very ordinary small nude study.

The State, in its purchases, seems to lean towards subject pictures, or, if landscapes, those of the topographical order, giving an accurate representation of some foreign place. Among the figure pictures officially purchased is a rather interesting and unusual one by M. Buland, "Devant les Reliques," showing a family of bourgeois persons kneeling with an expression of unintelligent but sincere devotion before an altar with a reliquary on it; there is a good deal of character in this, which is an odd picture to see purchased by a Government so little religious, or so anti-religious, as that of France at present; still more oddly, another State purchase is M. Henri Royer's "Communiantes." Is this a policy of conciliating the Church? Among other figure subjects M. Henner sends the eternal half-length woman with sad eyes, rusty hair, and red drapery; and the late M. Benner is represented by one of his nymph pictures, "Sous les Ombres"; not one of his best. Mr. Harcourt's picture of the leper's wife insisting on accompanying her husband in his exile, which was exhibited in London either at the Academy or the New Gallery, we forget which, is here, and holds its place very well by the side of many French subject pictures that seem more sensational but less sincere.

The portrait of the year is the large one by M. Benjamin-Constant of the Duc d'Aumale seated on a bench in a park amid warmly-lighted foliage, a portrait rather melancholy in itself, and which has become more so from the recent circumstances of the unexpected death of the subject of it. There seems something unsatisfactory in the pose of the head, but in the main it is a fine picture and worthy of the painter. Generally speaking, portraits are not very strong this year. M. Glaise has a half-length of M. Saint-Saëns, hard, realistic, and effective in a way, but not conveying any expression of genius. M. Bonnat exhibits a forcibly painted realistic head of a well-known member of the French Academy, whose physiognomy is certainly the reverse of attractive. Two portraits of ladies by M. Baschet are exceedingly pretty—that is the word. M. Lefebvre's portrait of the "Comte B. de C—" is a costume portrait of the first force, showing the gentleman in a long frockcoat and furred overcoat, standing in a super-magnificent attitude, with an ornamental walking-cane in his hand; the same artist has a very highly-finished portrait of a lady in a splendid costume; but in

each case the head is hardly painted and deficient in the appearance of life. One of the more pleasing portraits is a rather *déjà-gé* one by M. Amas of a young man seated sideways before an easel; the hands very carefully studied. M. Benjamin-Constant has another portrait, that of M. Chauchard, a strongly painted realistic work with a curious treatment of the profuse grey beard which is not satisfactory. There are other portraits, of ladies chiefly, of considerable merit and interest, but hardly to be called remarkable.

In pure landscape painting there is hardly any work so noticeable as the decorative landscape by M. Laurens before referred to; there are however a certain number of good landscapes, and a few of special excellence. M. Harpignies has nothing so remarkable or ambitious as his great landscape on the Loire last year (which however was very dead in colour in spite of its grand design), but one of his two small landscapes, "Solitude," has a grand quality both of design and colour, and somehow looks like an "old master." The landscape with most individuality and most carefully worked out is M. Quignon's "Pommiers en Fleurs," one of those foreground landscapes in which he excels, most simple in subject, a mere lane and trees between two fields, but quite perfect as a representation of nature; all the detail fully indicated without losing breadth. Another with the same kind of merit in a lesser degree is M. Armand Guéry's "Les Coquelicots," a flat meadow with a gay foreground of poppies, and little bit of distance. With the exception of Harpignies, the French seem to be strongest in landscapes the less subject they have; when they get a fine scene with water and hills they seem, in the Salon examples at least, to trust more to the quality of the scene itself than the treatment of it. Mr. Smith-Lewis, a native of the United States and now a painter more French, so to speak, than a Frenchman, has one of his huge pictures of cattle, life size, driven into a pool by a Brittany peasant woman; this is really a capital cattle picture, but it is impossible to imagine who buys pictures of such subjects on this immense scale. Sea painting is no better than usual; one or two of the *marines* exhibited are perfectly ridiculous; and even M. Tattegrain, a painter of exceptional ability and who can paint smooth seas very well, fails in his large and ambitious picture "Sauvetage en plein mer;" he has got the look of the movement and run of the sea before a gale, but not the forms of sea waves; the whole thing is unreal.

There are, as usual, some first-rate still life pictures, a branch of art in which the French surpass every one else. One of the most notable is a figure picture in which the interest nevertheless is mainly in the realistic painting of the accessories, "La Ménagère," by M. Joseph Bail, a woman in a red bodice filling pickle jars; it is much too large, but in the brilliancy of execution of detail it is almost like an old Dutch picture magnified.

Passing over the sculpture for the present, and turning to the New Salon, we first have to lament the absence of M. Puvis de Chavannes, whose grand decorative pictures have been features in this Salon ever since it was started. Other decorative paintings there are, but not of this calibre. In the staircase hall hangs M. Victor Prouvé's "La Vie," for the staircase of the Mairie at Issy-les-Moulineaux, a long landscape with a group of lovers and dancing peasant girls

on the right, the story continued through the family group in the centre to that where the lovers appear as grand-parents on the left; the colour is warm though subdued; the picture decorative in effect but with human interest. Similar efforts at decorative painting of real life are to be found in the gallery, but they are not successful in proportion to the space they occupy. In the way of allegorical decoration M. Dubufe has a large picture for the Sorbonne Library, with the motto "Et Scientia quoque poesis erit," with the usual people seated on clouds, but it is not very attractive, and moreover is unintelligible without the explanation appended. M. Lerolle's "Douce Journée" is a satisfactory and very pleasing effort at decorative landscape, with a definite attempt at combining artificial line with natural effect; the landscape, with its dark purple hills, lake, and lawn foreground, running mainly into horizontal lines, the tall tree stems forming vertical lines cutting across them, except in the centre, where a little open space is partially emphasised by the three seated figures on grass. Though not powerful, this is a work that is successful in its aim and pleasant to the eye. M. Gervex contributes the largest painting in the exhibition, another of those "Commandé par l'État," showing the distribution of awards at the Paris Exhibition of 1889; an illustration that comes rather late in the day, but which no doubt occupied a long time in painting, if only from the mere labour of covering such an expanse of canvas. It is reasonable enough that a Government should employ its leading artists to commemorate important events in this manner; but, as before observed, this is business and not pleasure, either to the spectator or (one may suppose) to the artist, except in a financial light.

Speaking generally, there are a larger proportion of works that are worth attention at the New Salon than at the Old, but none so good as the best at the Old Salon. There is a considerable amount of work which represents special ideas, special experiments in painting, whether in subject or treatment; sometimes far too experimental, at other times of considerable interest. It must be admitted, however, that some of the experiments have been seen for two or three successive years under different names, as in the pictures of M. Gandara, M. La Touche, and M. Carrière. The latter last year painted a theatre scene as if looked at through a mist, a ghost of a picture rather than a real one; he now takes the Crucifixion as a vehicle for the same treatment. There is a certain heartlessness and want of reverence about thus laying hold on such a subject merely for an experiment in effect. M. La Touche, like M. Henri Martin, has carried to exaggeration what was at first really an original style in regard to colour and conception of subjects half decorative, half symbolical. His colour is still fine, but his subjects verge on absurdity.

M. Carolus Duran, as usual, has a series of works at the New Salon, and if his portraits of Parisian ladies in rich costumes are not this year quite as brilliant and remarkable as on some previous occasions, he nevertheless shows an extraordinary versatility of powers, his contributions including portraits, landscape, and still-life. The two landscapes, although small and rather slight in execution, are very beautiful and true in effect. M. Besnard's portraits, though rather eccentric in style and treatment, are original and

effective. The exhibition includes some very charming landscapes, among them Mr. H. V. B. Davis's Academy picture of last year, which is well hung and evidently much appreciated; yet one cannot help feeling that it wants breadth and freedom of style in comparison with some of the best of the French landscapes in the gallery, such as M. Courtens' "Derniers Rayons," for instance, and some others. The New Salon contains also a good many groups of small and delicate landscape paintings, such as those of M. René Billotte, M. Jettel, and others, which find a chance to be seen and appreciated here, but which would be completely killed amid the crowded and much larger works in the Old Salon. Among what may be called the experiments are the various eccentric but clever works of M. Picard, who has a perception of the poetry of colour, at all events; and the curious studies of heads and figures in a flat conventional manner, by M. Botkine, a Russian who has struck out a new fancy in paintings which look rather as if intended to be copied in needlework; but they are certainly clever. A special room is assigned to an exhibition of the drawings and illustrative designs of M. Boutet de Monvel, which are full of clever design and delicate or humorous fancy; this collection should not be overlooked amid the larger and more prominent paintings which form the bulk of the exhibition.

NOTES.

The Proposed Chelsea Embankment. THE fact that the Select Committee of the House of Commons have thrown out the first proposal in the London County Council Improvements Bill, to extend the Chelsea Embankment and widen Cheyne Walk, comes rather as a surprise, and will no doubt be a gratification to those architects and artists who have opposed the scheme on the ground that it would destroy the picturesque character of Chelsea Reach. No one, we imagine, will suppose that we are indifferent to questions of picturesqueness, and we sympathise very much in one sense with the feelings of those who opposed the proposal; but we are by no means convinced that they are in the right. In spite of recent improvements in the state of the Thames, we cannot conceive that a low-water foreshore in the tidal portion of the Thames can be otherwise than a place of deposit of unwholesome matter. It is enough to remark the smell which comes from the water in Chelsea Reach when churned up by the paddles of the steamers* to come to Ben Jonson's conclusion—

"All is not sweet, all is not sound."

We have no doubt that if the first portion of the Thames Embankment were still unmade, and the Bill brought in for it now, there would be many persons ready to lament the destruction of the picturesqueness of the old foreshore; yet the Thames Embankment is undoubtedly the greatest London improvement of the century. We are inclined to think that the Embankment will eventually be carried past Chelsea, in spite of the present check, and that it will be better that it should be.

* We had occasion to notice this not very long since, in going up the river in one of the steamers, at a point opposite Chelsea, where the smell from the water was almost unbearable.

The Château of Chantilly. By the death of the Duc d'Aumale the Château of Chantilly in its entirety—

woods, lawns, waters, buildings and all which they contain, a collection of paintings, trophies, books, artistic objects of all kinds,—becomes the property of the Institute of France. The terms of the donation are that nothing shall be altered or modified in the exterior or interior architecture of the Château, in the Pavillon d'Enghien and the Pavillon de Sylvie, in the tennis court or in the three little chapels. The whole estate is to be preserved in its present form and to be accessible to the public during two days in the week, as well as the collections of works of art. It is indeed a splendid gift to have left to a nation.

Bronze Charioter from Delphi. THE latest issue of "Archæologischer Anzeiger" contains a prototype—indifferent in quality, but still most welcome—of the great "find" of last year at Delphi—the bronze statue of the charioteer. The statue, it will be remembered, was discovered last May,

to the north of the Sacred Way, between the Temple of Apollo and the theatre, and though only fragmentary is in parts in better preservation than any other bronze statue that remains to us. It belongs, moreover, to a period of special interest, *i.e.*, that immediately after the Persian war—just before the period of perfect maturity. The statue was at first connected with Hiero, tyrant of Syracuse, and on the basis which almost certainly belongs to it stands the name of Polyzalos, brother of Hiero, but as this name obviously is inscribed over some other previously erased, the question is still unsettled. Anyhow, we must give up the idea that the statue is a portrait of either Hiero or his brother; to represent a great tyrant as his own charioteer would not have been consonant with Greek convention. Happily this does not diminish the great artistic beauty of the work, which, seen even in a poor prototype, is impressive, both by its wonderful dignity and simplicity, and also by a softness and charm that is enhanced by the long drapery of the charioteer. Most people at first glance would take the statue to represent a woman.

Drawings Exhibited by the Architectural Association. THE small collection of drawings exhibited at 9, Conduit-street in connexion with the Jubilee celebration of the Architectural Association, and arranged in approximately chronological order, is of considerable interest. Among the earliest are Allom's brilliant sepia-tinted competition drawings for the Manchester Town Hall. Near these is one of Mr. Street's pen drawings of a portion of a church, with wide masses of buttress. Under date 1850-60 are some beautiful sketches by Mr. Waterhouse, on tinted paper, a water-colour by Mr. Seddon of part of St. Mark's, and Burges's extraordinary sketch for a fountain, a thing of defiant originality both in design and execution. Under 1860-70 are a good many small drawings by Mr. Tarver, and Mr. Florence's fine elevation of a gold medal design, tinted in the French manner. Under 1870-80 we have early drawings by Mr. Aston Webb, Mr. Baggallay, and Mr. Marvin. In the next decade we

see a considerably greater tendency towards the use of pencil drawing, and an increase in delicacy in the use of it, as shown in drawing by Mr. Horsley and Mr. Needham Wilson. Mr. Pitt's elevation of "El Dorado," and Mr. Brewer's grand composition called "Deserted" are also among this set. In the tea-room are still later drawings, including, among others, Cathedral and Abbey drawing (*Builder* series) by Mr. Mitchell, Mr. Beggs, Mr. Bidlake, and Mr. MacLaren, water-colour drawings of a pulpit, monument, &c. by Mr. A. E. Street, and Mr. Millard's admirable plans of Wickham Hall.

The Scandinavian Exhibition at Stockholm. AT Stockholm an important Exhibition of Scandinavian Arts and Industries will be

opened next month, and it is seldom indeed that the promoters of an exhibition of this description are able to obtain a site so beautifully situated as that of the Djurgården. Swedish work will be primarily represented, but the exhibits of Norway and Denmark will also take up a considerable space, whilst the Baltic Provinces of Russia are also to have a section. The site is well laid out, and the buildings are far above the average; the most important of the latter is the Industrial Hall, designed by Messrs. Boberg & Liljekvist, the central feature of which is a large cupola, flanked by four towers. The Art Exhibition Hall, by Mr. Boberg, and the Fishery Hall, by Mr. Theburn, are exceedingly effective, and of considerable architectural merit. We may say that the arrangements for this exhibition have been in the hands of an executive committee, in which painters and architects were well represented, and where the committee men are expected to participate in the management, instead of simply appearing as figure-heads, which is so often the case in similar enterprises. This exhibition will probably be worth a visit.

"Non-Flammable" Wood. ON Tuesday last (the 11th inst.) some interesting experiments were carried out on the site

of old Millbank Prison to demonstrate the non-inflammability of different kinds of wood, when the latter has been treated by the special process of the "Non-Flammable Wood Syndicate, Limited," Victoria-street, Westminster. The experiments were organised for the Office of Works, and the Prince of Wales and many leading architects were present. Two buildings had been erected, one of the prepared wood and the other of the same kind of wood not prepared. Large fires were kindled against a wall of each building, and the structure of wood in its ordinary condition was rapidly burned down. That of "non-flammable" wood was considerably charred in the process, and the wood in immediate contact with the blocks that were kindled perished, but none of the prepared wood, fierce as the heat was, actually caught fire. In the interior of the building several objects were placed amidst shavings and pieces of wood saturated with oil; but although the fire without burned strongly for half an hour, these inflammable substances did not become ignited, and, in fact, the interior of the structure was comparatively cool at the conclusion of the demonstration. A fire was then kindled within the building, where a box of the prepared wood, containing

ocket-books and the like, had been placed. The fierce heat did not burn this box, the outside only becoming charred, and on being opened the contents were found uninjured—the box was described as a wooden safe. The process for rendering the wood incombustible consists essentially of two parts: the removal of sap and the application of chemical preparations to the emptied spaces. This is effected by alternate exhaustion and steam treatment, the chemicals being forced into the wood at a high temperature. The prepared wood is subsequently dried; most varieties are not in any way altered in appearance by the process. "Non-flammable" wood has already been largely adopted in America, and, judging from the success of the experiments made on Tuesday last, the material has a great future. The nature of the impregnating chemicals was not disclosed.

An important paper has recently been read to the American Institute of Electrical Engineers by Messrs. Crehore & Squier on a new method of rapidly transmitting intelligence by alternating currents. From the theoretical considerations given, and the experiments they have done on a line thirteen miles long, it is clear that it is a practical invention, although, no doubt, many difficulties will have to be got over before they can apply their "synchronograph" to long distances. The transmitter is automatic, and is fed by means of a prepared perforated paper tape, which is driven by the alternator. The receivers described are most ingenious, and one of them completely gets over the difficulties caused by inertia by making the electric current act on a beam of light. This beam is polarised, and after passing through a Nicol's prism, falls on a rapidly rotating photographic plate. The magnetic impulses transmitted along the wire rotate the plane of polarisation of the light, and hence the light passing through the analyser varies in intensity, and this variation is shown plainly on the photographic plate. They calculate that a speed of 6,000 words per minute could be obtained by means of this apparatus on a single line connecting Chicago and New York. Such a speed, of course, would revolutionise telegraphy, but although theoretically possible, it is a little premature to talk of speeds even one-tenth as quick as the above as being practically possible.

DR. WYNTER BLYTH, the Sanitary Officer of Marylebone, has been experimenting with a new disinfectant, formic aldehyde, the results of which are described in the last issue of the Sanitary Chronicles of the Parish of Marylebone. The statement seems to show that formic aldehyde is slightly more destructive to bacilli than sulphur, and has no more effect on materials, such as textiles, which it is desired should not be spoiled in the process of fumigation. Several specimens of materials which had been exposed to its action during fumigation are appended to the report, which is of considerable interest. Another convenience in the use of formic aldehyde is that after fumigation it was possible to enter the room almost immediately, while in the room which was fumigated with sulphur, for the purposes of comparison, it was impossible to enter the room so as to

open the windows for nearly an hour after three unsuccessful attempts having been made during the time. The whole description of the experiment can be read in the printed report, copies of which can no doubt be obtained by those who desire full information in regard to it.

WE read in a daily contemporary that this famous tavern is offered for sale. The "Rainbow" has a history that begins with the closing years of the Commonwealth, and claims to be the second, or third, coffee-house established in London. J. Y. Akerman describes a halfpenny token bearing the name, with this sign, of James Farr, and date 1666. Farr, a barber, had been presented, as Hatton tells us in his "New View," by the Inquest of St. Dunstan's-in-the-West, in 1657, "for making and selling a sort of liquor called coffee, as a great nuisance and prejudice of the neighbourhood." He records, too, that the Phoenix Fire Insurance office (established *circa* 1682, by Dr. Nicholas Barebone and others) was at the "Rainbow," in the first decade of the eighteenth century. In Farr's time the house by that sign was also occupied by Samuel Speed, the printer.

THE Fine Art Society has had a great piece of good fortune in acquiring possession of such a remarkable collection of miniatures as that of Mr. Lumsden Propert, which is now on view at their galleries, though it seems a pity that such a collection should not have been secured as a whole for the nation, instead of being put up to be dispersed by separate sales. The rush after them at the private view last Saturday arose no doubt mainly from their historic interest as portraits; but to those interested in miniature painting as an art the exhibition offers an unusual opportunity for seeing in one room a collection illustrating almost all styles of miniature painting and all the eminent names in the art, arranged in approximately chronological order. There are also some cabinet pictures of considerable value, mostly portraits, but including also a beautiful Virgin and Child by Memling, painted on a sunk panel with the frame moulded out of the same piece, and curiously decorated with painted flowers and insects. The whole collection, both in the historic and artistic sense, is well worth a visit.

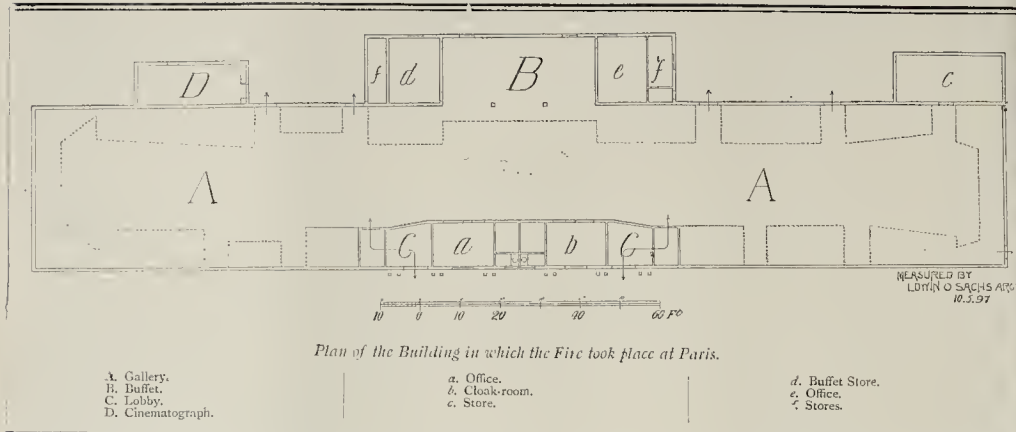
THERE is an air of pretence and sensationalism about the exhibition of Japanese paintings by Mr. Menpes at Messrs. Dowdeswell's gallery. The specially-coloured hangings, the awning through which the light is allowed to penetrate (and which had the effect of giving the gallery the temperature of a hot-house) the small squares of painting in the middle of large expanses of black frame, contribute to give the whole the effect of a theatrically got-up show rather than an artistic exhibition; and the painting is as tricky as the get-up. Some of the little studies of Japanese figures are very good; the larger ones are mainly remarkable for ugliness of effect and coarseness of execution. The Japanese actor figures in an amusing manner in some of the studies, and the one entitled "The Stencil Cutters" (40) gives a vivid idea of the absorption of the workman in the minute elaboration of a Japanese stencil pattern.

An interior called "The Foundry Kitchen" (12) is superior to most of the others in general effect of light and colour. Some so-called landscapes have the effect of being produced by dabbing sponges, dipped in colour, on a piece of blotting-paper. Mr. Menpes could, we believe, have done much better things than most of what this exhibition includes; has done better ones, in fact; but as it is, the whole thing is only a form of commercial venture intended to appeal to the fashionable taste for curiosities and oddities in painting, and as such it seems to attain its purpose.

WHILST a crowd of persons were elbowing each other to look at the last-named exhibition, a dozen or so of visitors in Messrs. Goupil's Gallery could study at their ease the works of a true artist, M. Billotte, whose small landscapes are not of the kind that draw a fashionable audience, but they will appeal to all who can appreciate truth of feeling and breadth and force of execution in landscape painting. Though all the works are of small size, they have not the character of what are called cabinet pictures; they are painted in a large free manner in which more attention is paid to general truth of colour and effect than to minute detail. Among those which are specially admirable are "Cliffs at Quiberville;" "The Square Tower Cliffs at La Rochelle," in which both the structure of the landscape and the effect of air and light in the evening sky are beautifully conveyed; "Morning in the Plain at Rueil;" "A Farm House, Eure;" "Moonlight, Quarries of La Folie," one of the most real moonlight pictures we have ever seen, but with no tricks of effect—it is the result of careful study and knowing what to do with the materials; "Evening in the Marshes," and "Road to Carrière St. Denis." But almost every picture in the collection is worth looking at.

WE have elsewhere given a short report of the Soirée of the Architectural Association, but we should like to congratulate the Association specially on the great improvement in the style and taste of the little drama, of home manufacture, which forms the principal item of the entertainment on these occasions. We must confess that we thought the humour of these Soirée plays in former years very much below the mark; in fact it could hardly merit the title of humour at all. In the play produced the last two years (for this year's was practically a repetition of the last) there is a notable improvement; it is quite a different style of thing; moreover, a good deal of the musical setting is very pleasing, and some of the singing was excellent. The hits at some contemporary theatrical performances, which formed the principal element of novelty in this year's play, were also very neatly put in.

WE have received a copy of a paper by Mr. T. Butler Wilson, read before the Leeds and Yorkshire Architectural Society in March, on "Modern House Interiors," the main point of which is one which has often been urged before, that architects should take, or should be allowed to take, a larger part in the arrangement of the decoration and furniture of the houses which they build. Mr. Wilson says—
"How is a modern house interior evolved?"



Usually the architect is called in, and plans the building with its several rooms, their structural fittings, such as doors, windows, and mantels. He is then politely bowed out, under an impression that his duties have now ended, and that he has rendered all the assistance in his power. The 'Art' decorator then appears upon the scene, and carries out a scheme of decoration in accordance with his own predilections, and, more frequently than not, in a manner totally opposed to the structural work of the architect."

This is quite true, and where a house has been carefully designed with a special architectural feeling about it, it is very vexatious to the architect to see it spoiled. But the question is not so simple as it may at first sight appear. It depends very much on the client; if he has perceptions on the subject he will wish for the architect's assistance; but as we presume the architect does not desire to do a great deal of additional work *gratis*, he is hardly in a position to say to the client, "pray employ me further; it will be to your advantage." Mr. Wilson's suggestion that when the architect is employed on a house his first duty is to make a psychological study of his client, in order to make the house an expression of his character and taste, we fear might have its ludicrous side. Suppose the client got wind of this idea, one can imagine his feeling, every time his architect tried to engage him in conversation—"Ah! this is part of the psychological study!"

SOCIETY OF ARTS.—On Tuesday evening Mr. G. Clulow read a paper on "A Half Century of Line Engraving, 1780-1830." Although he did not claim for England a first place in that art, he maintained that during the fifty years between 1780 and 1830 England had formed a distinct school of engravers, of which we were justly proud; their work would always rank with that of the little masters of Germany. After giving a description of the most ordinary incised work, as seen upon a visiting-card, the lecturer explained the more complicated methods of engravers, and showed illustrations of engraved work, and of the combination of engraved and etched work. The slides were greatly appreciated, and much astonishment was afterwards expressed at the beauty of line work that would bear enlarging sixty or seventy diameters. Mr. Clulow dwelt lovingly over the work after Stothard, Reynolds, and Turner, by such men as Allen, Fox, Goodall, Robinson, and others, and pointed out how indebted the arts of painting and architecture were to the engravers who educated the eye by their appreciation of composition and form. Indeed, many painters had reason to be grateful to the men who had so indelibly engraved their work, and Turner himself cannot be said to have reason for complaint. Mr. Clulow merely opened the subject up, and an interesting discussion followed his paper.

FURTHER NOTES ON THE PARIS FIRE.

The reports on the lamentable fire at Paris, which have been continuously appearing in the daily press, have been so confusing and, in many instances, so incorrect, that the presentation of some of the principal facts, as seen from an architect's point of view, should be of value to those entrusted with the safety of our public places of amusement. First, as to the site. The Rue Jean Goujon is situated between the Champs Elysées and the Seine, and it runs on to the Place de l'Alma. The exact frontage of the site is 90 metres, and its average depth 45 metres. Only the front portion of the site was occupied by the temporary building in which the bazaar was held, for the dimensions of the structure were 78 metres by 13 metres, and the front wall stood on the frontage line. At the back of the building the ground was hence uncovered to the extent of 90 metres by 32 metres, and there was a passage from the thoroughfare to this back land of nearly 11 metres width, for, as already observed, the structure did not occupy the whole frontage. The site was hemmed in on three sides by the walls of adjoining houses or by garden walls. In the case of the Hotel du Palais, some of its windows overlooked the site, and it was from a staircase window, six feet above the ground level, that a number of people were saved off the back land.

The building had only lately been put up, and had at first been used for some theatrical performances, with a stage, rows of seats on a sloping floor, and an electrical installation. The stage and the seating were cleared away and the electrical light installation was apparently disconnected, when the promoters of the bazaar took possession. No architect had been employed to design the building; a well-known firm of builders, who had been frequently associated in carrying out large schemes of street decorations in Paris, having set out and executed the structure for 12,000 francs. We understand that the builders were particularly anxious to be economical, in view of the charitable purpose to which the building was to be put. The materials employed only cost them 6,000 francs out of the contract sum; they consisted only of timber, tarred paper or felt, and glass.

The plan here given shows the shape of the building, which was practically in the form of a gallery with some back additions. The walls were formed by a number of strong uprights, faced and lined with match-boarding. The roof was supported by a number of trusses of light construction, and the upper part (on either side of the ridge) was glazed, whilst the lower part was covered in with tarred paper or felt. All fixed partitions were of light wood boards on wood sleepers. The plan shows the arrangement of the stalls, the decoration of which was effected by some old canvas scenery, which was exceedingly dry and worn. The roof was hidden by a large velarium running the whole length of the gallery. There were two principal entrance doors from the thoroughfare, three steps above the street level, and measuring each 2 metres in width. There were four smaller emergency doors at the back, and two small service doors to the side and back respectively. Of the service doors, only one

was known to the stallholders, and of the emergency exits apparently also only one, *i.e.*, the door leading through the open space to the entrance of the cinematograph room. As the French Government intends holding an inquiry, it is not our intention to criticise the arrangements, but to let the facts and the plan explain themselves, as far as the structure and its equipment are concerned.

As regards the progress of the fire, there is no longer any doubt that it originated in connexion with the cinematograph, though the exact cause has not yet been proved. As will be seen from the plan, no direct communication between this room and the hall is shown, but there is no doubt that the flames in the hall were first perceived at the back of the stall abutting on to this room. There was a considerable draught in the hall, and the fire apparently immediately made headway in the direction of one of the front entrances. The velarium at once caught fire, and on the glass in the roof breaking from the heat, the burning strips of the canvas fell on the ladies below, igniting their dresses. The fire ran along the velarium as if it were tinder. The canvas fronts of the stalls then became involved, and within a few minutes the whole building was in a blaze. Those of the visitors who were at the cinematograph end of the hall were apparently cut off, and no one appears to have had the idea of trying to break through the light walls which imprisoned them. The store at the opposite end of the hall, which had been used for cloak-room purposes, was likewise the scene of a number of deaths, as many crowded into this room by mistake, thinking it led to an exit. The other deaths appear to have occurred just inside of the two entrances that were most known, in all probability owing to their becoming blocked.

There is no doubt that the panic was exceptional, this being due, in great measure, to so many of the ladies' dresses having caught fire from the falling of the velarium. Of those who effected their escape to the back land, only few appear to have attempted to get round the building to the main thoroughfare. Many seem to have succumbed in their attempts to escape through the hotel window. As the grass in the further corners of the back land is still green, and some trees overlooking the site have only been slightly singed, a fearful state of panic must have prevailed to have prevented those who had the opportunity from sheltering themselves at a distance of quite 100 ft. from the burning building. On going over the ground, and looking at the plan, there is yet much which needs explanation in connexion with this dreadful catastrophe. We are afraid that what appears at present inexplicable must be ascribed to the fearful state of panic that must have prevailed, and the panic, we would repeat, must have been due, above all, to the fatal velarium.

TOWER, SS. MARY AND MODWEN'S CATHOLIC CHURCH, BURTON.—The new tower recently added to the church of SS. Mary and Modwen, in Guild-street, Burton, was dedicated recently. The tower, with campanile, has been erected in a style to harmonise with the body of the church. The tower, which measures 14 ft. square at the base, rises to a height of 56 ft., the octagonal stone campanile with its spire and cross bringing the total to 98 ft. 6 in. above the pavement. The architect was Mr. G. Mills, Derby, and the builder Mr. George Hodges.

ARCHITECTURE AT THE ROYAL ACADEMY.—II.

The architecture of public buildings, institutions, and business buildings, is not very largely represented this year, the space being all taken by churches. Plans are not to be seen at all except in a very few instances.

Taking the works in the order of hanging, we come first on a design for a school at Woburn, by Mr. Arthur S. Jones (1,757; no plan). This is a geometrical drawing which works well; it is in a very simple and unpretentious style of architecture, but looks as if it might be effective; the four large arched openings in the basement, two on each side of centre, and which presumably give access to a covered playground, have a bold effect, and are balanced by the tall windows and gables immediately over them, the line of small windows between the upper and lower stories uniting the whole together. In the absence of a plan it is, however, impossible to say how far these features arise out of the disposition of the mass. Mr. Aston Webb's simple and unpretentious design for the French Protestant School (London) is illustrated in the present number; it is accompanied by a small plan, which is better than nothing, and is sufficient to explain the design. No. 1,766 shows the perspective view of the new theatre in the Haymarket, which was illustrated in our pages last week. It represents the usual type of theatre architecture of the day, and that is about all that can be said about it. Neither plan nor section are given.

Mr. Ernest Runtz's Royal Music Hall, Holborn (1,761), shows much better architecture than we generally find in music-halls; the upper portion is like many other buildings in the free classic style of the day; the ground story shows deeply recessed solid piers, and there is a little special interest given to this portion of the exterior by the varied treatment of the two end bays, one on the left including a segmental bay window, that on the right being filled in quite differently, the two openings divided by a pier trying coupled colonnettes, with rather little effect. (No plan.)

Mr. Lansdown's "Mission Building, Theodolite-street, New Kent-road" (1,770) is illustrated by a good little water-colour drawing; of the building itself there is little to say, except that it seems simple and appropriate to its purpose (no plan).

Mr. Jas. C. Watt's "Design for a Mausoleum" (1,780) is a pretty and rather unusual bit of work; the drawings show a small octagon roofed with a dome; the gray masonry (granite?) is relieved by a wide band and some panels of lighter yellowish stone. There is a good deal of coloured decoration, partly in the shape of mosaic in the interior of the dome, and partly in the insertion of circular panels of coloured marble in the frieze, inserted at intervals in the midst of a general design of carved scroll work. This is a pretty little design and the drawings are very neatly executed.

Mr. Waterhouse's perspective view of the Carver's Institution (1,793; no plan) occupies a prominent position on the walls. The principal block, fronting Great George-street, has a large cantilever cornice which marks it out from the remaining portion of the group, and a balcony over the ground-floor windows carried on large boldly projecting consoles. The projecting porch, on columns and with a segmental solid stone (or terra cotta) roof, is connected to the rest of the front by a projecting bay immediately above it. The employment both of strongly marked horizontal and vertical features gives a great deal of solidity of aspect to the building, which will certainly have a powerful effect when completed. The absence of a plan renders it impossible to judge what is the intention of the grouping of the different sections or blocks, to which the building is divided, and which do not have a motive founded on the uses of the various portions of the plan.

Mr. Cappin's competition design for the Jeffan Institute, Forfar (1,799) deserves a passing mention as a picturesque street front, owing something no doubt to Mr. Colcutt, and we next come to the finest design for a public building in the room, Mr. Caroe's competition design for the Liverpool Technical School. This is a beautifully executed Indian ink drawing (1,818; no plan) which gives full effect to a design both dignified and graceful in its general character. The treatment of the flank of the building is particularly picturesque and effective. The ground story shows a series of semi-

circular openings in rusticated masonry between each of these is a pedestal and panel with sculpture, which is very well and delicately shown on the drawing; above is a row of nearly plain Italian windows with sculptured panels under them, and above them a mass of plain walling, very effective by contrast, and obviously marking the top-lighted museum portion of the plan. The end, with its conventional pilasters, is not quite so interesting as the side elevation; the cupola is elegantly designed. The detail elevation of the flank is shown under No. 1,831.

Mr. Hare's Presbyterian College, Cambridge (1,829), is illustrated in a lithograph in this number. As will be seen, it is a carefully and compactly planned building, though we wish an indication of the compass point had been added to the plan, as, from the nature of the plan, the question of aspect will obviously be of some importance in regard to many of the rooms. The design has the quiet home-like expression proper to collegiate architecture, and the tower is effectively treated. With this may be compared the second premiated design for the same building, by Mr. H. Seth-Smith (1,839), though it is difficult to compare the plans, as Mr. Seth-Smith's is so perfectly different not merely in detail but in general shape as to lead to the conclusion that site boundaries were not specially defined for the competitors. The general effect of the design, which is in more or less collegiate Gothic style, is suitable and pleasing, and the author perhaps follows more correctly the traditions of University architecture in making the principal entry under the tower, which in Mr. Hare's design only marks a secondary entrance. The Dining Hall is placed on the first floor in a block at right angles to the main building, and the kitchen and scullery occupy the lower portion of the block; there may be no practical objection to this, but the architectural treatment of the exterior does not suggest sufficiently the utilitarian employment of the lower story of this buttressed and rather ecclesiastical-looking bit of building. The fireplace in the kitchen would certainly be insufficiently lighted.

Mr. Tiltman exhibits the perspective of his Kennington-road Public Baths (1,837; no plan), which has the merit of suggesting a Public Baths building in the disposition of wall and windows, and is sufficiently architecturally effective, in a general sense, for a building of that class, though we do not like the character of the detail. Mr. Runtz's "Empire Palace of Varieties, Middlesborough" (1,847; no plan) is much more pleasing architecture than Palaces of Varieties generally show; the large masses of blank wall at each end of the front are well contrasted with the pretty treatment of the windows in the centre portion, and the angle cupolas are picturesque. Mr. Colcutt's additions to the Savoy Hotel (1,850) are illustrated in the *Builder* of July 11, 1896; architecturally it is merely the treatment of the side of a courtyard on which some new additions are made; it is a bold piece of work, with a series of deep round arches carried by pannelled square columns on the ground story, and a range of mullioned windows divided by pilasters over this, overhanging and carried on corbels which seem rather too heavy and massive to be in character with the rest of the work; or rather, perhaps, the panning of the columns and arches below gives to that part of the work a rather light appearance in comparison with what is over it; if the ground story had been treated in a heavier and more massive manner the total effect would have been better. Mr. J. Murray Robertson's "Lochee Free Library and Baths" (1,854; no plan) is a pretty looking gabled building with a circular tower-looking addition effectively added at one end; the lower portion of the building is brick the upper (probably) terra-cotta. Mr. R. T. Blomfield's picturesque design for the Parish Institute, Portsea (1,860; no plan), was published in our issue of last week; he exhibits also a design for the new Girl's School, Hammersmith (1,858; no plan), a block of E shape, with the faces of each the three arms treated with an elliptical pediment and pilasters in such a manner as to make the whole end of each block a design in itself; the treatment is very simple, but it all hangs together well.

In Mr. Jackson's New Boarding Houses for Westminster School we at last have a plan forming an integral part of the exhibit (1,874), and showing two boarding houses and their adjuncts arranged side by side on a rather long slip of ground, with a division wall running down the centre; the studies are placed at the back towards the playground

enclosure, which is good for quiet (as playground and studies are not used at the same time); the day rooms are in front; perhaps the fact of their having a north light was unavoidable, but it makes a dull room; though it may be repented that the sunlight will form an attraction in the studies, and promote their use. The building is a very plain brick one, in what may be called Queen Anne style, with dressings of darker brick (we like this much better than stone dressings), the only ornament is the rather jejune one of cut-brick festoons hanging from the eaves between the windows and appearing to carry cartouches hung to them. This is not a very "researched" form of architectural detail, and to say truth the exhibit is not a very important or striking one as a representation of the work of an architectural "K.A. elect." one had looked for rather more from Mr. Jackson.

Messrs. Ernest George & Yates show perspectives of the interior of Claridge's Hotel (1,884), the hall of which, vaulted with elliptical arches, has a sufficiently spacious and dignified appearance. Mr. Applebe exhibits a small "Study for Municipal Buildings" (1,897; no plan) which groups well, though not possessing any special originality. Mr. H. R. Gardner's "Market Hall" (1,898), we presume a student's competition design, wants unity of treatment; it is too scattered and the details do not harmonise. Messrs. H. S. Legg & Son's new ballroom for the Royal Palace Hotel, South Kensington (1,907), is a handsome room, somewhat better architecturally than hotel entertainment rooms generally are. Mr. Vigers's "Bonded Stores, Vauxhall (1,904; no plan), is illustrated in this number—the second illustration of buildings for Dock business that we have been able to give within a few weeks; it is satisfactory to find that those concerned in such buildings are beginning to think it worth while to employ architects to design them. Sir T. N. Deane and Sons exhibit a small drawing for a large building, a design for a hotel for Cork (1,913; no plan); this is a bold and picturesque building, in the treatment of the right hand portion especially, and it is the more to be regretted that there is no plan to explain and justify this picturesque piece of architectural grouping. Mr. Belcher's perspective sketch of a design for a Mausoleum (1,916) we shall illustrate shortly, with the interior perspective also, which was sent but has not been hung; there is no plan to this, but the design is so simple it hardly requires one; and though the detail is very plain, except the little bits of bas-relief sculpture inserted in the piers flanking the entrance, there is a distinctly marked originality about it. Messrs. Wimperis & Arber's large interior of the Princess Restaurant (1,917), with a crowd of people dining, is an imposing drawing no doubt, but it is hardly a kind of thing to find place in the architectural room of the Royal Academy.

THE ARCHITECTURAL ASSOCIATION: JUBILEE CONFERENCE.

A CONFERENCE of this Association was held at the rooms of the Royal Institute of British Architects, Conduit-street, on the 6th inst., in connexion with the Jubilee commemoration of the Association. Mr. Beresford Pite, the President, occupied the chair, and among those present to take part in the conference were Mr. Hampton W. Pratt (President-Elect), Mr. Hy. Lovegrove, Mr. Wm. White, F.S.A., Mr. W. R. Lethaby, Mr. C. E. Bateman, Mr. T. Sulman, Mr. Cole Adams, Mr. Scaries-Wood, Mr. W. Pite, Professor Roger Smith, Mr. T. M. Rickman, Mr. W. H. Seth-Smith, Mr. J. B. Seddon, the Honorary Secretaries, Mr. Banister F. Fletcher and Mr. Howley Sim, and several representatives of provincial societies.

It was proposed that short ten-minute papers should be read upon points in the Association's work, which are exciting special interest at the present time, with a view to elicit in a conversational discussion the views of the members of the Association.

Upon the first point, "The work of the Technical Institutes as related to the Architectural Association," Mr. Beresford Pite, in opening the discussion, said the extension of institutions for giving technical instruction, similar in some respects to that which the Architectural Association had to provide, had created special difficulties during recent years. The Architectural Association had to provide certain courses of instruction necessary in order to pass the Institute's Examinations, and in

doing this it had now to compete against classes for technical instruction given at University College, King's College, and numerous Polytechnics and similar institutions which had access to sources of income to which the Architectural Association had not access. County Councils had distributed large sums of money as subsidies to such institutions, out of special funds placed at their disposal. These subsidised institutions had to make the best possible use they could of the subsidies, and to satisfy examining visitors from time to time with regard to the results obtained. The way in which the subsidies worked to the prejudice of the Architectural Association was shown by every-day experience. The student at a Polytechnic could obtain for a shilling instruction which the Association could not give for less than half a guinea—and besides, their members' subscription and entrance fees amounted to a three-guineas premium before they paid their half-guinea fee. The committee had had to reduce the fees to their instructors, and although the fees now sufficed to pay the instructors, there was no margin whatever. They had to provide office accommodation and the expenses of administration from other sources. What was to be done? The students of technical Institutes possessed some of the advantages of an ideal training. They could go into the workshops which some of the Institutes possessed and apply their theoretical instruction in practice. For these reasons students were drawn away from the work of the Architectural Association. They could not well now retire from the position they had taken up before the rise of these new Institutes. Then what was to be the future scope of the Association in the face of technical Institutes? Should they place themselves in line with them? Should they by putting themselves under the same conditions as the Polytechnics sacrifice their freedom? Or should they continue on their own lines to do the best they could, and trust to their superior methods and their prestige?

Mr. Wm. White, F.S.A., in opening the discussion, observed that it would be a pity to merge the Architectural Association into another and different class of institution. They should remain independent in order to feel above the level of mere schools. He advocated the policy of retaining their freedom. It might perhaps be possible to devise for their classes some form of endowment.

The President: The Association has no endowment whatever.

The discussion afterwards turned upon the character of the instruction given in the classes at the Polytechnics, its efficiency, and how far it was artistic or merely elementary.

Mr. Pite thought that few of the students belonging to the Association went to these technical classes.

Mr. H. D. Searles-Wood said it would hardly suit members of the Architectural Association to mix with the students of such Institutes. They were of a totally different class. There was great diversity among these schools. While in London they had generally been well organised, there were others in some parts of the provinces in which the instruction was very inferior, and in which the teachers were a laughing-stock. It was not to be expected that their students (members of the Architectural Association) would care to mix with the students at these schools.

Mr. W. White thought that perhaps some of their own classes might be given up in order that more time could be devoted to real training in art. He would like to know if any Architectural Association men went to the classes at South Kensington. His impression was that those in attendance there were quite of a different class.

Mr. Pite said that so long as "cram" was accepted as knowledge, the technical Institutes would flourish, because they offered instruction at microscopic fees. Those not born to wealth would go to the Polytechnics, but they were the kind of men the Association wanted.

Mr. J. E. Drower observed that the most important advantage which members of the Architectural Association had was the opportunity of forming good associations and lasting friendships. This was well worth the extra cost, and it was a question whether it was advisable even to consider the possibility of applying for subsidies. It was conceivable that a man by attendance at a technical institute might become a quantity surveyor. But the architectural student, although he ought to know something about taking out quantities, had to take up many other subjects, and must

know many other things than quantities. If they were to go in for a grant for this specific subject they would have to produce specific results, and to make their students mere surveyors of quantities. He (the speaker) had some knowledge of Polytechnics—acquired while examiner there—and he was of opinion that a Polytechnic education was not calculated to produce good architects.

Mr. H. W. Pratt, who also opposed any suggested change of policy, said it would lead to the giving up of their exclusive privileges, and eventually wreck the Association. The Architectural Association had a work of its own to do which no aided institute could perform. All who were present at the recent dinner would admit that through the Architectural Association, they got much more than they could get in a technical institute or in schools of any kind. He hoped it would be possible to carry on their work, and yet give their students technical training. They might drop some outside subjects, such as geology, which few took up, in favour of going into workshops. If they were to drop certain subjects and go in more for design, drawing, and the art side of the Association, they would succeed in strengthening and building up their institute, and they would be keeping themselves together as a class. Under the suggested change it would be more easy for them to get levelled down than levelled up.

Professor Roger Smith observed that the object of a technical institute should be to train artisans, but that was not the object of their Association. It was not necessary to have an artisan's knowledge in order to make a good design, and a man might be a good artisan without being much of an artist; a joiner, for instance, might be a good artisan but not know the art side of his work. He trusted that the Architectural Association would remain an association for training architects and artists rather than artisans.

Other speakers pointed out that such a change would require an Act of Parliament, and that it would reduce them from an architectural association to a school.

The President closed the discussion of the first subject with the observation that the main point brought out by the discussion was that a man who joined the Architectural Association joined it to get instruction and for other purposes. With respect to changes that might be required to be made from time to time, they had always found that when a thing was really wanted it could be got. If a few men banded themselves together to demand anything that was within the power of the Association they would get it.

Mr. Pite read a paper upon the third point, "What subjects should be compulsory in an architectural examination, and what studies supplementary." Speaking broadly, it might be said that the ultimate result, if not the aim, of an architectural examination was to close the ranks against incompetent men. It was necessary that an architect should be a good builder and an honest builder, and therefore a preliminary examination should be made compulsory; but whether he was capable of designing beautifully was another matter, which it was perhaps not possible to ascertain by a preliminary examination. He wished to suggest to the conference for discussion that it should be admitted as a necessary and essential qualification of an architect that he should be a good builder, and that the interest of the public demanded that he should be a good builder. The course should therefore include a knowledge of constructional practice and a knowledge of correct drawing. But from the earlier examinations might be removed subjects connected with high art, the object of which was to take a review of the whole history and practice of the human race. In other words, they should remove architectural history and design. The object of the examiner, at a certain stage, should be merely to satisfy himself that the men he examined would make architects in whom the public would have a right to trust. Then, what was to be done with other subjects, which might be called honours subjects? They were, no doubt, essential to the finished architect, but not to the architect considered merely as the servant of the public. They might have an intermediate art as well as a science examination associated with an honours course. In this examination a knowledge of ornament and design might be required, and some knowledge of ornamentation in its historical forms. In an honours examination they could require a knowledge of high art. Science and

practice would have to be strengthened. The final examination might include questions of art history, of criticism, of Greek archaeology, and tests of knowledge of perspective, artistic draughtsmanship, water-colour drawing, and design. The gain to the Association of such a scheme would be increased thoroughness of work, and results more satisfactory to the students and more satisfactory to their clients. The study should be carried beyond examination point. They had only to look round that exhibition to see how much more slight—more *short-hand*—he might say—was the practice of the present of former times. It was of vast importance for them to be able thus to measure progress. At the present day they sketched instead of designed. Those architectural subjects which he called supplementary were yet in the far distance. It was absurd to put a limit on study, and members of the Architectural Association should desire to carry on their education as far as possible. They must continue to study, and to encourage this would not be possible to have a *grand prix*? Should they not have something to offer to students who had passed all the examinations? By providing an honours class they might enable architects to gain a higher position in the world. They might give them a status such as was gained by men who passed in honours at the Universities, and they might help their students to get a better status in the Institute.

Mr. H. Lovegrove, who opened the discussion, feared that the demands of examination under such a scheme would be so great that few members would be able to find the time necessary to satisfy them all.

Mr. W. White thought the scientific branches of their art should be held the most important. They should teach the "science of the art" just as in music the student of counterpoint was taught all that pertained to the art of music. That there was a science in the art of the architect was shown by the old architects whose fine proportions showed that they were perfectly acquainted with the science of geometry.

Mr. Pite said they could get, and had a right to get, from every student such definition and accuracy as would make them feel that he could produce, when called upon, accurate drawings of all kinds of details of construction. An honours course would prevent the tendency shown by too many students to settle down after passing their obligatory examinations.

Mr. H. W. Pratt said that a man having passed such an examination was generally counted good enough for the post of surveyor or builder, but not for that of an architect. Still, he thought the President, in his proposed examination scheme, had gone to extremes in the other direction.

Other speakers thought the scheme would tend to bring older members more into touch with each other and with the younger members, and would tend to keep them longer in the ranks of the students. What was wanted was that the architect should be educated up to a point that could not be easily defied.

The President, in closing the discussion, said there was a natural reaction which induced many men, after passing an examination, to cease further effort, but no man should be dubbed an architect simply because he had passed the obligatory examination in building construction. Under the proposed scheme he would have to go on to the higher examinations. The examination point was satisfactory so far as construction went, but not so far as art was concerned. The whole profession would suffer a shock if the designs done in examinations were exhibited, and if examining boards were to show all that were sent in, the whole scheme of examinations would be damned.

The conference then closed, and the members were invited to partake of light refreshments, which had been provided by the committee.

The Soirée.

The Soirée of the Association was held on Thursday evening, May 6, at St. George's Hall, when a large number of members and friends, including ladies, assembled to witness the usual musical play. It was announced some time ago that a new play had been written for the occasion, but owing to unavoidable circumstances its presentation was deferred, and an adaptation of "The Celestial Institute," last year's play, was given instead. It is satisfactory to remark that, though the burlesque, was

most a repetition of last year's play, the rest of the occasion was well sustained, for the new songs and topical allusions had been worked into the play, the performers acted in parts with considerable success, and the picturesque ensemble which attracted attention had been given. The title of the burlesque this year was "The Institute Abroad," a sphere of that body's activities having been transferred from Paris to Algeria. For some of the details of the play we must refer our readers to our account of the "Celestial Institute" in the *Builder* for May 23, 1896; the marriage of the members of the Institute Council to the architectural girl students, the election of the President, the proposed architectural stores and the cinematograph were points which were again dealt with. Mr. Alfred Stanton made an excellent Sultan (the braggadocio the "Emperor" in last year's play being done a good deal of) and Mr. G. B. Carvill was successful as "Blarney Barnooley," a London adventurer and company promoter, in the similar part of "Svevalli" which took last year. The meeting of the Institute, at which the Librarian took the chair and the President arrived, was very successfully managed, while the allusions to some of the papers read at the ordinary meetings of the Association were well received. The following are the characters:—John Jones, Mr. H. Seton Harris; Patrick McBrowne, Mr. W. W. Furlong; Archie Robinson, Mr. S. Constanduros (A.A. Travelling Students); Blarney Barnooley (a London adventurer and company promoter); G. B. Carvill, the Sultan, Mr. Alfred Stanton; the Secretary of the Institute, Mr. Frank Collins; the Librarian of the Institute, Mr. F. D. Clapham; members of the Council, E. S. Collins, Mr. A. Cox, Mr. Frank Lay, Mr. H. A. Neubronner, Mr. John Ormrod, Mr. H. Turner; members of the Sultan's body-guard, Mr. F. P. Allworth, Mr. Arthur Kelly; Moorish boys, D. Carvill, P. Albert, S. Elston, J. E. Collins; Zorah, Miss Grace Wyld; Lah, Miss Ada Verbury; Moorish girls, students of the Institute—Casina, Miss E. Black; Cassana, Miss Carvill; Bamama, Miss Dolly Wade; Pajama, Mr. K. Rimell; Sasa, Miss Ethel Selvig; Lulu, Miss Ethel Williams; and Blarney (Barnooley's ward), Miss Blanche Fig. The stage manager and author was G. B. Carvill, assisted by Mr. F. D. Clapham, and others.

The Annual Excursion.

The twenty-eighth annual excursion of the Association will take place from August 9 to 14, the district chosen this year is Lancashire, further particulars of the excursion will appear in "Architectural Association Notes." Members wishing to join should communicate about delay to Mr. W. Talbot Brown, The Bure, Wellingborough, hon. sec. for the excursion.

MAGAZINES AND REVIEWS.*

THE *Edinburgh Review* contains a very interesting and charmingly-written essay on "The Sculptured Tombs of Hellas," the authorship of which it is not difficult to guess. The essay of monuments spoken of, as the writer remarks, though not the work of great artists, have a traditional grand manner about them. They are as a class admirable examples of those qualities we expect from the Greeks, stately, restrained, good taste; as such they strike us by the contrast with our own sepulchral monuments. Moreover they are in the main easy to interpret, and—which is no small element in their popularity, they strike an unexpected domestic note." The article, a review of a good many various books on the subject, sketches the character of various groups of such monuments, touching lightly on one or two disputed points, and forms a very good *resumé* of the present state of this field of Greek archaeology. Another article, under the title, "Painters behind the scenes," is a somewhat sarcastic review of several books of the lives or reminiscences of painters, in which the main deduction drawn is that the painter behind the scenes is not always a person who claims very much veneration on intellectual grounds, and in fact that painting is more of a mere business than is

* The object of these notes is to point out anything in the contents of the current magazines which is of special interest to our readers, with occasional brief criticisms on the views expressed in such articles. When a magazine which has been sent to us is not noticed, it is because that number contains nothing that is within our province to comment upon.

commonly supposed. The only painter whose biography (among those reviewed) really raises him in our estimation higher than the mere contemplation of his pictures would have placed him, is Jean Francois Millet; though the reviewer considers that Millet's art, after many years of undeserved neglect, has latterly been the object of a reaction of feeling which has caused it to be somewhat over-rated.

The *Quarterly Review* contains a well-written article on "Modern French Art," a review of its present position and of the works of some of the leading artists of the last quarter of a century. The author speaks strongly in regard to the great place now occupied in France by decorative painting. Referring to the reaction against realism in art and literature in France, he observes "one important result of this revived idealism is the new impulse which has been given to decorative art. . . . It may be, in the future, architecture, sculpture and painting, will all combine to form one great and harmonious whole. It is a branch of art that is capable of vast developments, and, as Dr. Mither suggests, may be destined to exercise an important influence on the coming age. Meanwhile there can be no doubt that mural painting is practised with greater success in France at the present time than in any other country." The author does not add, as he might and should have done, that one great cause of the French superiority in this branch of art is the encouragement given to it by the French Government. In England artists hardly get a chance to do anything of the kind.

The *Art Journal* continues the description and illustration of the contents of "A Northern Home," which appears, among other attractions, to contain some exceptionally good eighteenth-century furniture. Mr. O'Fallon contributes a short notice, accompanying four illustrations, of a "Virgil Shield" designed by Mr. John Watkins and executed by Mr. Thomas Spall. It is obviously a very fine piece of silversmith's work, and the groups of figures illustrated are designed with much vigour; but the employment of a series of architectural pilasters, radiating like the spokes of a wheel, to divide the subjects of the circular bas-relief, appears to us to be quite a misappropriation of architectural detail, besides giving to the design a series of harsh lines which had been much better avoided in silversmith's work. Mr. Claude Phillips's article on the collection of pictures at Longford Castle is continued, dealing this month with the Italian pictures, of which four are illustrated. Some very pretty sketches of Plymouth and its neighbourhood by Mr. R. Hoskin, accompany an article on Plymouth by Mr. Radford. The frontispiece is a reproduction of Mr. Frith's Railway Station, which it appears now forms part of what is called "The Holloway College Collection;" a picture which, we think, might have been allowed to die a natural death.

The *Magazine of Art* contains an article on Sir E. J. Poynter's studies, illustrated by a good many reproductions which, as might be expected, are of considerable interest. One is glad to see that more attention is being paid to the work of the learned and intellectual painter who is now at the head of the Royal Academy. An article in the same number deals with that interesting English mansion Kedleston Hall, with illustrations by Mr. Fulleylove. It is a pity that the plan, which is unique in its way, was not included.

The *Essex Review* (quarterly) contains a longer and more interesting article than usual, in its series of "Essex Churches" by Mr. F. Chancellor, the church described and illustrated being that of Felsted. Miss Fell Smith contributes the second of a series of articles on "Picturesque Essex," dealing with Thaxted, and illustrated by some good sketches. We observe that the date on the cover of this issue is January, but it is the latest number of the *Essex Review* that has reached us.

The *Century* contains three articles, grouped together, on the subject of scientific kite-flying, describing experiments made in America in the use of special forms of kite with the object of getting meteorological data, of lifting persons from the ground for observations, and of photographing from cameras attached to kites. The articles and diagrams are of considerable interest, though it does not seem that much practical progress has been made as yet. We should think the risk in lifting men would be considerable, from the chance of a sudden failure of wind.

Scribner contains nothing this month of artistic or technical interest except under the

usual heading of "The Field of Art," one of the paragraphs in which consists of an appeal for a more serious treatment of the art of theatre scene-painting, as one not unworthy of the efforts of eminent artists, if regarded from the right point of view. The concluding sentence seems to imply that England is regarded as having to some extent taken a lead in this direction.

Harper has a short article by Mr. Corbin on "Two Undescribed Portraits of Shakspeare," the Droschout engraving and the "Ely Palace Portrait" which hangs in Shakspeare's house, or rather the house in which he was born. Are they really "undescribed?" In America perhaps; hardly in England, we imagine. The Droschout portrait carries its refutation in its face; Shakspeare never could have been so weak-looking a man as that. An article on "English Country-House Life" concerns us all more or less, for it is an endeavour to render more familiar to American readers the ways and etiquette of English country-house visiting, which apparently are occasionally a puzzle to the American visitor; it is written with a great deal of pleasant humour and sufficient knowledge of the subject. Mr. G. W. Smalley is the author.

The *Revue Générale* contains an interesting article by M. J. G. Freson, "A Budapest," a review of the impression made by the city and its buildings. M. Freson speaks with great admiration of the new Houses of Parliament, which, he observes, recalls the Palace at Westminster, "la seule construction en Europe auquel il serait comparable." This is true, and indeed the plan of the Budapest Houses of Parliament is evidently imitated from ours, and perhaps something of the general treatment; but the architecture is not nearly so refined. It has the merit, on the other hand, that the position of the two Chambers is externally shown in the design; the want of this is the one serious criticism that can be made on Barry's building.

The *Pall Mall Magazine* contains an illustrated article on Mount Edgecumbe house.

In the *Gentleman's Magazine* there is an article on "St. Mary Redcliffe," not however architectural, but dealing with the history of some of the monuments and the persons connected with them.

The *Genealogical Magazine* is a new journal of "Family History, Heraldry, and Pedigrees" appearing for the first time this month; we presume it is to be issued monthly. It has no direct connexion with our class of subjects, except that it gives some attention to heraldic matters, and the present issue contains illustrations of two coats of arms, those of Legh of Lyme and those of Nelson. The subject of family history becomes also, of course, of interest on some occasions as throwing light on the architectural history of buildings erected or altered by the family.

THE SURVEYORS' INSTITUTION:

PROFESSIONAL EXAMINATIONS, 1897.

THE following student candidates have passed the examination for the Professional Associateship:—

J. H. Addie, Welshpool; B. B. Baddeley, London; J. G. Bickford,* London; H. Bowden, Newport, Barnstaple; W. N. Brackett, Orsett, Grays; H. H. P. Burgess, London; F. H. Burrows, Ashford; C. F. Cargill, Masham; C. W. Clarke, Leeds; W. Clarkson, jun., London; W. Denton, Sheffield; J. H. Dunt, London; A. Elliott, Liskeard; A. C. Ellis, Highgate; J. H. Furnledge, Middleton Stone, Bicester; A. E. Gayer, Bristol; D. F. Goldsmith, Hordean; H. N. Gray, Forest Gate; H. B. Harrison, Chippenham; A. F. Howland, Amersham; J. M. Kerr,† Llanidloes; H. J. T. Kibblewhite, London; E. G. Lomax, Kensington; H. Mitchellson, Dresden, Stoke-on-Trent; F. E. Molyneux, South Croxdon; W. Paice, Egham; P. Peebles, Albury; J. R. Pinger, Malmesbury; F. A. Pinfold, London; C. H. Price, London; R. E. Robinson, London; L. S. Simpson, Newport Pagnell; F. C. W. Stacey, London; H. P. Stimson, London; H. C. Stokes, London; E. T. Walton, London; H. C. Waterfield, London; J. P. Wilton, Liverpool; E. B. Fitz-Herbert Wright, Leek Wootton.

The following non-student candidates have also passed the examination for the Professional Associateship:—

F. S. Appleby, Waverley, Liverpool; F. R. Benson, Harnage House, near Shrewsbury; L. T. Bigg, Mortimer; J. B. Bird, London; C. Blackshaw, London; E. H. Blake, Tooting; C. Butler, Huddersfield; H. Carpmael, London; C. L. Cassin, Catterdill Hill; G. Chipp, York; H. A. Cobbe,

* Special Prize, 1897.

† Institution Prize, 1897.

York; F. R. Cooke, Leek Wootton; W. G. Cope, London; T. J. Council, London; W. T. Creswell, Aldershot; C. T. Cronk, London; C. O. Cushen, Woodford; C. J. T. Dadd, London; T. S. Dangerfield, London; R. B. Davidson, St. Helen's; B. M. Douglas, Wrentham; W. A. Farnham, London; E. Greenwood, Richmond, Surrey; J. E. Harrison, Allestree; T. W. A. Hayward, Weston-super-Mare; W. A. Head, London; H. O. Holloway, Bristol; H. L. Johnson, New Brighton; W. P. Knatchbull, Hellingbourne; W. B. Leather, Leeds; A. W. Loft-house, Middlesbrough; H. J. M. Mackenzie, Thetford; R. C. Marchant, Clifton, Bristol; C. M. Mayne, London; R. M. Ogilvie, Hayward's Heath; A. C. Parnacott, Penge; H. McA. Peppercorne, Wye; P. E. Ridley, London; T. R. Robinson, Wye; F. C. Ruddle, London; B. M. St. Aubyn, Clowance, near Camborne; H. C. Salt, Bingley; A. S. E. Sedgwick, London; R. H. Seel, Cardiff; H. Shearburn, Collingham, Newark; J. H. Shearer, Exeter; C. A. M. Skues, South Croydon; S. A. Smith*, London; H. C. Snow, Leicester; J. C. Southcombe, Barnstaple; G. Stanford, Ealing; E. R. Stoneham, Erith; B. Swanwick, Cirencester; H. S. Thompson, Birmingham; A. F. A. Trehearne, Putney; B. E. Turner, Wye; D. Turner, Wye; H. Turner, Cardiff; L. J. Veit, Wolverhampton; J. Weatheritt, London; J. S. Wein, South Shields; D. S. Williams, Mountain Ash; R. S. Woolf, Penrith; J. F. H. Wrightson, Downton; T. J. Young, Wye.

The following Professional Associates have passed the Fellowship Examination in Division IV.:-

P. Allen, Croydon; L. T. Ashenden, Canterbury; H. Bentley, Teddington; H. G. W. Brinsley, Gipsy Hill; W. T. Cox, Maidstone; H. W. Daniel, Burton-on-Trent; W. Easter, King's Lynn; H. P. Fletcher, London; E. C. Foster, London; T. S. Fraser, Glasgow; J. S. Garner, Uxbridge; A. Goulding, London; E. H. Green, London; F. A. Green*, London; J. H. Hall, Middlesbrough; H. C. Heasler, Richmond, Surrey; H. P. Homan, Rochester; E. W. Hooper, Huntingdon; W. Jarman, London; A. P. Jenkin, Redruth; W. Jenner, Hove; P. H. Kingsford, Folkestone; C. J. Lake, London; E. E. A. Lee, London; J. A. Lucas, Exeter; A. J. Martin, Clelmsford; C. E. Mercer, London; H. Nuttall, Bury; F. W. Pearce, Wimbledon; W. Phillips, Plymouth; F. W. D. Pinney, Birmingham; C. A. Riffell, Guildford; H. M. Rogers, London; G. A. Sexton, London; H. H. Skipper, London; C. G. Smith, London; J. G. Tate, Tonbridge; W. S. Walker†, London; J. D. Wallis, Manchester; J. H. W. Wheeler, London; E. V. Whitaker, St. Albans; P. Whitton, London.

The following candidates have passed the direct Fellowship Examination in Division V.:-

C. Harrison, Burton-upon-Trent; W. D. Hollis, Leeds; S. E. Isted, Ryde, I. of W.

THE ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

A MIDLAND Counties district meeting of the Association of Municipal and County Engineers was held at the Local Board Offices, Market Harborough, on the 8th inst. Mr. F. J. C. May, C.E., of Brighton, President, occupied the chair, and amongst those present were Messrs. W. Weaver, Kensington; J. P. Barber, Islington; Savage, West Ham; W. Mann, Sevenoaks; Cooper, Wimbledon; J. T. Eayrs, Birmingham; Greatrex, West Bromwich; Silcock, King's Lynn; A. T. Davis, Shrewsbury; J. W. Walshaw, Peterborough; Colonel Jones, V.C.; C. F. Marston, Sutton Coldfield; E. G. Mawbey, Leicester; C. C. Hooley, Nottingham; and others.

The President having acknowledged the reception accorded to the Association by the Local Authorities, announced with regret the resignation by Mr. A. T. Davis, County Surveyor of Shropshire, of the office of Honorary Secretary for the Midland district. He proposed a vote of thanks to Mr. Davis for the services which he had rendered in that capacity for the past ten years.

Mr. J. T. Eayrs seconded the vote of thanks, which was accorded by acclamation, and suitably acknowledged by Mr. Davis.

On the proposition of Mr. Eayrs, seconded by Mr. Marston, Mr. J. S. Pickering, Borough Surveyor of Nuneaton, was appointed to fill the vacancy created in the Hon. Secretaryship of the district.

Mr. H. G. Coales, Engineer to the Urban District Council, then read a paper on the Public Works of Market Harborough. Mr. Coales gave details of the various public works, and of the population, rateable value, and mortality statistics of the town. He said the by-

laws provided for a street of not less width than 36 ft., but the Council pass a street of a width of 30 ft., provided the houses on both sides are set back 6 ft. from the street, making the air space 12 ft. The district was entirely re-drained in 1881 by Mr. Mawbey, at a cost of about 18,000l.; and in 1890 a water scheme was carried out by Mr. Everard, of Leicester, at a cost of 24,000l., which gave the town a water supply second to none in the country. The gas works were in the hands of a private company, but the Council were at the present moment negotiating for the purchase of the same. Previous to the formation of the Local Board the sewage of the district was discharged into the river Welland at a point below the town. In 1882, twelve acres of land were purchased for the purposes of sewage disposal, of which nine and a half acres were laid out on the intermittent downward filtration system. In 1889 two small settling tanks were put in at the outfall of the main sewer from the town to catch the grosser matter coming down. By 1894, with the vastly increased supply of sewage to be dealt with consequent upon the new water supply and the development of the district, it became absolutely necessary to provide additional means of purification. Two fields of pasture were accordingly purchased adjoining the lower end of the old sewage farm, forty-seven acres in extent, at the price of 84l. per acre. Nine acres of this land were unavailable for sewage owing to their natural position; about five acres were taken up by embankments, &c., leaving thirty-three acres available for sewage. The new land was kept as pasture, and worked on the broad irrigation system. The land was drained in a similar way to ordinary agricultural land with common tiles. A 9-inch socket pipe effluent drain, with inspection chambers, was laid at the lower end of the farm to pick up the land drains. The sludge from the settling tank was raised by means of chain-pumps, and when dry was sold to the farmers for 2s. per ton. The character of the subsoil varied, part of it being a loamy clay and the remainder of a more sandy nature. The average depth of the drains was only about 3 ft. Market Harborough was favourably situated as regards levels, and pumping was avoided both for water supply and sewage disposal. On several occasions money had been raised by private subscription for the widening, deepening, and straightening of the River Welland, and of late years no serious floods had occurred. In February last the nearest approach to a bad flood which had been experienced for seventeen years occurred, but no houses in Market Harborough were flooded, although the flood water made its appearance in the main street. A subject which, in his opinion, was too much neglected by that Association. Local Authorities had no power to compel the riparian owners to move in the matter; yet a Local Authority might expend money in watering a highway, and might compel an owner to cut a hedge adjoining such highway. Were floods of less consequence than dusty or dirty roads? With regard to sanitary matters he said the Council did not insist on flushing cisterns if efficient hand flushing was practised.

Mr. E. G. Mawbey, Leicester, in opening the discussion, congratulated the town upon the progress it was making. The increase of population during the past seven years had been 38 per cent., which was considerable. They had a splendid water supply and an excellent sewerage system and sewage disposal works. He congratulated the town upon having the land system of sewage disposal. A great many schemes and inventions had been brought out of late years, but there was nothing that beat the land for sewage disposal.

Mr. J. T. Eayrs, Birmingham, said he took exception to allowing streets to be made 30 ft. wide when the by-laws stipulated for 36 ft. It was a great mistake to go behind the by-laws, and he believed the public could obtain a mandamus to compel them to carry out the by-laws. Further, how could they expect the builders to comply with the by-laws in other respects if they themselves went behind them.

Mr. Barber, Islington, said he had also made a mark against the paragraph referring to the width of the streets. As Market Harborough was growing, and might in time become a populous centre, it was desirable that the Council should look ahead and try to see that the streets were made a proper width as provided in the by-laws; otherwise there would

be a great difficulty to face in the future, and a large amount of compensation to pay for land which at the present time ought to be given up to the public. He also thought they were a little in arrears of present day sanitation when the Council did not insist on flushing systems for water-closets if efficient hand-flushing was practised. He did not see how it was possible for the sanitary officers, unless they made very frequent visits indeed, to see that the closets were properly flushed.

Mr. W. Weaver, Kensington, having expressed the opinion that the streets ought to be a minimum width of 40 ft., said he would like to congratulate the district upon not having a School Board. It must be a happy state of things.

Mr. Walshaw, Peterborough, said he was sorry to say they had a system of hand-flushing of closets in Peterborough with houses built previous to the adoption of the model by-laws, and his experience of such closets was a very unpleasant one. He contended that the foul emanations from the manholes in the street were due to the inefficient way in which the closets were flushed. He was pleased to say they had now adopted the three-gallon system.

Mr. Pickering, Nuneaton, said he found that every sewage farm was condemned. The only point as to which he thought there might be no doubt as to the efficiency of the farm was the depth of the drains. He could hardly believe that drains of an average depth of 3 ft. would give good results. That struck him as a weak point in the system.

Mr. Mann, Sevenoaks, thought the provision made for infectious diseases rather meagre, and he took it that smallpox was the only disease for which accommodation was provided.

Mr. Coales said the hospital had never been used for anything but smallpox.

Mr. Dawson, Banbury, asked if the River Conservators sent their inspectors to take an analysis of the effluent regularly, and whether the analysis was satisfactory.

Mr. A. T. Davis, Shrewsbury, speaking with reference to the depth of drains on the sewage farm, said his opinion was that with depths so shallow as 3 ft. they could not get a properly purified effluent. He also deprecated the hand-flushing of water-closets.

Mr. Cooper, Wimbledon, thought it was rather soon to say anything about the depth of the drains before they knew the line of the land, and whether the sewage got two cleanings or had to trust to one.

Mr. Coales briefly replied to the various points raised in the discussion. He said that although the Council had passed roads of 30 ft. in width, with a 6 ft. building line on each side, the plans were now being sent in for roads of greater width. They did not analyse the effluent from the sewage farm, but they thought it a very good one. They had no complaints no Conservancy Board, and no inspectors to see them. With regard to the under drainage when they laid out the farm they trusted to the existing land-drains, but they found they required some little assistance, and they put in drains at an average depth of 3 ft. The land was rather flat, and they could not get the full of the effluent into the river if the drains were any deeper.

The President expressed the opinion that no system of sewers would be efficient so long as they were flushed by hand. The greatest nuisance would arise at the manholes from these inefficiently flushed closets, and he would strongly recommend that a three-gallon flush be insisted upon.

Mr. H. G. Coales then submitted a second paper on "Public Baths for a Small Town." He said these baths were opened in October last and were built from his designs. The initial problem was how to carry out good baths for 2,000l. The Council presented a good site for the purpose, which had the great advantage of adjoining the Council offices, to which a caretaker's house was attached. The accommodation to be provided was simplified to swimming bath, slipper bath, pay office, and attendant's room, laundry and boiler-house. A swimming bath of 75 ft. by 25 ft. was decided upon, with a depth of 7 ft. of water at the deep end, and 3 ft. 6 in. at the shallow end of the bath. There were twenty-four dressing-boxes, with a wooden gallery over. The partitions between the boxes were 5 ft. high. The bath walls were of the following average section: 10 in. Portland cement concrete, 1½ in. common red bricks in cement mortar, ½ in. cement mortar rendering, ¼ in. neat cement skimming, and

* Driver Prize, 1897, and Penfold Silver Medal, 1897.

† Penfold Gold Medal, 1897.

‡ Crawford Prize, 1897.

4 in. best white glazed brick lining in cement mortar. Two lines of blue glazed bricks were run longitudinally down the bath floor for the assistance of those swimming under water. The bath walls were finished by 2-in. round-nosed York coping. The floor was of the following average section: 8 in. of Portland cement concrete, 1½ in. cement mortar rendering, ½ in. neat cement skimming, and 3 in. best white glazed brick lining in cement mortar. There was a hollow galvanised iron handrail around the swimming bath, which served an additional purpose in circulating the water. The handrail was perforated and provided with aerators, by means of which air was mixed with the water in the bath, and it was claimed that the water was thereby freshened and purified. To the right of the entrance hall was a door leading to four private slipper baths, with a water-closet attached. Each room was fitted with an enamelled iron bath, with hot and cold water laid on. To the left of the entrance hall was the pay office and attendant's room. The Roster system of heating was adopted, the warmed water from an annular heater issuing from three gun-metal spreaders at equal distances up the centre line of bath. By this system bathers could not be scalded, and the temperature of the water was uniformly raised with no cold patches. The cost was £1,102., and they expected to spend another £50. upon a new boiler, making a total cost of £1,152.

Mr. Barber, Islington, expressed a preference for asphalt rendering to cement as less likely to be affected by leakage.

Mr. Eavrs, Birmingham, said they would be especially interested when visiting the baths to see the way in which the water was aerated.

On the proposition of the President, seconded by Mr. Mawbey, Leicester, a hearty vote of thanks was accorded to Mr. Coales for his papers.

Mr. Coales entertained the members attending the meeting to luncheon, and the remainder of the day was occupied in inspecting the baths, the sewage farm, and the Burn Mill Hill service reservoir. At the conclusion of the visits the members were entertained to tea by Mr. S. Symington, late Chairman of the Baths Committee.

THE INSTITUTE OF BUILDERS:
ANNUAL DINNER.

The Annual Dinner of the Institute of Builders was held at the Trocadero Restaurant, Piccadilly Circus, on Wednesday evening. The President of the Institute, Mr. W. Shepherd, occupied the chair, and amongst those present were: Messrs. Rowland Plumbé, H. H. Statham, James Edmeston, F. May, J.P., J. M. Burt, J.P., J. Jacobs (the Master of the Carpenters' Company), J. Howard Colls, F. J. Dove, G. H. Trollope, H. H. Bartlett, G. Kett, J.P.; J. Randall, C. Wall, W. Scrivener, and others.

The loyal toasts having been honoured, Mr. J. Mowlem Burt proposed "The Navy, Army and Auxiliary Forces," coupled with the name of Major Gilks, who responded.

In giving the toast of "The Institute of Builders," the President referred to the origin of the Institute, mentioning that it was first known as the "Builders' Society." It was felt, however, that that body was too exclusive, and efforts were made to widen its sphere of influence. The members of the building industry who founded the Institute were actuated by the best of motives, viz., to raise the status of members of the industry, and they evidently thought that a builder had something more than a mere money-making instinct, and that he wanted a *locus standi* amongst other similar bodies. Membership of the Institute was not confined to builders in the Metropolis, and in their ranks they had several influential provincial master builders. The Institute did not take any part in the relations between the masters and the men. The Central Association of Master Builders did that; but they looked after the larger interests of the industry. No doubt the founders of the Institute had in view meetings like that which he was addressing, and a very useful purpose was served by such gatherings, for nothing contributed more to a better understanding between men than meetings where business was not discussed, and they could meet on common ground. The Institute was able, owing to its standing, to foster and develop the interests of the members of the building industry—the largest industry in the Metropolis. They were endeavouring to impress upon builders the

importance of consolidating themselves and assisting the efforts of the Institute; but that was not an easy task, for the circumstances under which the industry was carried on, and the severe competition of the time, made it difficult to bring people together and make them realise that there was an interest common to all.

Mr. Howard Colls then proposed the toast of the "Architects and Surveyors," coupled with the name of Mr. Rowland Plumbé. In the course of his remarks he said that their trade was passing through a very curious phase. There had been no limited liability companies floated lately amongst the leading business in London, and architects could congratulate themselves that in dealing with ordinary firms they had some one personally to deal with their work; but builders were now faced with the opposition of firms who called themselves builders, but who had no claim to that title. Various stores, for instance, composed of directors who knew nothing about the trade, represented to their customers that neither architects nor builders were needed and that work could be done better by the stores. He did not think that would last long, and he was sure that architects would be better pleased to deal with men who understood their business.

Mr. Plumbé, in response, said that he agreed with the President that meetings like that did much good in enabling men to understand each other, and architects and builders in particular. Architects were sensible of the difficulties builders had to contend with at the present time, principally in regard to labour, and architects did all they could to meet those difficulties in the best possible way. The labour difficulty was not by any means at an end, and at a later time, when the crisis had to be faced, he believed that architects would gladly assist builders to get through their troubles.

The Chairman then proposed the toast of "The Carpenters' Company," coupled with the name of Mr. Jacobs, the Master, and referred to the assistance which the Company had afforded in promoting technical education amongst those engaged in the building trade.

Mr. Jacobs having briefly replied, Mr. Dove proposed the toast of "The President," who responded.

The next, and last toast, was "The Visitors," proposed by the Chairman, and coupled with the name of Mr. H. H. Statham, who briefly replied, thanking the Institute for their hospitality to the visitors.

The proceedings then concluded.

ARCHITECTURAL SOCIETIES.

GLASGOW ARCHITECTURAL ASSOCIATION.—At a meeting of this Association, on Tuesday, the 4th inst., Mr. Geo. S. Hill, Vice-President, in the chair, Mr. W. J. Anderson read a paper on the "Acropolis of Athens in the Light of Recent Researches." He, in the first place, showed the kinship of the primitive Acropolis of Troy, Tiryns, Mycene, and Athens, and the indications at Athens of the pre-Homeric era, to be superseded by that of Hellenic Greece. The buildings of this period were severally considered in their purpose, the ancient temple of Athene Polias, the Parthenon of Pericles, the entrance gates of the Propylaea, the Megaron of Erechthens, and his museum or Heroon. The present aspect of the buildings, their architectural details, and their former magnificence, were shown by a large number of lantern views and restorations.

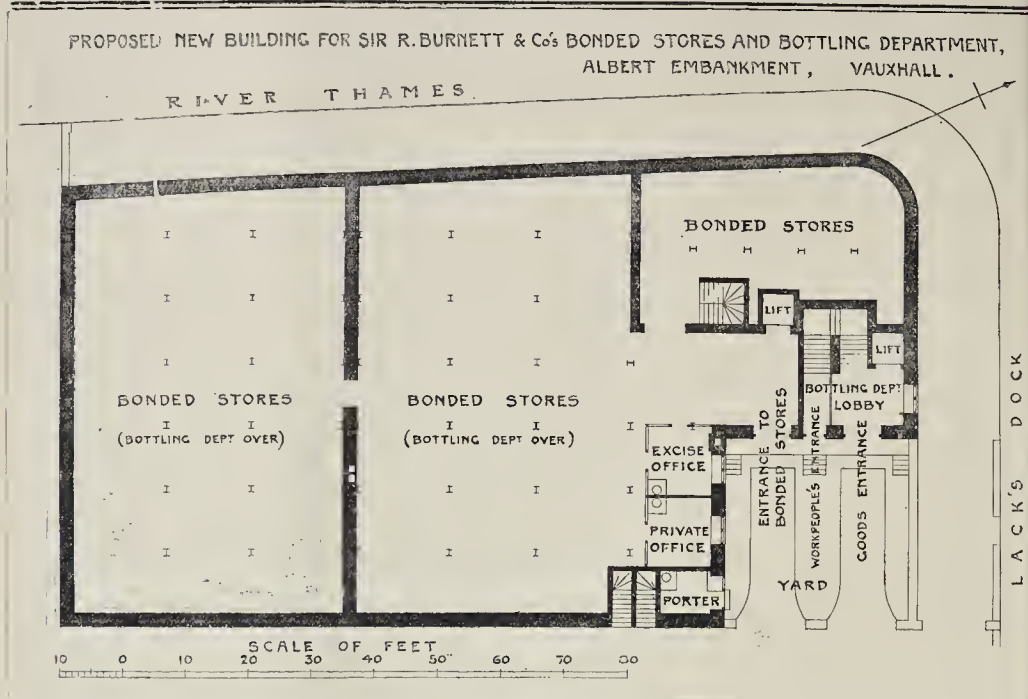
ARCHÆOLOGICAL SOCIETIES.

ARCHÆOLOGICAL INSTITUTE.—At the general meeting of this Institute on the 5th inst., Mr. James Hilton, Hon. Treasurer, in the chair, Mr. Tailourd Ely read a paper on "Wreaths and Garland," with especial reference to Greek and Roman usages. He pointed out that the modern English limit the use of wreaths to funeral purposes, whereas among the ancients the wreath was a sign of feasting and joy. Religion originally prompted the use of the garland, which may have been connected with the widespread belief in the supernatural powers of trees and plants. Wreaths were employed as bandages to assuage headache resulting from debauch; and certain plants, as the myrtle and the rose, were believed to exercise a prophylactic power against the effects of wine. The Greeks, too, were fully sensible of the beauty of flowers, and floral decoration played a great part in Greek poetry, from Sappho downwards. Among the early Romans, on the contrary, the use of wreaths in public was

strictly limited to religious functions, and marks of distinction connected with services performed to the State, such marks of distinction being in great part derived from the Etruscans, who made great use of wreaths. In Greece, the simple wreath of olive, &c., as a reward for athletes, superseded the prizes of intrinsic value offered in heroic times. In the fifth, and still more in the fourth century, crowns, usually of gold, were awarded to successful statesmen or warriors. Wreaths of laurel, myrtle, vine-leaves, or flowers were commonly worn at *symposia*, and were thus represented on vases. For the most part, of course, these wreaths had perished; but some had been preserved in Egypt. The manufacture of garlands gave employment to many, and its processes were depicted in several Pompeian pictures. Gold crowns were frequently modelled in the form of leaves, as ivy, &c. Other materials for wreaths were wool, and artificial leaves and flowers of horn or silk. Mr. Ely exhibited photographs of paintings and casts of coins in illustration of his paper. Professor T. McKenny Hughes then read a paper on "A Comparison of Flint Implements of the Palæolithic and Neolithic Age." He exhibited a series of flints in illustration of the view that in their earlier stage of manufacture the Palæolithic and Neolithic implements passed through the very same stages—that is to say, that a block of flint was first rough-dressed by both Palæolithic and Neolithic people into the same general form, and that the Neolithic men merely proceeded further on the same lines, afterwards finding out the way to grind the edge, and finally the whole implement. He pointed out that, with few exceptions, all Neolithic-worked flints were found on the surface or in artificial excavations; whereas, as a rule, Palæolithic implements were found in deposits which seemed to be due to the sweeping down into hollows or river terraces of surface soils in or on which the implements and other stones lay. In the river gravels the flints did not owe their shape to the action of running water, but had that variety of character and colour which showed that they were due to sub-aerial weathering; and the amount of subsequent attrition that they had undergone was very small. Fracture was, therefore, the rule, not the exception, in all river gravels, so that the flints were sub-angular and quite unlike the symmetrical flint pebbles of a sea beach. All the irregular fractures produced by accident on surface flints may be referred to two principal groups—the fracture produced by blows and those due to unequal expansion and contraction from changes of temperature and amount of moisture. They are found, as might be expected, in the flints of the terrace and plateau gravels, and if a flint got wedged in, these fractures would be commonly repeated along the exposed edge in a manner suggestive of design or use. In this way he explained the so-called Palæoliths.

COMPETITIONS.

WINTER GARDENS AND CONCERT-ROOM, FELIXSTOWE.—The Felixstowe Spa and Winter Garden Company invited, some time ago, plans and estimates for laying out about 800 ft. of the cliffs and grounds beneath the present public gardens, for the building of a pavilion or other erection available for concerts or winter gardens, with reading and refreshment rooms, and lavatories and cloak-rooms, and with or without bath, club, and billiard rooms. The cost was not to exceed 15,000l., and a premium of 50l. was offered for the drawing placed first in the order of merit, and 15l. for the drawing placed second. The Committee has been advised by Mr. E. C. Frere, of London, and upon his report have awarded, out of eight competitors, the first premium to Mr. Brightwen Binyon, of Ipswich, and the second to Mr. George William Leighton, of Ipswich and Felixstowe, and arrangements are being made to carry out the work. Mr. Binyon's plan provides for a central building, containing billiard, refreshment, and cloak rooms, over which is a large concert hall or winter garden, with reading, smoking, and dining rooms, facing the sea, and opening on to a promenade along the front of the site, under which is arranged beach houses, that could take the place of the present bathing-huts. The concert hall is lighted principally from the top by a glass pavilion roof, having a promenade round, with a band stand and wind shelters to the front. The buildings and grounds are entered from the beach in the centre, and also from



the cliff gardens. The grounds have been divided into three, and the building so arranged that it can be carried out in sections:—The first, the centre portion, containing the concert hall and beach huts; the second, the portion to the west of the zig-zag containing the spa and baths, and also a continuation of the promenade; and the third portion consisting of a continuation of the promenade to the east, as far as the end of the site. The beach huts would be suited for swimming, boating, or rowing clubs. The design has been arranged with the view to the subsequent building of a pier, starting from the level of the promenade at the centre of the range of buildings, and the grounds are laid out with paths and tennis courts, with summer huts and seats at convenient places. According to Mr. Leighton's designs, the winter garden and concert pavilion, the latter's internal dimensions being 80 ft. by 52 ft., are placed in the centre of the main building. It has a fine sea frontage, and the roof is covered with glass. It is in the shape of an irregular octagon, with long sides, and there is a deep stage or orchestra on one side. Cloak-rooms and lavatories are placed in convenient positions, with pavilion and dressing-rooms for the artists. Billiard, card, reading, ladies' refreshment and pump rooms are all provided, and the whole of the flat roof forms a promenade, with band stands or kiosks. The style adopted in the design is Classical, and there is a long colonnaded terrace or verandah extending along the front. Salt-water swimming baths for ladies and gentlemen are shown in a separate building at the eastern point of the cliff. Both designs show that the buildings will be of red brick and stone. The following are the names of those who sent in plans: Messrs. G. H. Elphick, Broad-street, E.C.; Ernest Herber, 32, Bedford-row, W.C.; F. E. Robinson, 13, Victoria-street, S.W.; Mawson & Gibson, Windermere; J. H. Wright, Ipswich; H. W. Roberts, Newmarket.

LIVERPOOL ENGINEERING SOCIETY.—At the annual meeting of the Liverpool Engineering Society, at the Royal Institution, Colquhoun-street—Mr. S. B. Cottrell presiding—the annual report, which was adopted, showed that the additions to the roll of the society during the year had been forty-nine, compared with sixty-one in the previous session. At the present date the number of members of all classes is 363. During the evening Mr. S. B. Cottrell was heartily thanked for his services as President during the year, and Mr. George Farren, M.Inst.C.E., was elected his successor.

Illustrations.

PRESBYTERIAN COLLEGE, CAMBRIDGE.

HIS new College, which is to be called Westminster College, is now being erected on a fine site of about three acres in Madingley-road, and near the new portion of St. John's College. The accommodation consists of class-rooms with a large library over, twenty-six sets of students' rooms, dining-hall, senate room, principal's house, &c.

The materials used are red facing bricks with Clipsham stone dressings, the roofs being covered with Colleyweston stone slates. The whole of the construction is fireproof, and the majority of the joinery and the open timber roofs to dining-hall and library are to be of wainscot. Mr. Shint, of Cambridge, is the contractor.

The design was selected in a limited competition about eighteen months ago. Mr. H. T. Hare is the architect. The drawing is exhibited at the Royal Academy.

SCULPTURE FOR OXFORD TOWN HALL.

THESE two figures, typical respectively of "Industry" and "Sloth," are at present exhibited in a prominent position in the Octagon Hall at the Royal Academy. They form two of a series of figures executed by the sculptor, Mr. F. E. E. Schenck, for the Town Hall at Oxford, of which, as our readers will remember, Mr. H. T. Hare is the architect, and which was opened on Wednesday last by the Prince of Wales.

The series of figures, in a position about eighteen feet from the ground, is continued round three sides of the Town Hall. In the Lecture Room at the Royal Academy are exhibited also six sketch designs of some of the figures.

The two here illustrated form very good examples of sculpture applied to architecture, being both decorative in effect and also having a distinct and appropriate signification.

PROPOSED NEW BONDED STORES, VAUXHALL.

THIS building is proposed to be erected by Sir R. Burnett & Co. to replace their present building on the Surrey approach to Vauxhall Bridge, which will shortly be pulled down by

the London County Council for improving the approach to the new bridge, the site for the new building being close by on a wharf facing the river, and behind Messrs. Burnett's distillery. It consists of four floors, the basement and ground floors being used for the bonded stores, and other two floors for bottling and packing, &c., both sections having their offices, excise offices, and power lifts and cranes. The spirit vats are to be in the upper part of the building, to supply the bottling departments, the vats being lilled from a gallery above in connexion with a lift from the bottling department below. There is a piece of wharf running between the building and the river and round by the creek, to facilitate loading and unloading barges.

The building is to be faced with red bricks, with stone copings to the parapets, the roof of green slates with half-round red tile ridges and lead hips. The frames, mullions, and transoms to windows are of wood, and the whole of the floors and staircases are of fireproof construction. ALLAN F. VIGERS.

NEW SCHOOLS FOR THE FRENCH PROTESTANT CHURCH OF LONDON, SOHO SQUARE.

THESE schools are about to be erected on a site in Noel-street, Soho, recently acquired by the trustees of the French Protestant Church, of Soho-square, near which they will be conveniently placed.

The building will provide space for 212 children and residence for the master. On the ground-floor room for eighty-two infants is provided, on the first floor eighty girls, and on the second floor eighty boys. The lavatories, cloak-rooms, and water-closets are in a spare building in the rear, the closet blocks being in all cases aerially disconnected. The exterior will be faced with Luton bricks and bright red dressings, the cornice, strings, &c., being in red terra-cotta and the roof of Westmoreland slates to accord with the colour and materials used in the church. Mr. Aston Webb is the architect, and the drawing is exhibited at the Royal Academy.

ALEXANDER THOMSON STUDENTSHIP DRAWINGS.

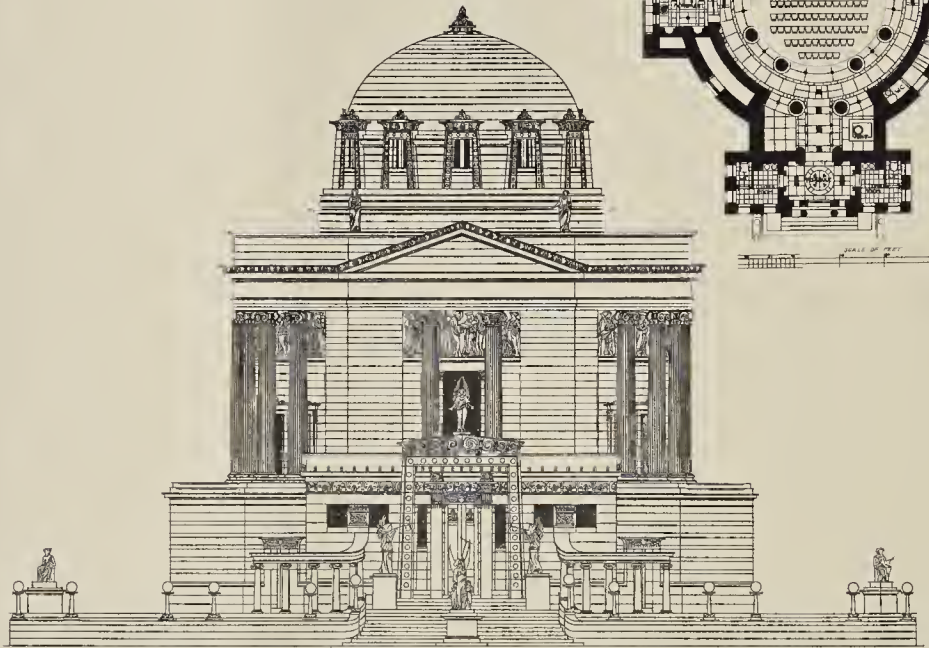
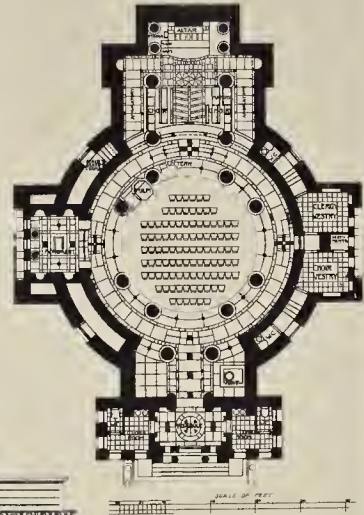
THE Alexander Thomson Studentship bears the name of the late eminent Glasgow architect who, from his predilection for a Greek character of detail in his buildings, and the ability which he showed in adapting Greek



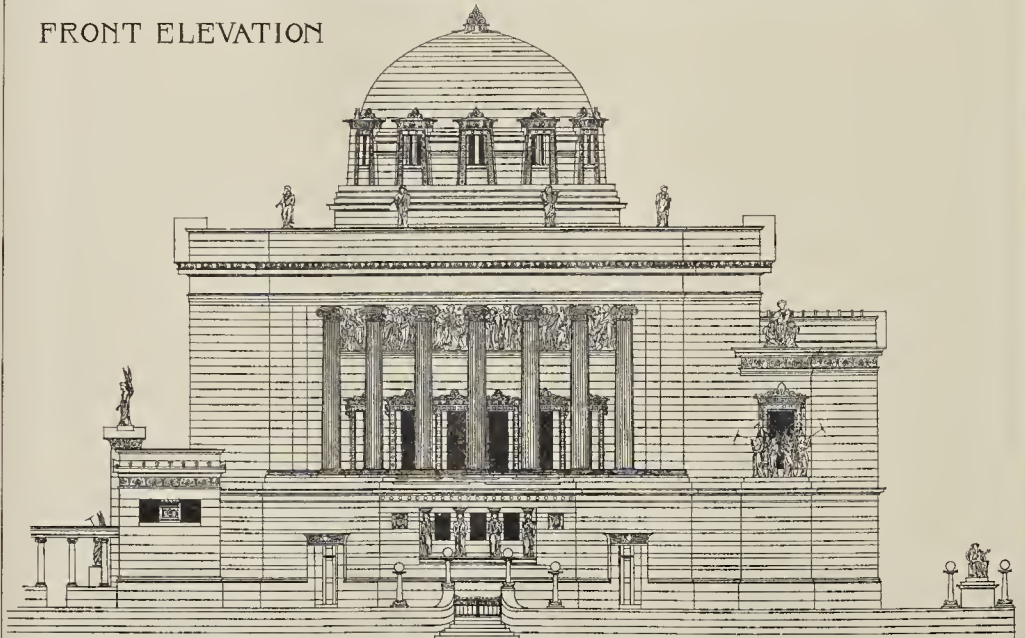
DESIGN FOR A MEMORIAL CHAPEL

BY MR G. A. PATERSON

(Alexander Thomson Travelling Studentship)



FRONT ELEVATION

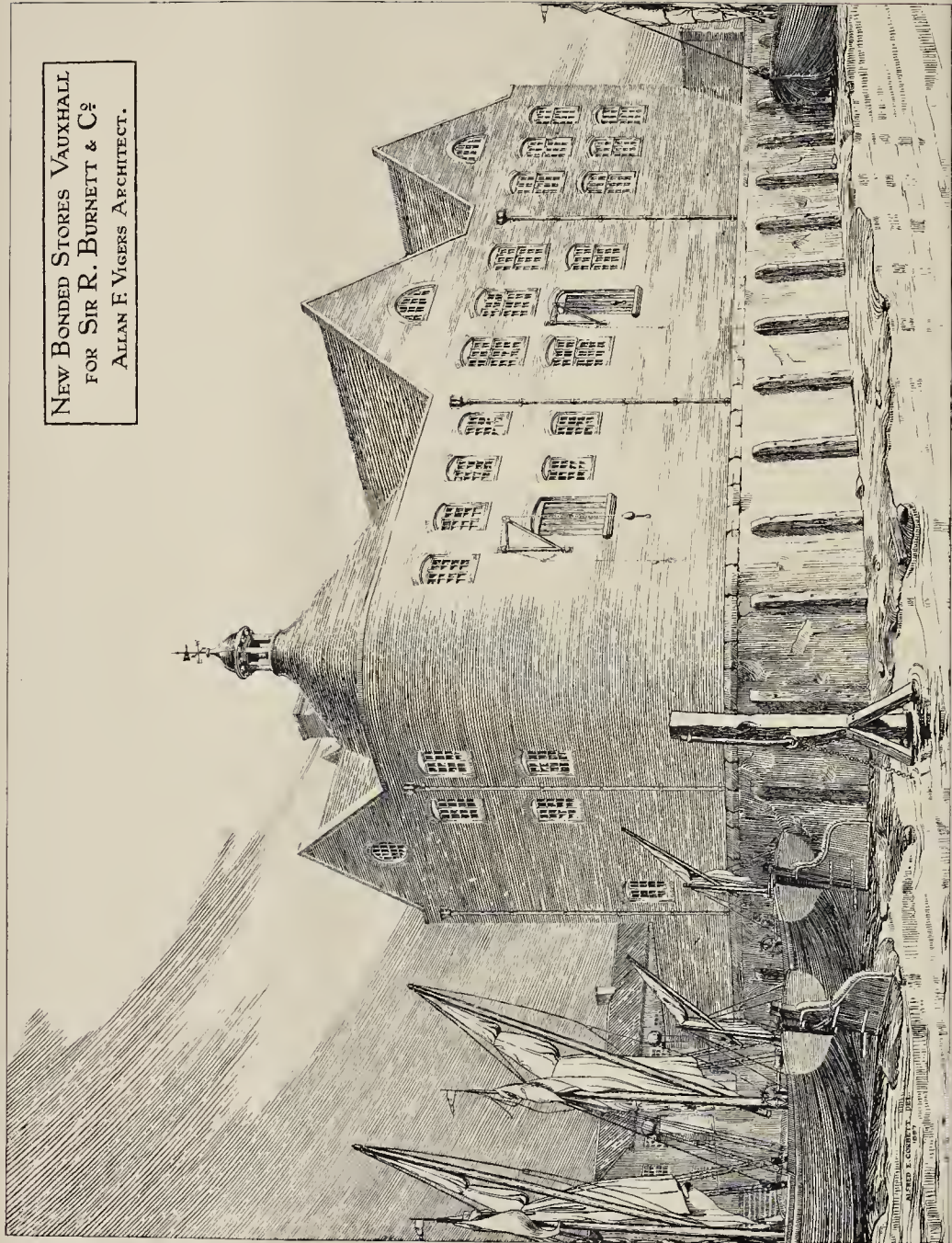


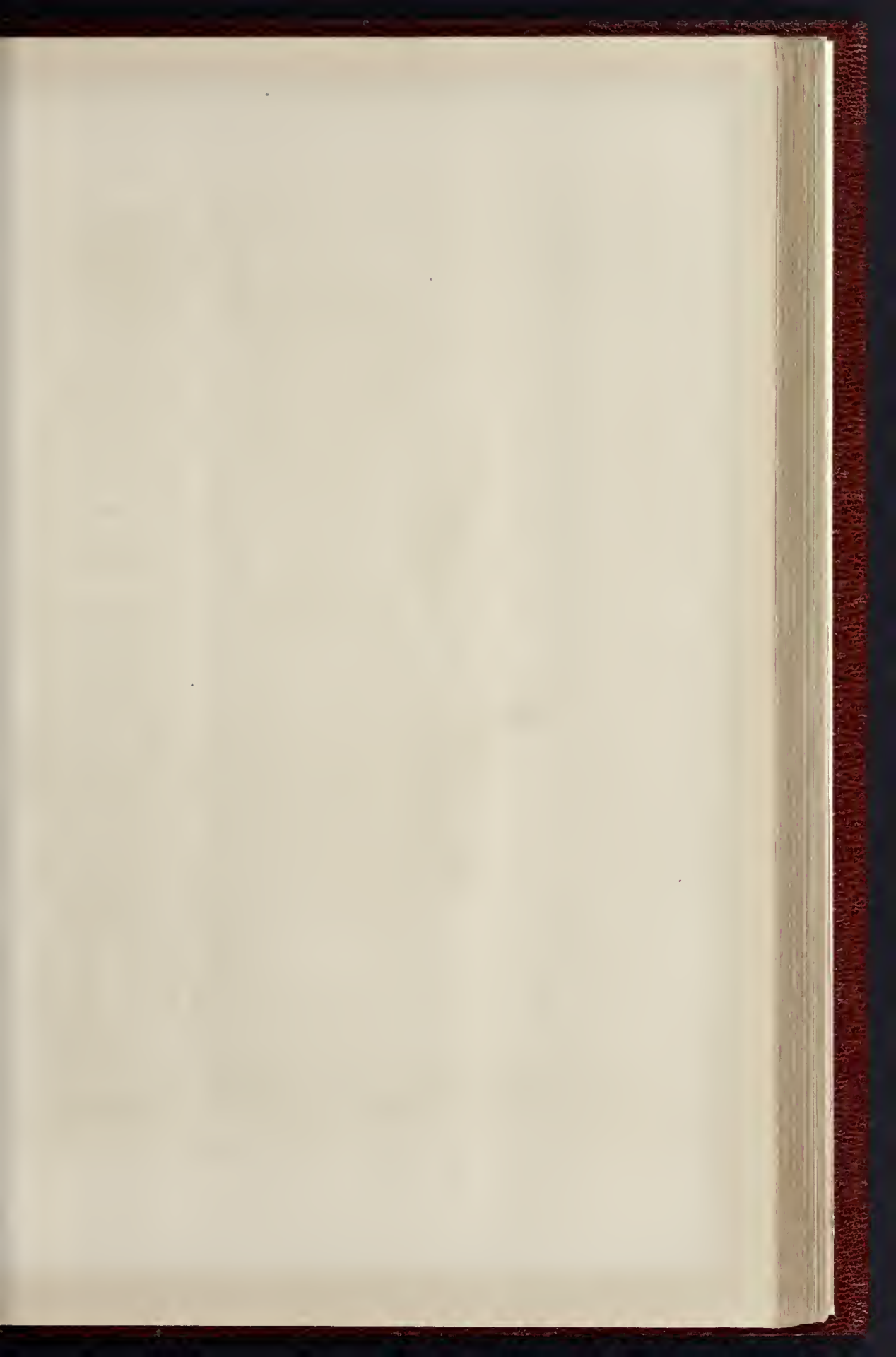
SIDE ELEVATION



THE BUILDER. MAY 15. 1897

NEW BONDED STORES VAUXHALL
FOR SIR R. BURNETT & CO.
ALLAN F. VIGERS ARCHITECT.







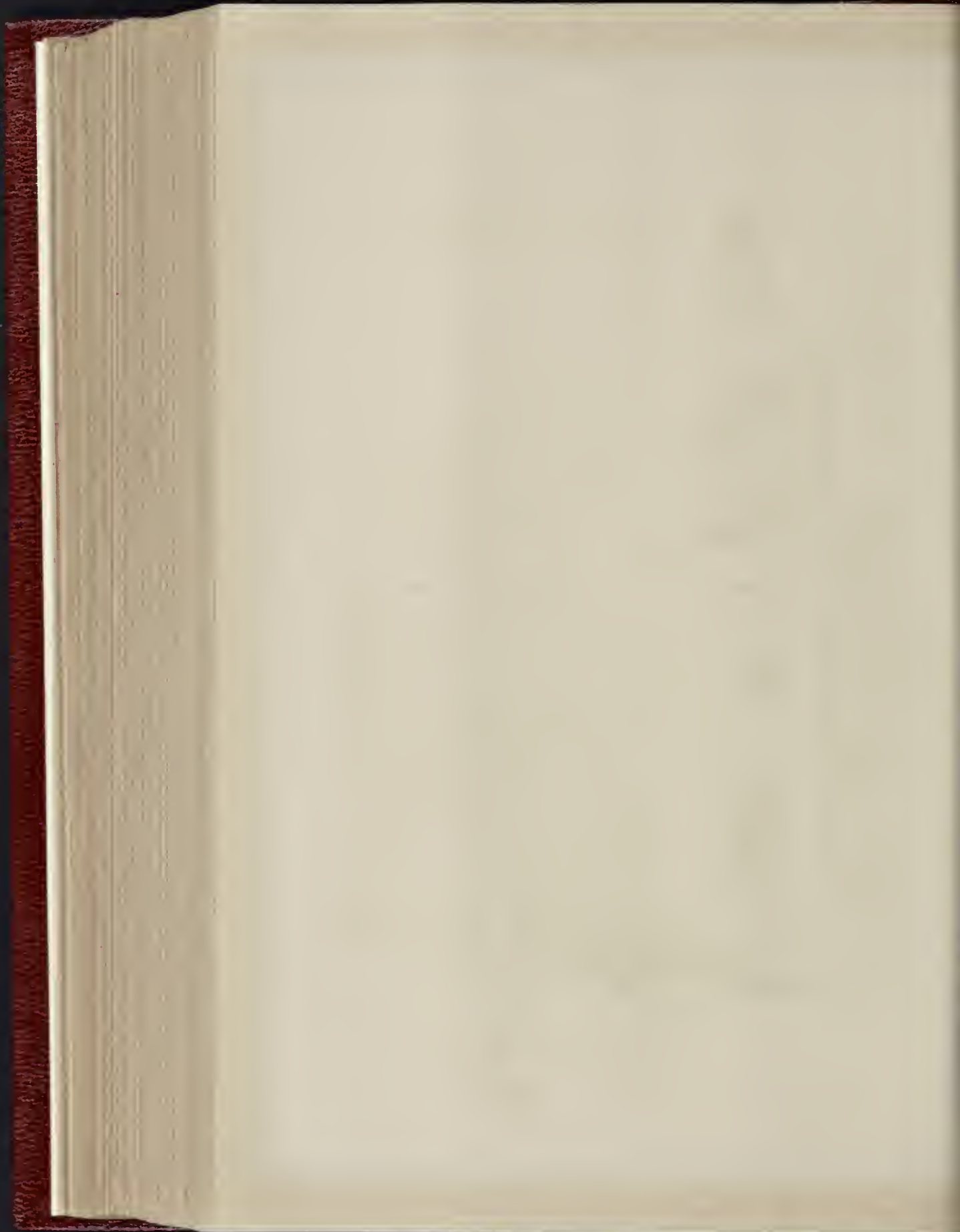
THE PHOTOGRAPH BY MR. J. S. EAST HARDING STREET FETTER LANE, E.C.

SCULPTURE RELIEF: "INDUSTRY."—MR. F. E. E. SCHENCK, SCULPTOR
(FOR THE TOWN HALL, OXFORD.)



INK-PHOTO SPRAY & CO. 4 & 5 EAST HANING STREET, ZETTER LANE, E.C.

SCULPTURE RELIEF: "SLOTH"—MR. F. E. E. SCHENCK, SCULPTOR
(FOR THE TOWN HALL, OXFORD.)





MAIN
CORNICHE



U. P. CHURCH
ST. VINCENT ST.
GLASGOW

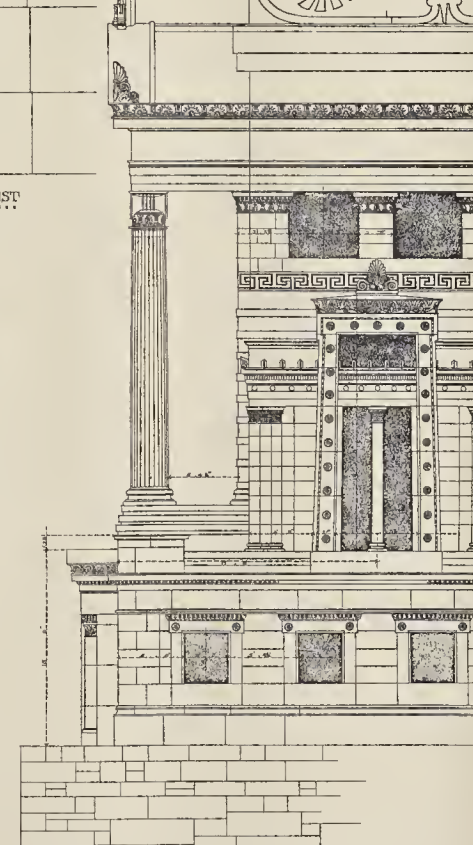
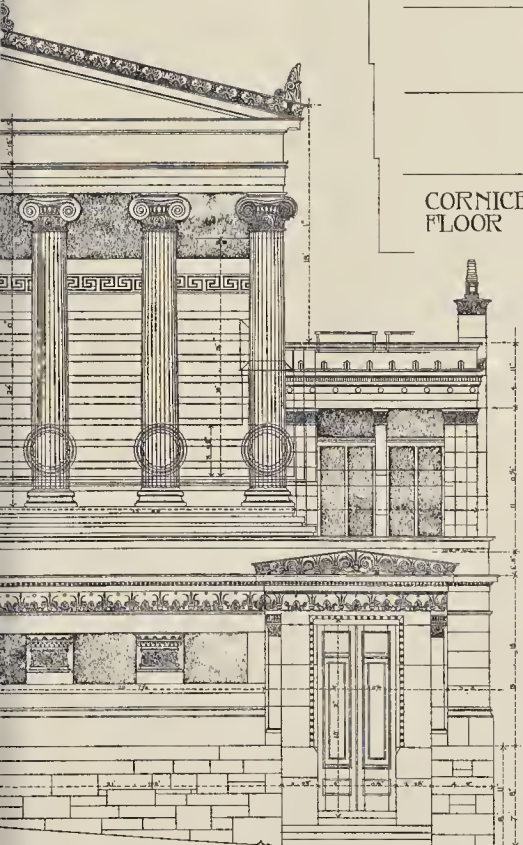
MEASURED DRAWING

BY M^r G. A. PATERSON

(Alexander Thomson Travelling Studentship)

CORNICE
& FRIEZE OF
PEDIMENT
FIRST FLOOR

CORNICE 1ST
FLOOR



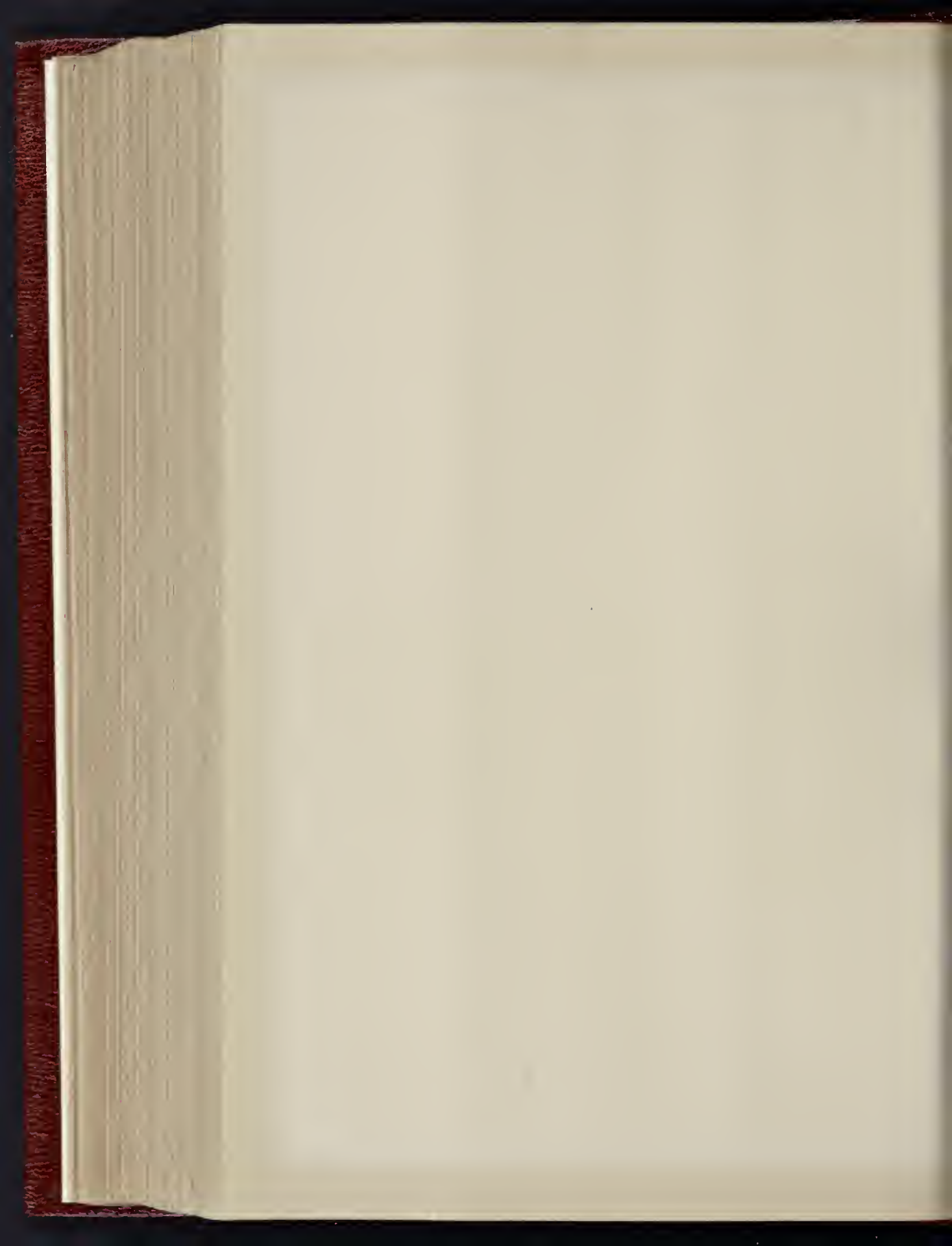
FRONT ELEVATION

SIDE ELEVATION

PLAN

PLAN THRO. FIRST FLOOR WINDOWS

SCALE = FEET





PLAN.



details to modern architecture, was often spoken of as "Greek Thomson." He left a fund to found this studentship for the furtherance of the study of ancient Classic architecture. The value of the studentship is 60*l.*, and it is open for competition every third year to any architectural students in the United Kingdom, between the ages of 18 and 25.

The last holder of the studentship is Mr. G. A. Paterson, of Glasgow, and the drawings are reproduced from a portion of his work in connexion with it. One of them consists of measured drawings of one of Alexander Thomson's best works, the United Presbyterian Church in St. Vincent-street, Glasgow. The other sheet is a design for a memorial chapel in the same school of architecture.

The chapel is designed to seat 100 persons, with space for a monument. The author writes:—

"The site is open, and the area available is 20,000 superficial feet, but the ground covered by the building proper does not exceed 5,000 superficial feet.

The design is treated in an early Classic style, the detail being principally of Egyptian character. A dome has been introduced to give it a monumental appearance. The main entrance is through a front porch (on either side of which there is a cloak-room) into an inner vestibule which contains the font. The vestries are on one side and the corresponding space on the opposite side is utilised for the monument.

The organ is placed above the ambulatory in the choir, and the heating chamber is in the space below.

The materials suggested are principally marble and mosaic."

THE LONDON COUNTY COUNCIL.

This Council re-assembled on Tuesday at Spring-gardens, for the first meeting after the Easter recess, Dr. Collins, Chairman, presiding.

Louis.—On the recommendation of the Finance Committee it was agreed to lend the Kensington Guardians 2,700*l.* towards defraying the cost of erecting new buildings at the workhouse in Marles-road; the Guardians of St. Olave's Union 13,800*l.* for the purchase of a site at Ladywell upon which to erect buildings for the aged poor; the Paddington Guardians 19,000*l.* for the purchase of a site and the erection of casual wards; the St. Giles District Board 3,500*l.* for the construction of an underground convenience in High Holborn; the Battersea Vestry 5,000*l.* for the erection of baths and wash-houses; and the Hackney Vestry 17,620*l.* for the erection of baths and wash-houses.

The Estimates.—Lord Welby, in moving the reception of the Report of the Finance Committee, explained the estimates for the coming year. The net expenditure for 1897-98 was calculated at 2,718,556*l.*, as compared with 2,433,000*l.* for 1896-97. As London was growing year by year it must be anticipated that the estimates would increase as time went on. It was satisfactory to know that the expenditure, as a rule, fell short of the estimates. The net debt of the Council on March 31, 1896, was 37,941,704*l.*; the rateable value of London on April 6, 1895, was 34,221,830*l.*

Fires in Theatres.—Upon the reception of the report of the Theatres and Music Halls Committee.

Mr. Fardell, M.P., called attention to an alleged report of a conference of the chief officers of the Metropolitan Fire Brigade and others, said to have been held on the 5th inst., consequent upon the fire in Paris. It stated that reference was made to the state of the gallery entrances of the London theatres, and the opinion was expressed that they were a public danger on account of the distance of the pay-boxes from the actual entrances. The officers were asserted to have expressed the unanimous opinion that the pay-boxes should be close to the entrances. He ventured to think that that was a most important and serious statement, and he now desired to ask the Chairman of the Theatres Committee whether he could give the Council an assurance that the statements were erroneous, and whether he would communicate with the Chairman of the Fire Brigade Committee with reference to steps being taken to prevent the publication of similar sensational statements before there had been submitted an official report by the chief officer of the brigade.

Mr. Kemnant, Chairman of the Theatres Committee, in answer to Mr. Fardell, said the published statement was an erroneous one. The barriers near the pay-boxes in the theatres were so constructed as to prevent crushing and accident upon the ingress of the audience, and not to offer any obstruction to their egress.

On the report of the Building Act Committee,

Sir A. Arnold asked whether the powers of the Building Act afforded security against the occurrence in London of such a calamity as that which had taken place in Paris.

Mr. Payne, Chairman of the Committee, replied that a building such as that described in the Press, in which a bazaar was held in Paris, could not be lawfully erected or used for any public purpose in London. Buildings of a temporary character required the licence of the Council, under Section 84 of the London Building Act, but such licence was not given unless the construction and the means of exit in case of panic were quite satisfactory. There was, however, at present nothing to prevent the use of any permanent building as a bazaar, the contents of which might be as dangerous as those in the Paris fire, so long as neither music, dancing, nor entertainments of the like kind, nor stage plays, formed part of the proceedings at the bazaar.

On the motion of Mr. Dickinson, the following resolution was unanimously agreed to:—

"That it be referred to the Theatres and Music Halls Committee to report what security is afforded by the existing law to the public against fire and panic in charitable bazaars and other similar gatherings, and, if necessary, to make suitable recommendations to the Council for the amendment of the law."

Proposed Lodging-House for Women.—On the motion of Mr. Beachcroft (Vice-Chairman), the Public Health and the Housing Committees were instructed to report as to accommodation for women and children in London shelters and common lodging-houses, and as to whether the Council, having already established a model lodging-house for men, should not now construct a house (to serve in like manner as a model) for the accommodation of women alone or of women and children. The motion was agreed to.

The Council soon after adjourned.

APPLICATIONS UNDER THE 1894 LONDON BUILDING ACT.

At the meeting of the London County Council on Tuesday, the Building Act Committee reported that they had considered the unmentioned applications under the London Building Act, 1894, and had arrived at the following decisions:—Those applications which have been agreed to are granted on certain conditions:—

Poplar.—That consent be given to the erection of an addition on the south side of West India Dock Station to overhang West India Dock-road, on the application of Mr. J. Wilson on behalf of the Great Eastern Railway Company.

Marylebone, East.—That consent be given to the erection of two iron and glass shelters in front of the Oxford Music-hall, Oxford-street, on the application of Mr. H. Lundy on behalf of the Oxford Music-hall, Limited.

St. George, Hanover-square.—That consent be given to the erection of a pediment and blocking to the porch at No. 15, Old Bond-street, on the application of Messrs. J. T. Wimperis & Arber, on behalf of Messrs. Lawrie.

Lewisham.—That consent be given to the erection of a porch in front of Cecil House, Westwood-road, Sewardston, on the application of Mr. J. Johnson on behalf of Mr. J. Pearson.

Marylebone, West.—That consent be given to the erection of an iron and glass covered way over part of the forecourt of No. 26, Abercorn-place, St. John's Wood, on the application of Messrs. W. Densham & Sons on behalf of Mrs. Margaret Lean.

Paddington, North.—That consent be given to the rebuilding of the bank premises, No. 2, Egham-avenue, at the corner of Harrow-road, on the application of Messrs. Edmeston & Gabriel on behalf of the National Bank, Limited.

St. George, Hanover-square.—That consent be given to the erection of a portico and balcony in front of No. 2, Great Stanhope-street, on the further application of Messrs. Matthews, Rogers, & Co.

St. George, Hanover-square.—That consent be given to the erection of a balcony at the first-floor level, in front of No. 18, Park-lane, on the application of Mr. G. Lethbridge on behalf of Mr. W. Wright.

Strand.—That consent be given to the erection of an oriel window at the first-floor level in front of No. 31, Foubert's-place, Regent-street, on the appli-

cation of Messrs. Goodwyn & Sons on behalf of Mr. C. Soderberg.

Peckham.—That consent be given to the erection of a porch and covered way at the new relief-station, No. 106, Peckham Park-road, to be built upon Bird-in-Bush-road, on the further application of Mr. R. P. Whellock on behalf of the Guardians of the Poor of the Parish of Camberwell.

Westminster.—That consent be given to the erection of an addition with projecting bay windows and porches at Members' Mansions, No. 36, Victoria-street, at the corner of Great Chapel-street, on the application of Messrs. J. & A. E. Bull on behalf of Mr. J. B. Martin.

St. George, Hanover-square.—That consent be not given to the erection of two iron and glass shelters at the entrances to the Berkeley Hotel from Piccadilly and Berkeley-street respectively, on the application of Mr. R. Griggs on behalf of the Berkeley Hotel Company, Limited; as, apart from other objections, it is considered undesirable to agree to the principle of covering over portions of the public way as proposed, although it might be of great public utility if, as a general practice, footways of suitably designed streets were so covered.

Brixton.—That consent be not given to the building of the Perseverance public-house, No. 51, Vassall-road, North Brixton, with the flank of the building to abut upon Clivessell-road, on the application of Messrs. Eedle & Meyers on behalf of Mr. W. S. Penny.

Strand.—That consent be not given to the erection of an iron and glass shelter in front of the Tivoli Music-hall, Strand, on the application of Mr. W. F. Farthing on behalf of the New Tivoli Company, Limited.

Width of Way.

Bermondsey.—That consent be given to the erection of a two-story latrine addition on the east side of Holy Trinity Schools at less than the prescribed distance from the centre of Parkers-row, Dockhead, on the application of Mr. E. Cross on behalf of the Trustees of the schools.

Kensington, South.—That consent be not given to the erection of a workshop and stables at the rear of Nos. 5, 6, and 8, Park-terrace, Earl's Court-road, to abut upon Warwick-street and Sutton-street, respectively, on the application of Mr. F. E. Williams on behalf of Messrs. Harman, Pickett, & Floyd.

Space at Rear.

Finsbury, Central.—That the Council in the exercise of its powers under Sections 13 and 41 of the London Building Act, 1894, do not consent to, nor permit of, the erection of buildings adapted to be inhabited by persons of the working class, with shops on the ground floor, on a portion of lot 37 and on lots 39, 40, 41, 42 and 43 of the Council's land in Rosebery-avenue, Clerkenwell, with portions of the buildings at less than the prescribed distance from the centre of Jellie's-yard and Garmant-mews, and exceeding in height the width of those streets respectively, and also with irregular open spaces at the rear of the new buildings, as shown upon the plans submitted with the application of Mr. F. Smith on behalf of Mr. H. Royley.

Line of Fronts and Width of Way.

Poplar.—That consent be not given to the erection of a building on the north side of Prestage-street, to abut also upon Brunswick-street, with the forecourt boundary or fence in the position shown upon the plan submitted with the application of Mr. R. J. Beale on behalf of Mr. P. Hart.

Camberwell, North.—That consent be not given to the erection of a two-story building at the rear of the Duke of Clarence public-house, No. 181, Camberwell-road, to abut upon New Church-road, on the application of Messrs. F. J. Eedle & Meyers on behalf of Mr. A. E. Garrard.

Width of Way and Space at Rear.

Kensington, South.—That sanction be not given to certain deviations from the plan certified by the District Surveyor under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding and extension of a house known as Hillside, on the east side of New-road, Aubrey-walk (formerly Notting Hill-grove), Notting Hill, and that consent be not given to the erection of such building and of a two-story stable in connexion therewith, on the application of Mr. T. Arnold on behalf of Mr. H. Robson.

Formation of Street.

Peckham.—That an order be sealed and issued to Mr. F. A. Powell, sanctioning the formation or laying out of a street, 40 ft. wide, for carriage traffic, to lead from Surrey-road into Ivyton-road, Nutham, on his application to the Council on behalf of Mr. H. Ford. That the name Surrey-road (in continuation) be approved for the new street.

NEW PUBLIC HALLS, SELKIRK.—The new public halls for Selkirk, which have been named the Victoria Halls, have been erected and handed over to the town. The building comprises a large central hall with a suite of retiring-rooms and other accessories; a smaller hall, and a caretaker's house. It is situated in a central position at the east end of the High-street. The total cost is over 7,000*l.* The architect is Mr. H. J. Blane, Edinburgh.

Correspondence.

To the Editor of THE BUILDER.

R.I.B.A. ELECTIONS.

SIR,—I have ascertained from an Institute paper that between May 5, 1896, and May 3, 1897, twenty-eight meetings of the Council were held, but no less than sixteen of the members each attended only on an average of $2\frac{2}{3}$ occasions.

Five never attended, four of them went each to one meeting, and two of them were seen twice, yet all but one or two of these sixteen members are nominated for re-election.

But one of those members of the Council, who never attended any one of the Council sittings, atoned for his twenty-eight absences therefrom by his presence at the Institute dinner at Manchester, when he proposed the toast of "Architecture and the Sister Arts." A FELLOW OF THE INSTITUTE.

* * * To be quite fair, our correspondent should have mentioned that the gentleman who attended none of the Council meetings but attended the Manchester dinner, and proposed the toast referred to, was (as we find on reference to our report of the dinner) an eminent architect from Dublin, whose position on the Council was in the nature of an *ex officio* one, as the representative of one of the Allied Societies, and who was not one of the elected members of Council. The representatives of Allied Societies (generally Presidents of those Societies) are added to the Council in a complimentary spirit, and are not so much asked to attend the Council meetings as given the right to attend if they wish. As the Manchester dinner was a special occasion, representative members of the Institute were rather pressed to be present if possible. That appears to be the true statement of the case.—ED.

A POINT IN AMERICAN ARCHITECTURAL HISTORY.

SIR,—Information is earnestly desired concerning Peter Harrison, of York, said to have been a pupil of Sir John Vanbrugh (a statement in which I have little belief), and to have assisted in completing or decorating Blenheim Palace. At any rate, he came to New England, and erected, *cir.* 1750, some of the finest public buildings and churches of the colonial days, much more in the style of Gibbs than of Vanbrugh. His life and work in the colonies is somewhat known, but the time that he spent before going thither is apparently a blank. Can any one illuminate the darkness? S. F. BATCHELDER.
Old Cambridge, Mass., U.S.A.,
April 21, 1897.

ROYAL ACADEMY EXHIBITION.

SIR,—Owing to a clerical error, Mr. Arthur R. G. Fenning's name was omitted from the catalogue of architectural illustrations now in the Academy, as being joint architect with me of the design for the New Presbyterian College at Cambridge.

In justice to him I shall therefore feel greatly obliged if you can find space to insert this letter in your next issue.

W. HOWARD SETH-SMITH.

PRESERVATION OF WOOD.

SIR,—Can any of your readers say what proportion of slaked lime to tar is most to be recommended for the preservation of wood out of doors, and should this mixture be applied hot or cold? S. B. P.

The Student's Column.

SPECIFICATIONS.—XX.
GLAZIER.

Quality of Materials.—It is a very usual thing to specify that "all glass is to be of the best description, clear from all bubbles and other imperfections," but as a matter of fact this stipulation is seldom strictly adhered to in the carrying out of the work. It is, in fact, one of those general and loosely-worded requisitions for the very highest quality, which are not intended to be acted upon either by the architect or builder. It is, therefore, more satisfactory to indicate precisely the quality which is desired. Thus, for example, sheet glass is made in six qualities, which are known respectively as Picture A, Picture B, Best, Seconds, Thirds, and Fourths. The Picture quality alone is that which is really altogether free from bubbles, and also as flat as can be made. The other qualities differ in their variation from perfect flatness and perfect freedom from bubbles. It would, therefore, be better and more satisfactory to put in a clause such as the following:—All the glass to be of the precise quality described in the specification, to be well puttied and back puttied except where

otherwise described, and to be sprigged where required. (Spriggs are made in two sizes, $\frac{1}{4}$ in. and $\frac{1}{2}$ in.; but it is hardly necessary to specify which size is to be used save in exceptional circumstances). For large panes of glass and skylights it may be as well to specify that the glass is to be puttied with Thermo plastic putty. For glazing to iron, hard putty should be specified thus:—"the iron sashes are to be glazed with hard putty composed of oil and red and white lead." Under this heading should be described the manner in which the edges of glass in door panels are to be bedded, whether in india-rubber, wash-leather, felt, or flannel. A general clause would apply thus:—All the glazed panels in doors to have the edges bedded and to be bedded in double thickness of white Welsh flannel and fixed with beads, secured with brass cups and screws (or brass screws only, or bradded in for cheap work). In specifying plate glass be sure to indicate whether patent plate or British plate is to be used; patent plate being really sheet glass polished on both sides. Patent plate is made in three qualities: best, seconds, and thirds, and two colours of which the "crystal" or "usual" is the better for window glazing, as it is harder. In British polished plate glass there are three qualities: ordinary, best, and silvering, the latter being only used for looking glasses, as a general rule.

Sheet Glass.—The windows numbered to on plans to be glazed with 26 oz. sheet glass of "seconds" quality. The windows of scullery to be glazed with 21 oz. sheet glass of "thirds" quality. The windows of larder and pantry to be glazed with 21 oz. sheet glass of "thirds" quality ground on one side.

Rough Plate.—The borrowed light between scullery and corridor to be glazed with rough cast plate $\frac{1}{4}$ in. thick (this is the cheapest variety of plate glass, and there is only one quality but of different thicknesses). Skylight over to be glazed with $\frac{1}{4}$ in. plain rough rolled plate. The roof of conservatory is also to be glazed with the same glass.

Polished Plate Glass.—The windows of reception-rooms, numbered to on plans, to be glazed with British polished plate glass about $\frac{1}{4}$ in. thick, of "best" quality, fixed with beads secured with brass cups and screws.

Embossed Glass.—Specify whether this is to be ordinary embossed, or whether the design is to be worked by sand-blast.

Coloured Glass.—Specify whether the glass is to be coloured sheet with flashed colours, stating the weight, 16 oz., 21 oz., &c., or whether pot-metal or rolled cathedral glass; particularise the colours that are to be used, as the price of glass varies with the colouring.

Lead Lights.—Specify whether the work is to be carried out with broad comes or narrow comes. The kind and quality of glass to be used, and state if it is to be fixed with stout copper wire bands to wrought iron saddle bars, the diameter and distance apart of which is to be stated, and explain whether the glass is to be bedded in mastic cement or in white lead.

Iron Casements.—Specify these thus: The windows numbered to on plans to have iron casements of Messrs. manufacture as No. in their list p.c. price l. Gunmetal casements and other specially made articles of this kind should also be specified in a similar manner as provisional items.

Crown Glass.—This is now but seldom used except for the sake of the centre blob or "bullion," and even these are less in favour than they were twenty years ago. The qualities of crown glass are classified as with sheet glass. Specification may be thus: The windows numbered to on plans to be glazed with flattened crown glass of "seconds" quality, the small panes having each a "bullion" cut from centre of table.

Doors.—The doors numbered to on plans to have the centre panel glazed with patent plate glass of "second" quality and No. 4 thickness (the thicknesses are No. 1 to No. 4, weighing about 13 oz. to 24 oz. per ft. super) ground on one side.

The doors numbered to on plans to have the upper panel glazed with British polished plate glass of "best" quality and about $\frac{1}{4}$ in. thickness in one square.

Bent Glass.—The windows of circular bay in drawing-room to be glazed with British polished plate glass of "best" quality and about $\frac{1}{2}$ in. thickness, bent to accurately follow curve of bay (which is 15 ft. radius).

Completion.—Clean and polish all glass and leave same perfect at completion.

Paper-Hanger.

The best way to deal with this trade is as follows:—

The paper hangings are to be of Messrs. manufacture, and the several rooms are to be hung with paper of the list price value quoted in the following schedule:—
Dining-room 5s. per piece.
Drawing-room 6s. per piece.
Bed-room (No. 1) 2s. 6d. per piece, &c., &c.

Dados, Friezes, and Borders.—Mention expressly which rooms are to have dados, friezes, and borders, and give the width of each.

Hanging of Papers.—All walls which are to be papered are to be rubbed down, stopped, sized, and prepared for paper-hanger. The walls of the following rooms are to be hung with lining paper before the wall paper is hung: Dining-room, drawing-room. All papers are to be cut close.

Damp Walls.—If there is any danger of any of the walls being damp, care must be taken to specify the selected precautionary devices, such as thin sheet-lead or tin-foil, tarred paper, or battening and canvas, or whatever else may be preferred by the architect. In specifying canvas and battening mention that the nails are to be painted and covered over with strips of common paper before the papering is done.

Varnishing Papers.—The wall-paper of staircase to be twice sized and once varnished with good copal varnish (or French oil varnish if the paper is of a delicate colour).

Painting Papers.—Flock paper of ceiling of drawing-room is to be twice sized and painted in three coats of good oil colours to an approved light vellum tint, and flatted.

Zinc Eaves Gutters.—It has been suggested by a practical zinc worker that the durability of zinc gutters is greatly increased by the stiffening tubes being used at closer intervals than was mentioned in accordance with usual practice in our chapter of last week, and that screws are better than nails for fixing. This suggestion undoubtedly makes for higher class work and for this we may therefore specify "The eaves gutters to be O.G. moulded, 4 in. eaves gutters of No. 15 gauge Vieille Montagne zinc with stiffening tubes 12 in. apart and secured to fascia with 5 in. galvanized round-headed screws through each tube." Such a construction will give the zinc its full chance of durability.

OBITUARY.

DR. KARL VON LUETZOW.—We regret to announce the death of this learned Professor, who held the chair of Art History at the Royal Academy of Arts at Vienna, and was particularly active in all questions relating to the architectural improvement of the Austrian capital. Dr. Luetzow for many years contributed to the Art Press of his country, and his criticisms in the *Neue Freie Presse*, the leading Austrian daily, played a more important part in the Art circles of his country than he perhaps generally the case. It was in that journal that the deceased Professor also published his scathing criticisms on the Berlin Houses of Parliament, and German architecture generally, and drew upon himself and his Austrian confreres a great deal of abuse. Of his various publications in book form we may mention especially his "Denkmaeler der Kunst" (in collaboration with Luehke) and his "Monuments of Church Architecture."

GENERAL BUILDING NEWS.

OXFORD MUNICIPAL BUILDINGS.—On Tuesday the Prince of Wales opened the new Municipal Buildings which have been erected at Oxford. The architect of the buildings is Mr. H. T. Hare, and Mr. Chappell, of Pimlico, was the builder. Illustrations of the building have been published in the *Builder* for July 9, 1895, and August 19, 1895.

ART GALLERY, BATHS.—A meeting of the General Committee, who have charge of the arrangements for the erection of an Art Gallery was held at the Bath Guildhall on the 4th inst. The recommendation of the Building Committee that Mr. J. M. Brydon be appointed architect was agreed to.

THEATRE, SHEFFIELD.—It is stated that the directors of the Sheffield Lyceum Theatre have let to Messrs. George Longden & Son, Neepsend, the contract for the reconstruction and alteration of the Old City Theatre, which is to be reopened under the name of the Lyceum Theatre. The contract is 10,900l. The architect is Mr. W. G. R. Sprague, of London.

BOARD SCHOOL, PENKHULL, STAFFORDSHIRE.—On the 3rd inst. a new mixed Board school was opened at Penkhull. The school is built on the central hall principle, with three class-rooms on either side and one at the end. The building occupies a position at the junction of Princes-road

and Penkhill-street. It provides accommodation for 470 children. The exterior is marked by two towers over the entrances, with carved cement friezes, the rest of the work being of brick, with stone sparingly used. The walls inside are plastered, and have tiled dados, supplied by Messrs. Milton, Hollins, & Co. Mr. T. Godwin is the contractor for the building. The heating is by Messrs. R. Dawson & Co., of Stalybridge. Messrs. R. Scrivener & Co., of Hanley, are the architects.

ST. MARY'S SCHOOLS, ROCHEDALE.—The new day and Sunday schools built in Redcross-street by the parishioners of St. Mary's, Wardleworth, were opened recently. The architects are Messrs. Oliver & Leeson, of Newcastle, the builders being Messrs. W. A. Peters & Sons. In the basement there is an infants' schoolroom with gallery, two class-rooms, a teachers' room and a couple of cloak-rooms. At each end of the building there is a staircase leading to the upper story, and halfway up each of these staircases is a cloak-room. At the top of each staircase is an entrance to the large schoolroom. To the right of this room there is another class-room. The accommodation is for close upon 700 children; and the cost of the building has been about 4,500l.

SCHOOL, BYNEA, CARMARTHEN.—A Board school to accommodate 400 children was opened at Bynnea recently, erected from plans prepared by Mr. J. B. Morgan, architect, of the same town.

PLANNED NEW BOYS' SCHOOL, CARDIFF.—At a meeting of the Governors of the Cardiff Intermediate Schools, recently, recommendations were received from the Building Committee to the effect (1) that in view of the Governors securing within a reasonable period a site for the boys' school in Calfways Park the Committee recommends the erection of temporary premises, at a cost of from 1,500l. to 2,000l., upon the site already acquired in Newport-road; (2) that the Clerk be authorised to instruct Mr. George Thomas, architect, to prepare plans of temporary premises to accommodate 300 pupils, with chemical and physical laboratories in addition for thirty pupils in each; (3) that the plans be designed for the erection of the proposed temporary premises on a portion of the Newport-road site which will not be required if, and when, permanent buildings have to be built on the said site. The recommendations were agreed to.

WESLEYAN SUNDAY SCHOOLS, BRADLEY, NEAR BIRMINGHAM.—The memorial stones of the new Wesleyan Sunday schools which are being erected in Hallgreen-street, Bradley, at a cost of 2,500l., were laid on the 3rd inst. The building will accommodate over 700 scholars. It will be executed with best bricks, terra-cotta, and Hollington stone, from designs by Mr. R. J. Rowe, architect, Bilston.

FREE CHURCH, NEW CUMNOCK, Ayrshire.—This church is about to be built to accommodate over 400 sitters. It is planned with a nave and one side aisle, the aisle being separated from the nave by an arcade of three pointed arches of dressed stone, supported by piers and responds, which are also of dressed stone. The entrance is through a double porch which, with the main gable of the nave and its traceried windows, the broad flanking buttresses, and the bell tower, form the principal external features of the design. The roof will be of open timber construction. The sanctum, vestry, and lavatory are provided. The church will be heated by low-pressure hot-water pipes. The whole seating accommodation will be entirely on the ground floor. A manse is also to be built. Mr. James Kennedy Hunter, Ayr, is architect for both the church and the manse, and contracts for both have recently been awarded to the following contractors:—Mason work, Mr. A. Beattie, New Cumnock; joiner work, Mr. D. Mathieson, New Cumnock; slater and plumber work, Messrs. W. Auld & Son, Ayr; plaster work, Messrs. M. Campbell & Son, Cairnrie; heating work, Messrs. Boyd & Sons, Paisley; glazier work, The Glass Stainers Company, Glasgow. The cost of church and manse will be about 2,500l.

MEMORIAL HALL AND SCHOOLS, MAESTEG, GLANORGANSHIRE.—Mrs. J. T. North, widow of the late Colonel North, laid the foundation stones of North's Memorial Hall at Maesteg recently, and on the same day Mrs. J. Boyd Harvey opened the new central schools. The cost of the memorial hall will be about 1,500l. The buildings will follow the same plan, and will consist of a library, reading-room, committee-rooms, and billiard-rooms. The main room will be 58 ft. by 29 ft. The site is opposite the Town Hall, on the Maesteg Uchaf Estate. The new central schools are on the same estate. The new school buildings afford accommodation for 1,016 children, and consist of boys', girls', and infants' departments. The contracts for the schools and the memorial hall are Messrs. Rattray & Jenkins, and Mr. E. W. Burnett, Tondri, is the architect.

RESTORATION OF PARISH CHURCH, ROPLEY, HAMPSHIRE.—The parish church of Ropley has just been reopened after restoration. Messrs. J. H. & E. Dyer, of Alton, were the builders, and Mr. G. O. Scott, of London, the contracting architect; and Mr. Charles T. Miles, architect, of Bournemouth, prepared the plans of the alterations. The tower has had new buttresses placed at the bottom, and the belfry covered with oak and louver boards. The old oak interior framework remains, but has been strengthened wherever necessary. A new east window has been placed in the south transept, and

it is intended to replace the other window, also one in the tower. The north transept has been elongated by half its length, while the whole of the west end has been encased with flint and Bath stone, and new windows in the fourteenth century style have been put in. In the interior the floor is laid with wood blocks, the chancel tiled by Messrs. Godwin & Hewitt, of Hereford, and fitted with oak choir stalls by Messrs. Dyer. The communion rail has been altered and refixed, and the old communion table and chair remains. The roof has been repaired and partly retiled, and inside is covered with pitch pine boards with moulded ribs. The font has been removed from the east end of the north transept to the west end of the nave. The sifting accommodation is for about 265. The gallery at the west end has been entirely taken away. The pulpit, by Messrs. Cox, of London, is in oak.—*Hampshire Chronicle.*

PUBLIC HALL, HEACHAM, NORFOLK.—The new public hall, which has been erected at Heacham, was opened recently. The architects were Messrs. Milne & Hall, of London. Mr. Nelson, of Hunstanton, was the contractor.

BOARD SCHOOL, TENDRING, ESSEX.—The Board school at Tendring was erected at a cost of 2,300l. This sum also covered the cost of a teachers' six-roomed cottage, which stands on the same piece of ground. The builder was Mr. Sanders, of Dovercourt, and the architect was Mr. Stevens.

AUCTION ROOMS, SHEFFIELD.—New auction rooms for Messrs. Nicholson, Greaves, Barber, and Hastings have been erected at the junction of High-street and Fargate, Sheffield. The architects were Messrs. Flockton, Gibbs, & Flockton. On each side of the entrance hall are the private offices of the firm. At the end of the entrance hall there is the best of the auction rooms, lighted from the top. It has a length of 54 ft., and an average width of 28 ft. From this apartment are reached another auction room and an office for the clerks, these together being 63 ft. 6 in. long, and 22 ft. wide. In the basement there is a store room cut out of the rock. It is lined with white glazed bricks. There is also a strong room. One of the carpenter's houses occupy the upper stories of the front part of the building.

CHURCH, BURNLEY, LANCASHIRE.—On the 4th inst., the new Church of St. Catherine, which has been built in Todmorden-road, Burnley, was consecrated by the Bishop of Manchester. The total cost is 8,150l. The building consists of a nave, which, with the transepts and western gallery, is of seven bays of a total length of 67 ft., and a clear span of 51 ft., widened at its eastern end to 66 ft., where the transepts occur. There are no aisles. A lofty arch opens out at the east end to the polygonal sanctuary, the windows of which are high up above the roofs of the adjoining vestries. The chancel, raised three steps above the nave, is arranged in line with the transepts, and is marked off by a low wall and wooden screen surmounted by wrought-ironwork. The morning chapel is in the south transept; there is an outside door and porch in close proximity for the use of those attending the weekday services. The main entrance is at the west end. The nave is seated with open benches, and altogether there is accommodation for 675 adults. The altar is of oak, with carved panels. It stands under a lofty baldachin of hammered iron. The pulpit and Bible lectern are made quite open, and form part of the screen which mark off the chancel. Panels are left in the walls under the nave windows, which it is hoped will be filled with painting, bas-reliefs, or mosaics. There is similar preparation for future adornment round the walls of the sanctuary. The work has been designed by Mr. Meland Taylor.

BATHS, SHOREDITCH.—The foundation stone has been laid of the baths and washhouses in Pittfield-street, Shoreditch. The first-class swimming-bath will be 100 ft. long by 40 ft. wide, with a depth of water graduating from 6 ft. 6 in. to 3 ft. 6 in. Round the "pond" will be a wide gangway, and dressing-room accommodation, and as the hall will, in the winter, be available for meetings, concerts, &c., it was thought expedient to provide six separate exits from the ground floor and four from the gallery. There will also be a second-class swimming-bath, 75 ft. by 35 ft., which in the cold weather will be found suitable for gymnastics. The laundry will be well fitted, and there will be fifty-six slipper baths for men and twenty for women. 15,700l. was paid for the land on which the baths will be erected, and the contract for the buildings amounts to 35,393l. Messrs. Spalding & Cross and Mr. Henry T. Hare are the architects, and Mr. C. Gray Hill is the builder. Adjoining the baths are the vestry dust destructor and electric lighting station. In the same block of buildings there will also be the Free Library.

BUILDING WORK, ROYAL HOSPITAL, SHEFFIELD.—The nurses' home at this hospital has been completed for some time, and now another part of the scheme for reconstructing the hospital is to be proceeded with. This is the building of the block to front West-street, which will form the principal entrance to the hospital. The plans of the architect, Mr. C. Hadfield, have been approved, and the work of actual building will shortly be begun. The new premises will be four stories high, and with a frontage to West-street of about 100 ft. From West-street the visitor will pass into the main entrance hall, through a doorway 18 ft. high, and

from this point access will be gained to any part of the hospital premises. The offices of the secretary will be on the ground floor, near the entrance, and in close proximity will be located the offices of the house surgeon and the matron, and the entrance for tradesmen bringing goods will be in the neighbourhood. It is also intended to have a hydraulic lift on the ground floor. The first floor above is to contain accommodation for the house surgeon and house physician, the dining-room for the staff, and other rooms. The ophthalmic ward will be the most important apartment on the second floor, and on the summit of the building the kitchens, larders, store-rooms, &c., are to be arranged.

GRAMMAR SCHOOL, WISBECH.—The foundation stone was laid recently of the new Grammar School, Wisbech. The portion of the building which, for want of money, for the present remains in abeyance, is the central block, or the three-storied portion of the building adjoining the house. The new premises in course of erection consist of a school, 45 ft. by 21 ft., with open timber roof. The interior of the schoolroom is to be paved round to the level of the windows—about 7 ft.—and the walling above is finished in red brickwork. The south side of the school has a corridor extending its whole length, from which access is obtained to two class-rooms, each 18 ft. by 16 ft. At the further end of the corridor, the space is occupied by the ordinary entrance for the day boys, and by the laboratory and science department. The whole floor of these rooms is laid with wood blocks. The new buildings are all finished in red brick with Ancaster stone dressings. The builders are Messrs. Rands & Son, of Wisbech, and Messrs. Miller & Sons are executing the stone work, whilst Mr. H. A. Ellis, of Cambridge, is acting as clerk of the works. The architect is Mr. W. M. Fawcett, M.A.

WESLEYAN CHURCH, BURLEY, YORKSHIRE.—The foundation stone of a new Wesleyan church was laid at Burley recently. The site is in Cardigan-lane. The buildings have been designed by Mr. G. F. Danby, architect, of Leeds. They comprise a chapel, schoolroom, infants' room, church parlour, minister's room, and twelve vestries or class-rooms. The chapel is being built of stone, lined with brick, while all the internal woodwork will be of pitch pine. A leading feature of the front elevation will be a double doorway with granite columns, carved capitals, and moulded arches, terminating in a gable. Over this there is to be a five-light traceried window. At the south-east corner a tower and spire will rise to a height of 110 ft. Inside the tower there will be a stone staircase leading to the gallery in the chapel, and a similar staircase will be provided at the opposite corner of the building. The chapel is to be 84 ft. long, 48 ft. across the nave, and 57 ft. across the transepts. Accommodation will be provided for 480 persons on the ground floor, and for 720 in the gallery. The chancel will be separated from the chapel by a moulded arch, supported on granite columns, with carved bases and capitals. The open-timbered roof will, in the centre, rise to a height of 40 ft. In heating the premises, the low-pressure hot-water system is to be applied. The contracts at present let amount to about 6,000l. The contractors are:—Mr. C. Myers, masonry; Messrs. Leitchard & Son, joinery; Mr. H. Boston, plumbing and glazing; and Messrs. J. Atkinson & Son, slating.

PRESBYTERIAN CHURCH, BERWICK, NORTHUMBRIA.—On the 2nd inst. St. Andrew's Church, Berwick, was opened for public worship. The building, for which the architect was Mr. William Gray, Berwick, is in the early Gothic style, and it seats for 306 people, but provision is made for the construction of galleries, if these should at any time be required.

PROPOSED RECONSTRUCTION OF Y.M.C.A. BUILDINGS, ABERDEEN.—It is proposed to reconstruct these buildings, plans showing the proposed work having been prepared by Mr. W. L. Henderson.

NEW SCHOOLS, GRESHAM, NORFOLK.—The contracts and conveyance of land for the new schools at Gresham are now all settled. Mr. H. J. Green is the architect, and Mr. T. H. Blyth, of Foulsham, the builder.

CONVALESCENT HOME, GRANGE-OVER-SANDS.—The new Convalescent Home, at Grange-over-Sands, was opened on the 7th inst. It has been erected for the Friendly Societies of the North Eastern Counties, and is built of the local limestone, with red sandstone dressings, and is covered with blue Welsh slate. It is built on the pavilion system. A short description of the building appeared in our issue for October 10, 1896, page 295. The cost of the Home is about 3,000l., and the contractors for the works are:—Mr. Enoch Denny, Grange-over-Sands, contracting, slating, and plastering; Messrs. Nelson Brothers, Kendal, carpenter and joiner work; and Mr. Lawrence Avery, Kendal, plumbing, painting, and glazing. The plans and specifications were prepared by Mr. John Hutton, architect, Kendal, under whose superintendence the work is being carried out.

WESLEYAN CHURCH, BRIGHTSIDE, YORKSHIRE.—The foundation stone has just been laid at Brightside of a Wesleyan chapel. The new building, which faces Deane-street, will comprise a chapel to seat 340, with nave and transepts and a small gallery at the end, also class-rooms for Sunday school and church work, a kitchen fitted up for the preparation of teas, &c., and other conveniences. Separate entrances are provided for church and school purposes. The structure is designed in the

late Gothic style, and is to be faced externally with Durnford Bridge wallstone with ashlar dressings, the windows having traciced heads with leaded glass. The work is being carried out by the general contractors, Messrs. B. Powell & Sons, at a cost of a little below 2,000l., and under the superintendence of the architect, Mr. W. J. Hale, of Sheffield.

POLICE BUILDINGS, MOTHERWELL, LANARKSHIRE.—On the 4th inst. sketch plans of proposed new police buildings for Motherwell were submitted at the monthly meeting of the Burgh Commissioners. The new buildings are to be three stories in height, and will be situated in Clyde-street, on the site of the present County Police Office. Mr. Alexander Cullen, F.S.A., Motherwell, is the architect, and the estimated cost is 6,000l.

PREBYTERIAN CHURCH, HELEN'S BAY, CO. DOWN.—On the 9th inst. the new Presbyterian Church erected at Helen's Bay was opened. The new church is built of silurian stone from the Ballygowan quarries, and faced with white granite from Scabblo. Messrs. Young & McKenzie are the architects, and Mr. Wm. Kerr the builder.

PROPOSED NURSES' HOME, SWANSEA.—A town's meeting called by the Mayor of Swansea was held at the Town-hall, Swansea, recently, at which the Mayor moved:—"That this town's meeting of burgoesses of Swansea hereby heartily pledges itself to do all in its power to promote the Swansea Jubilee benevolent effort known as the Victoria Home for Nurses at the Swansea Hospital." Mr. J. Coke Fowler seconded, and the resolution was carried. Plans by Messrs. Buckley, Wilson, and Glindenning Moxon, Swansea, were before the meeting to provide a building at a total cost of 5,000l.

SANITARY AND ENGINEERING NEWS.

NEW WATERWORKS, HAVERHILL.—These waterworks, which were commenced in 1864, have just been opened. The supply is from a well 103 ft. deep and 7 ft. 6 in. diameter, lined with 9 in. brickwork in cement, and an outside cast-iron cylinder down to a depth of 25 ft. from the top of the well. There is also an 8 in. borehole from bottom of well to a depth of 150 ft., making a total depth of 253 ft. into the chalk. There are also two adits 25 ft. long, 7 ft. high, 5 ft. wide. There are two 12-horse power gas engines, and the water is forced from the well by means of a pump to a tank which is alternately compressed into one chamber and exhausted from another; when the latter chamber is filled an automatic valve reverses the suction and compression so that the chamber which was last filled is discharged by compressed air, and the pressure that remains in the discharged vessel is brought back into the air compressor, consequently the power is not lost. All the machinery is in the engine-room, and none moving in the well except the valves in the pipes. The capacity of the plant enables 10,000 gallons an hour to be pumped from the well. There is a brick and concrete covered reservoir with a capacity of 150,000 gallons, also two concrete settling tanks, each of a capacity of 100,000. There is a red brick engine-house and cottage, and there are more than four miles been expended in carrying out the scheme. The contractor was Mr. Henry Roberts, of West Bromwich; and the engineer, Mr. Thos. Cockrill. The clerk of works was Mr. Wm. Lindley Catlin.

LOCAL SEWERS IN LONDON.—The Main Drainage Committee of the London County Council have sanctioned, subject to conditions recommended by the engineer, the construction of local sewers as follows:—Battersea: 350 ft. of 2 ft. 6 in. by 2 ft. half brick and concrete sewer in Cringle-street, Battersea Park-road; 350 ft. of 12-in. pipe and concrete sewer in Shellwood-road, Latchmere-road; 600 ft., 1,130 ft., and 1,000 ft. of 12-in. pipe and concrete sewers in Anner-road, Broxash-road, and Kytie-road, respectively, Clapham Common Estate, Lambeth; 184 ft. and 924 ft. of 12-in. pipe and concrete sewers in Durham-road and Martell-road, respectively, West Norwood; Paddington: 150 ft. of 9-in. pipe sewer and 500 ft. of 3 ft. 9 in. by 2 ft. 6 in. brick sewer in Ashworth-road, Elgin-avenue, and 165 ft. of 9-in. pipe sewer and 400 ft. of 3 ft. 9 in. by 2 ft. 6 in. brick sewer in Biddulph-road, and Lauderdale-road. Plumstead: 200 ft. of 9-in. pipe and concrete sewer in Ennis-road. Poplar: 122 ft., 280 ft., 120 ft., and 142 ft. of 9-in. pipe and concrete sewers in Duke-street, Lea-Parade, Salter's-buildings and West-street, respectively. St. Luke, Middlesex; 105 ft. of 18-in. pipe and concrete sewer in Lendsen-place, Golden-lane.

STAINED GLASS AND DECORATION.

WINDOW, BELMONT CHURCH, HILLHEAD, LANARKSHIRE.—A two-light stained glass window has just been fixed in this church by Messrs. McCulloch & Co., of Glasgow. The window has been presented to the church by Mr. Alexander Ferguson. The subject represented is the "Adoration."

MEMORIAL WINDOW, EARLS COLNE, ESSEX.—A stained glass window, the figures in which represent Sancta Lucina and Sancta Dorcas, has been placed in the south side of the parish church of Earls Colne by Dr. John Taylor, as a memorial of his deceased parents. The window, which consists of

two panels, has been made by Messrs. Clayton & Bell.

MEMORIAL WINDOWS, SHEEPY CHURCH, NEAR TAMWORTH.—The dedication of two stained glass memorial windows in the nave of All Saints' Church, Sheepy, to the memory of the late Mr. C. B. Lowe and the Rev. Hubert Lowe, took place recently. The windows are by Mr. C. E. Kempe. The figures in the first window are Daniel and St. Stephen, and the "Raising of Lazarus" underneath; in the second window, Isaiah and St. John the Evangelist, and the scene, "Behold the Lamb of God," beneath.

WINDOW, ST. MARY'S CHURCH, NEWRY.—On the 8th inst., at St. Mary's Church, Newry, a memorial stained-glass window was dedicated. The chancel window represents the Ascension, with five scenes from the parable of the Good Samaritan underneath, and in the tracery above the Abbot of Newry, St. Patrick, the four Archangels, and the emblems of the four Evangelists. The work is by Mr. A. O. Hemming, London.

REVERIES, ST. MARK'S, BATH.—A stone oreredos, with marble and alabaster enrichments, has just been erected in St. Mark's Church, Bath, from the design of Mr. S. J. G. Stone, architect, of Bath. The reveries has been carried out at Messrs. Jones & Willis's works, Horsey.

WINDOWS, TILLINGHAM CHURCH, ESSEX.—Seven stained glass windows have just been placed in the parish church of Tillingham. The windows are the work of Mr. F. Drake, of Exeter.

FOREIGN.

FRANCE.—The Trocadero Palace is to undergo some important alterations for the future exhibition. The large bays of the arched galleries which surround the Salle des Fêtes, and which open in the direction of the Champ de Mars are to be glazed and the ends to be closed by doors, making a closed in and warmed promenade for the concert-goers. There is also some talk of making at the end of the galleries two new Salles des Fêtes, but this project, which has been suggested by M. Bourdais, the architect, is not favourably received by the "Direction des Bâtimens civils," as it is considered that it will encroach too much on the Square du Trocadero. The "Société Nationale des Architectes Français" has opened its sixth annual competition, the subject of which is "Un Hôtel pour Sociétés Savantes ou Artistiques dans une ville de moyenne importance."—It is announced that an exhibition of modern medals will shortly be organised at the Bibliothèque Nationale. An interesting retrospective exhibition has just been organised in the Salons of the Société Saint Jean, Rue des Saints Pères. This exhibition contains about one hundred pictures of the French, Flemish, and Dutch schools, besides numbers of drawings and objects of all kinds which have been taken from various collections.—In the Georges Petit gallery there is an exhibition of the complete illustrations for the life of Christ by M. James Tissot. In the Gallery des Artistes Modernes there is an exhibition of the pictures and drawings of the late Louis Cabat, and an exhibition of old pictures, and views of Pompeii, by M. Gusman, at the Ecole des Beaux-Arts.—There is talk of reproducing in Gobelin's tapestry the principal pictures of Paul Baudry, which decorate the Paris Opera House.—The new buildings of the Mairie of Courbevoie are to be inaugurated on the 22nd inst.—On the borders of a well-known little lake at Vaux-de-Cernay a monument in memory of the landscape painter, Pelouse, who died four years ago, is to be inaugurated next Wednesday. He constantly painted in the neighbourhood of this site.—It is understood that the Municipality of Carcassonne intends widening the narrow and picturesque streets of this old town.

—The following is a list of the works executed this year in the architectural section by the students of the Villa Medici. They are now exhibited in Rome, and will eventually come to the Ecole des Beaux-Arts:—M. Bertone (fourth year), Restoration of the Temple of Baal, at Palmyra; M. Chaussonniche (third year), studies of the Temple of Mars and of a house of the fifteenth century; M. Recoura (second year), studies from a tomb in the Church of Ara-Cochi, and studies from the antique; M. Patouillard (first year), studies from the Temple of Concord; M. Pille (first year), a capital from the stadium recently discovered on the Palatine, in its actual state and in restoration.

GERMANY.—Considerable works are to be taken in hand at Heligoland, both with the view of protecting the shore from encroachments by the sea and with a view of using the island for surgical purposes.—There is to be an important Horticultural Exhibition at Berlin this summer, and the gardens of last year's Industrial Exhibition in the Treptow Park will be used for this purpose. A number of last year's exhibition buildings will be re-used for showing hot-house plants, and there will also be a section for scientific research. There will be a number of foreign exhibitors.—The post of Secretary to the Prussian Royal Academy, which became vacant on the death of Professor Hans Müller, is to be filled by Professor Dobbert. The post of second secretary, which became vacant on the death of Professor Spitta, some time back, will not be filled for the present.—A limited competition is to be opened for the designs

of the two statues of Siemens and Knupp, which are to be erected at the Royal Technical College.—It has now been definitely decided to erect the Provincial Museum on the Markisee-place, near the Waisen-Brücke, and the commission has been entrusted to the city architect, Herr Ludwig Hoffmann. Pomeranian brickwork will be a feature of the architectural treatment.—An important competition has been opened at Leipzig for the new Home of the Great Booksellers' Guild, of which Oskar von Haser is the President. The building will have an important site, and will cost 30,000l. There will be three premiums and some extra premiums, the first having a value of 175l. There will be a jury of seven assessors, three of whom are architects.—Schlottenberg, near Berlin, is to have a new town-hall, and the competition which has been opened allows for five premiums, the first of which has a value of 500l., the second 300l., and the third 200l. Here, again, there will be an influential Committee of Assessors, numbering nine members, of whom five are architects, including Messrs. Ende, Wallot, and Otzen.—We have much pleasure in recording the anniversary lately celebrated by the leading architectural book publishers at Berlin, Messrs. Wasmuth, whose influence on the development of modern German architecture has, no doubt, been important. It is only to be regretted that the publications favoured by this firm are either all too academic for the English architect, or do not show sufficient discrimination in the illustrations.

AUSTRIA.—A special Act for facilitating the compulsory purchase of property, is being framed in connexion with the great street improvements which are being undertaken at Vienna.—We hear of a competition for a Fire Station at Laibach, which will be held under the auspices of the Vienna Architectural Society. This is one of the first instances in which this class of building has been the subject of a competition, though there is certainly room for improvement in the planning of such establishments.—Sculpture at the annual Vienna Art Exhibition appears to be very well represented this year, and one of the principal marble works is an allegorical figure, representing "Architecture" in mourning, destined for the tombstone of the late Baron Hassenauer. The sculptor is Johannes Benk.—The ten principal city divisions of Vienna are to have the incandescent gas-light for street illumination; the work will probably be taken in hand at once.—A strike of the brickmakers is expected at Vienna and in the districts just outside of the capital.—Throughout the various building trades there appears to be some disposition to strike for higher wages, but there is by no means the activity in building that would lead one to expect such a movement.—The reconstruction of the auditorium of the Hofburg Theatre has now been commenced.—At Buda-Pest there has again been a case of stealing pictures from art galleries, this time from the Annual Art Exhibition of that city.

NORWAY.—An important competition has been decided at Christiania in connexion with a scheme for a new central station for that city. The first premium in this case has been given to Messrs. Gleim & Eyde, engineers, practising in Hamburg and Lubek respectively. The second premium was given to Messrs. Havesladt & Contag, of Berlin; and the third premium to two engineers practising at Altona, near Hamburg. It is indeed rare that we find an international competition in which all three premiums are awarded to foreigners, and it speaks well for the straightforward policy of the assessors, who, failing to find a good design by a countryman, were not afraid to brave public opinion in giving the premiums to strangers. It is, however, curious that all three premiums should have been awarded to Germans in a practical completion of this description. We notice that the assessors were seven in number, of whom three were laymen and four engineers; of the four engineers, one was "Baurath" Schwering, of Berlin. The value of the first premium was 10,000 crowns.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. Beresford Pite has removed his offices from 20, Hanover-square to 48, Harley-street.—The Hon. Victorian Stone Contractors have removed their Head Office from Kingsland-road to 11, 12, and 13, Hamilton House, Bishopsgate-street Within, E.C.

TRADE NEWS.—Messrs. Moinzer & Co. (London) have received the order for laying down marble mosaic paving in the Gallery of British Art.

ENGINEERING APPOINTMENT.—We are informed that Mr. E. W. Ives, C.E., of Derby, has been appointed Consulting Engineer to the Rural District Council of Lichfield.

WATFORD URBAN DISTRICT COUNCIL.—Mr. C. P. Ayres, of Watford, Herts, architect and surveyor, has been elected Chairman of the Watford Urban District Council, and has been duly sworn in as a Magistrate for the County.

LECTURES ON SANITATION.—Two of the series of lectures on sanitation arranged for under the auspices of the Cardiff Technical School, were delivered at the University College recently. These lectures are intended not only to interest the general public, but at the same time to include the special instruction required by those desirous of obtaining knowledge of the duties of sanitary

officers. The first was by Dr. P. Rhys Griffiths, London, his subject being "Ventilation, Heating, and Lighting." He showed how atmospheric air varied very considerably in courts, narrow streets, open spaces in large manufacturing towns, and in the country, pointing out the nature and character of air in back-to-back houses. He subsequently dealt with the question of the amount of air which it was considered should be allowed to each individual in a living room. The total limit of impurity should be six volumes of carbonic acid gas in 10,000 volumes of air, and in order that this might not be exceeded it was necessary that each individual should be supplied with 5,000 cubic feet of pure atmospheric air every hour. With reference to the space required for each individual, he said the minimum cubic measurement had been stated to be 1,000 cubic feet. He pointed out, however, that cubic space was a fallacious basis to go upon, and that it was essential that each individual should have sufficient floor space. Any height above 12 ft. in a room was ignored for ventilation purposes. Lastly, he described the method of practically examining the ventilation of any sort of building, illustrations being given on the screen by flashlight. The lecturer was heartily thanked.—Mr. Edwin Seward, Cardiff, delivered the second lecture in the evening on "Sanitary Building Construction." The lecturer pointed out the disadvantages in the planning of large buildings of not allowing for plenty of free air round their various parts; and in dealing with the evils of damp, &c., as agencies for unhealthiness and decay, spoke of the plentiful and consistent use of fresh air as the best antidote which modern sanitation had discovered. Each wall, which was open to the atmosphere below and through for the passage of air, floors should admit it, and, if timbers should be open to it, and drains would be harmless as long as air was properly admitted and passed through them. The injury to public health by making up ground levels with town refuse for building on was referred to, and an interesting series of lantern slide views were given to show the evils, one being omitted, "The villas of the future on the refuse of the past." In a low-lying district such as Cardiff, made-up soil of that kind was a double evil, and tended to make building sites of higher altitude near Cardiff more and more requisite for maintaining good health returns for the district. Speaking more definitely of Cardiff, he said that while the town had a nominal altitude of something less than 40 ft. above the mean tide level, it was surrounded with conditions which tended to depression and enervation, leading often to debility of body and opening the way for greater evils, far more than if the place were on a rising ground 100 ft. or 200 ft. higher. Consequently, the precautions he had mentioned, and which might bring even the worst of the atmosphere into play, were worthy of the attention of the local authorities.

PROPERTIES FOR SALE.—In July next the Duart Castle and Sealbaird estates, extending over 2,400 acres, with a seaboard of nearly fifteen miles, in the Island of Mull. The ruins of Duart Castle, a stronghold of the Macleans, stand upon a promontory at the eastern entrance of the Sound, between Loch Duart and Maclester Bay. It is believed that the keep was built by Lachlan Maclean, who in 1266, married a daughter of the first Lord of the Isles. Measuring 65 ft. by 46 ft. on plan, it has walls from 10 ft. to 15 ft. thick, those on the north and west sides rising almost sheer with the face of the rock, and the east wall, in which is a narrow stair, being against the wall of the earlier enceinte. The doorways and windows have round-headed heads. The enceinte, or courtyard, 80 ft. by 65 ft. is entered from the south, through an opening 6 ft. wide (since narrowed), with a pointed arch, swelling on the angle. It encloses the remains of a dwelling-house, supposed to have been erected by Sir Lachlan Maclean, Bart., who died there in 1660. In their "Castellated and Domestic Architecture of Scotland," Messrs. Macgibbon & Ross assign Duart to the fourteenth century, and characterise it as one of the most extensive and powerful castles of the west.

—In June next is to be sold Barton House, Warwickshire, which—though it seems upon slender data—is ascribed to Inigo Jones. Dugdale traces the history of the property from the Underhills, Denham, and Boreham, purchased by Walter, son to Sir Nicholas Overbury, of Bourton-on-the-Hill, in James I.'s reign, "whom said Walter," he says, "rebuilt the manor house of stone, in such sort as it now is."—Ladhams House, Goudhurst, Kent, the seat of the late Sir George Jessel, Master of the Rolls; and Shovswell, in the parish of Etchingham, Sussex, which was the family so named from the beginning of Edward I.'s reign until that of William III., and includes a reputed hunting-house of King John.

SANITARY INSPECTORS' CONFERENCE, DEVONSHIRE.—A general meeting of the Yorkshire branch of the Sanitary Inspectors' Association took place on the 8th inst. at the Town Hall, Dewsbury. The proceedings commenced with a meeting of the Council of the Association, and, business over, his Worship held a reception. Members were present from Bradford, Halifax, Leeds, Huddersfield, Batley, Morley, Hull, Barnsley, &c. The Corporation provided char-a-bancs, in which the members of the Association were driven to the sewage farm at Mitchell Laithes, Southth. The estate is 188½ acres in extent, and 60 acres are taken up with filter beds,

&c. The sewage of the town and the greater part of that from Southth Upper is treated on the farm, and in Dewsbury there are about 1,200 water-closets dealt with. Next the members and others returned to the Town Hall, where luncheon was provided in the Exchange Hall by the Mayor. At the close his Worship gave the toast of "the Queen," which was duly honoured, and he next proposed "The Yorkshire Sanitary Inspectors' Association; Yorkshire Branch." On the motion of Mr. Savill (Halifax), seconded by Mr. Wilkinson, the thanks of the meeting were given to the Mayor and Corporation for their hospitality.—The Corporation refuse-destroyer, erected by Messrs. Beaman & Deas, of Warrington, was next visited. Returning to the Town Hall, a meeting, presided over by Mr. Pridgin Teale, of Leeds, was opened, and a discussion took place upon cottage sanitation in rural districts. The Chairman stated what had been done by the Royal Agricultural Society to have the subject properly dealt with in a pamphlet for public use in country places. Incidentally, he asked what was done in Dewsbury in the matter of back-to-back houses. He was told by the Mayor, and also by Alderman Kilburn, that such were prohibited being erected in Dewsbury, the latter, however, explaining how, by the construction of blocks of four cottages, cheap and yet sanitary dwellings could be built. A general discussion followed, and in it there took part Mr. Denham (Tadcaster and District), Mr. Wilkinson (Altofts), Mr. Holmes (Wakefield), Chief Sanitary Inspector to the West Riding County Council, Mr. George Darley (Leeds), Mr. Lindley (Batley), Mr. Highmore (Ripon), and Mr. Dearden (Hemsworth). The hope was expressed that the Corporation of Leeds would give up the practice of building back-to-back houses. The discussion having closed, the Mayor mentioned what had been done in Dewsbury to promote the health and well-being of the borough, mentioning especially the efficiency of the refuse destructor and of the sewage disposal works, and the excellence and magnitude of the public baths, which he stated were largely used, not only by the people of the town, but those of the villages adjoining; the electric lighting and the waterworks were amongst the best in the country, and had cost £334,374. The Mayor and Corporation officials were thanked for their hospitality and kindness to the Association, and Mr. Pridgin Teale for his services in the chair.

ARTS AND CRAFTS EXHIBITION, MAIDSTONE.—The fifth annual exhibition of art work, &c., open to all amateurs of the town and postal district of Maidstone, was held at the Hollingworth Hall Church Institute recently.

NEW DIRECT LINE FROM LONDON TO SOUTH WALES.—A Local Government Board inquiry was held recently at Bristol, relative to the proposed erection of an infectious hospital beyond the northern boundary of the city. Mr. Charles Kishington, Divisional Inspector of the Great Western Railway Company, objected to the scheme. The company proposed to make forthwith a new line to provide direct communication between London and South Wales, cutting off Bristol. At Patchway, in the Gloucester side of the Severn tunnel, five miles from Bristol, traffic would be concentrated between all parts of South Wales, London, and Bristol. It was likely that 100 engines would be employed at this new depot, requiring a permanent staff of 300 men. The navies engaged at the construction of the line would be accommodated in huts, but the hands engaged permanently would have to live adjacent to the works. In addition to the houses required, fifteen acres would be built upon for engine sheds.

TEMPORARY STRUCTURES FOR THE JUBILEE CELEBRATION.—In the House of Commons on the 10th inst. Mr. Hogan asked the Home Secretary whether, in the interests of the public safety, special precautions would be taken to guard against the hasty erection of stands along the route of the Jubilee procession; and whether it was intended to insist on all such stands being officially inspected, and strictly limited to a prescribed number of occupants. The Home Secretary said, in reply: "This is a matter with which the London County Council have power to deal, except with regard to that portion of the route that lies within the City, under the London Building Act of 1894. The County Council, I understand, have given notice by means of advertisements, placards, and in other ways, that temporary structures cannot be erected to be used on the day of the procession, and that balconies intended to be used should be properly shored up. They have also made arrangements for the examination of the plans of such structures, and for proper supervision being exercised over their erection. Tools and materials will be kept in readiness at certain points for dealing promptly with any dangerous structures. Similar precautions will be taken by the City authorities."

A SPECIAL MORTUARY COFFIN.—From the annual report of the Medical Officer of Health for Marylebone we learn that the parish mortuary has been supplied with a patent coffin for the reception of the extremely decomposed corpses that from time to time are received. Since the patent coffin was supplied in the winter months, it has not yet been sufficiently tried to give an opinion as to its merits. The coffin may be described as a large shell, large enough to receive another coffin within it. The coffin lid is trapped by means of a groove in the walls of the coffin, which groove may be filled with a disinfecting liquid; in short, the arrangement is

very similar to an inspection chamber cover. Any gases which may be evolved pass away through a small vent tube, which can be led into the outer air.

A DÜRER SOCIETY.—A Society under this title has been formed for the purpose of reproducing, by modern *fac simile* processes, the works of Albert Dürer and his school. It proposes to issue in the first instance a series of faithful copies of the engravings, woodcuts, and drawings of these artists, and to include such paintings as have not been published in a satisfactory form, or are, from some other reasons, inaccessible. A number of plates will also be devoted to illustrating the relations of German with Italian art during the fifteenth and sixteenth centuries. A portfolio will be issued annually, containing from fifteen to twenty-five subjects, accompanied by text. Among the members of the Committee of the Society are Mr. Walter Craze, Mr. G. J. Frampton, A.R.A., Mr. Selwyn Image, Mr. Frank Short, &c. The issue of plates will be limited to two hundred and fifty subscribers.

HOME ARTS AND INDUSTRIES ASSOCIATION.—The Thirteenth Annual Exhibition of this Association will be held at the Albert Hall on Thursday, May 20, and following days. There will be spinning competitions in flax and wool on the opening day; also a competition in lace-making, the prizes for which will all be given by the Blenheim-street Spinning and Weaving School. Specimens of wood-carving, inlaying, repoussé metal work, pottery, cut and embossed leather work, handspun linen, woolen and silk fabrics, embroidery, smocking, knitting, bookbinding, &c., &c. will be sent from various classes belonging to the Association. A picture by Mr. W. B. Richmond, R.A., presented by him to the Home Arts and Industries Association, will be exhibited. Demonstrations will be given in wood-carving, inlay, metal repoussé, leather embossing, bookbinding, lace-making, embroidery, spinning and weaving, and a potter will be at work during the exhibition.

CAPITAL AND LABOUR.

THE LONDON BUILDING TRADE.—As we stated last week, it has been agreed by the Central Association of Master Builders of London that, from June 1 next, the wages of labourers shall be spinning 1½d. per hour. The new code of working rules, to come into operation on the same date, are as follows:—(1) That the working hours in summer shall be 50 per week for 40 weeks. That during twelve weeks of winter, commencing on the second Monday in November, the working hours shall be for the first three weeks, the working hours shall be 47 hours per week, and during the six middle weeks 44 hours per week. Hours of labour, summer, for forty weeks.—First five days of each week, 6.30 a.m. to 8 a.m., 8.30 a.m. to 12 noon, 1 p.m. to 5 p.m.; Saturdays, 6.30 a.m. to 8 a.m., 8.30 a.m. to 12 noon; equal to 50 hours per week. Winter, for twelve weeks, for three weeks commencing the second Monday in November.—First five days of each week, 7 a.m. to 8 a.m., 8.30 a.m. to 12 noon, 1.30 p.m. to 4.30 p.m.; Saturdays, 7 a.m. to 8 a.m., 8.30 a.m. to 12 noon; equal to 47 hours per week. For the next six weeks.—First five days of each week, 8 a.m. to 12 noon, 12.30 p.m. to 4.30 p.m.; Saturdays, 8 a.m. to 12 noon; equal to 44 hours per week. For the following three weeks.—First five days of each week, 7 a.m. to 8 a.m., 8.30 a.m. to 12 noon, 1.30 p.m. to 4.30 p.m.; Saturdays, 7 a.m. to 8 a.m., 8.30 a.m. to 12 noon; equal to 47 hours per week. (2) That the present rate of wages shall be advanced 1½d. per hour on June 1, 1897. (3) That overtime when worked at the request of employers, but not otherwise, shall be paid at the following rates, namely:—From 7 p.m. to 10 p.m., time and a half; after 10 p.m., double time. No overtime shall be reckoned until each full day has been made, except where time is lost by stress of weather. On Saturday the pay for overtime, from noon to 4 p.m., shall be time and a half; and after 4 p.m., and Sunday, double time. Christmas Day shall be paid for the same as Sunday. Workmen engaged on a night gang shall be paid 1d. per hour in addition to the ordinary rate of wages. (4) That one hour's notice be given or one hour's time be paid by either party, on determining an engagement. All wages due shall be paid at the expiration of such notice, or walking time if sent to yard. In the event of more than ten per cent. of the workmen of the trade employed at the job giving notice to leave during any one day (except Saturday), they shall not be entitled to receive their money until noon on the following day. (5) That men who are sent from the shop to a job, including those engaged in London and sent to the country, shall be allowed as expenses, 6d. per day for any distance over six miles from the shop or job, exclusive of travelling expenses, time occupied in travelling, and lodging money. (6) That payment of wages shall commence at noon, or as soon thereafter as practicable, on Saturday, and shall be paid on the job. But if otherwise arranged, walking time at the rate of three miles per hour shall be allowed to get to the pay-table at twelve noon. (7) That employers shall provide where practicable, and reasonable, a suitable place for the workmen to have their meals on the works, with a labourer to assist in preparing them. (8) That wages earned after leaving-off time on Friday, and Saturday, only shall be kept in hand as back time. (9) That the term

"London District" shall mean twelve miles radius from Charing Cross. (10) That in case of any dispute arising under these rules which cannot be settled by the employer and employe, no strike shall take place, but such dispute shall be referred to and decided by the Board of Conciliation, whose decision shall be final. Provided that no objection shall be taken to any workman in consequence of his belonging or not belonging to any trade society. (11) That six months' notice on either side shall terminate the foregoing rules.

CARPENTERS AND PLASTERERS' STRIKE, PLYMOUTH.—Carpenters, plasterers, and labourers, of the Three Towns, to the number of about 1,400, have come out on strike. The masters assert that they have done all they could in reason to bring about an amicable settlement. One of the demands, a 1d. an hour rise, the masters offered to grant in twelve months. As that was not accepted the masters, to avoid a strike, expressed themselves willing to grant the rise in six months. As that was also refused, the masters resolved to adhere to the old rate of pay. The conditions which the men have sought to impose in regard to apprentices are also resisted. The carpenters and plasterers will receive 15s. per week from their respective unions. The men hold that the time is ripe for the strike on account of the large amount of work in the town, but this the masters generally deny.

STRIKE OF SLATERS, ABERDEEN.—The operative slaters in Aberdeen are again on strike over a question of by-laws. As an exceptional amount of house-building is in progress, and a record number of plans of new buildings for approval were before the last weekly meeting of the Corporation's Plans Committee, the cessation of work, if continued for any time, will occasion much inconvenience.

BRICKLAYERS' STRIKE, NORTHWICH.—The bricklayers in the Northwich district, numbering about 150, have come out on strike for an advance of 1d. per hour. They now receive 8d., which they claim is 2d. per hour below Manchester prices, and 1d. and 1½d. less than the wages in Altrincham and Sale respectively.

PLASTERING TRADE DISPUTE, DOUGLAS.—The monthly meeting of the Douglas Master Builders' Federation was held at Corkill's, recently. The Sectional Committee, dealing with the plastering trade dispute, recommended the Federation to grant the plasterers and plasterers' labourers the wages they asked, it being understood that, as the labourers had opened their books to the men already working, all other cause of dispute was at an end. But the Federation rejected, by a large majority, the Sectional Committee's proposals, still adhering to their former resolution to pay the men by the hour. Worked out, the hour system gives the men an opportunity of earning more money in the winter and less in the summer; on an average for the year, the wages would be about the same as now. Regarding the masters' rule, which the men say gives sections to settle disputes, it is pointed out that the rule distinctly provides that all decisions by sections are subject to confirmation by the whole body. The Federation agreed to meet the joiners, as requested, and appointed a deputation for the purpose. They are determined not to deviate from the overtures made to the joiners some months ago, offering 30s. a week, commencing May, instead of 25s.; but, understand, that as the joiners have some grievance about men who have been discharged, an interview can do no harm. The other business was purely formal. A question is pending which is likely to cause some little friction in the Federation. Many members are objecting to the master builders supplying materials to them, when acting as sub-contractors, because that only allows their margin of profit to be made out of the workmen. The issue is looked upon with interest, as the builders are strongly represented in the Federation. Others, again, are agitating for an extension of the powers of sectional committees, and letting each settle the disputes which it is deputed to deal with.—*Manchester Sun.*

THE BIRKENHEAD BUILDING TRADE.—The master builders of Birkenhead have acceded to the notice given some six months since by the joiners to cease work on Saturdays at noon. It appears that the masters would have granted this concession twelve months ago had all the branches in the building trade desired it. But some of the branches did not want to lose the half-hour's pay.

THE ARBITRATION IN THE NORTH STAFFORDSHIRE BUILDING TRADE.—Sir William Markby's award, as arbitrator in the dispute between the carpenters and joiners and the employers of North Staffordshire, with reference to the apprentice system, and also the question of wages, on which the men asked for an advance of 1d. per hour, and the employers a reduction of the same amount, has been received. Sir William is of opinion that the alteration in Rule 7 asked for by the masters as to apprenticeship should not be made, nor does he allow the alteration in the same rule asked for by the men. He adds the following to the rules:—

"Any builder having more apprentices than are authorised by this rule, owing to the dismissal of journeymen through slackness of trade, will not be allowed to take on any more apprentices until the number has been reduced below the standard set forth in the foregoing clause." As to wages, Sir William does not think any sufficient ground has been shown for a reduction, but, on the other hand,

is not prepared to fix the rate of wages for carpenter and joiners in the district as high as 9d. With the exception of London, that was the highest rate paid in England, and it was only reached in a few places. Upon the whole, he thinks he is justified in placing the carpenters and joiners in the same position as he had already placed the bricklayers, and he awarded them 8½d. instead of 8d. per hour.—*Birmingham Gazette.*

STRIKE IN THE BUILDING TRADE AT PRESTON.—About seventy bricklayers are affected by the strike which has taken place at Preston for an advance of 1d. per hour in wages, the smallness of the number being due to the fact that several masters are paying the amount pending a settlement. Negotiations have been in progress between the master builders and the operatives, and the employers have offered an advance of ½d. per hour on the present wage of 9d., but conditionally that the men agree to a revision of the apprentice rule. The bricklayers' labourers have also left work for an increase from 6d. to 7d. per hour and a code of working rules, neither of which requests the masters entertain.

PAINTERS' STRIKE, NORTH SHIELDS.—The painters of North Shields have come out on strike, owing to the masters having declined to accede to their request for an advance in wages. For some time past endeavours have been made to effect a settlement without resorting to a strike. Their original demand was for an advance from 8½d. to 9d. per hour, but the men ultimately agreed to accept 8½d. per hour. The masters held a meeting, and their decision was to adhere to the present pay of 8½d. an hour, but to offer that the matter should be the subject of arbitration.

LEGAL.

MOOT POINT UNDER THE LONDON BUILDING ACT, 1894: CASE IN THE DIVISIONAL COURT.

The case of the Queen v. the London County Council, *ex parte* Webster, came before a Divisional Court of Queen's Bench, composed of Mr. Justice Hawkins and Mr. Justice Wright, on the 10th inst. Mr. Horace Avory said that he appeared to show cause against a rule *nisi* for a mandamus directed to the London County Council, requiring them to hear and determine an application under Section 13 of the London Building Act, 1894, to give their consent to the retention of a wall enclosing a yard to certain stables in Pearson's-avenue, Deptford, the short point being whether the Court could order the Council to hear the application for their consent to the erection of something after it had been erected, contrary to the terms of the Act. The learned counsel said that his answer to it, put shortly, was that the Council had no power to give their consent to an erection which had been put up contrary to the Act *ex post facto*.

Mr. Justice Hawkins: It is a matter of discretion of the Council?

Mr. Avory: Yes, but it is a matter of law as to whether the Council are bound to hear an application after the erection has been put up. My contention is that they are not bound to hear it, and that the Act clearly contemplates that the application must be made before the building is commenced. The learned counsel (continuing) said that the case so far as they were necessary for the discussion, were shortly as follows:—The applicant, Mrs. Webster, was the owner of a piece of land abutting upon a street called Pearson's-avenue, which was a high road open to carriage traffic. In February, 1896, the builder gave notice that he was going to build certain stables on this piece of land. There had been no building on the land before, but it had been enclosed by an old wooden fence, and immediately after the giving of that notice, the wooden fence was pulled down, and a brick boundary wall built in its place, which was within the prescribed distance from the centre of the highway. Sub-section 1 of Section 13 of the Act laid down that "No person shall erect any new building or new structure, or any part thereof, or extend any building or structure, or any part thereof, in such manner that any external wall of any such building or structure, or (if there be a forecourt or other space between such external wall and the roadway) any part of the external fence or boundary of such forecourt or other space, shall, without the consent in writing of the Council, be in any direction at a distance less than the prescribed distance from the centre of the roadway of any street or way (being a highway)."

By Section 5 (the definition of "wall"), "the prescribed distance" meant 20 ft. from the centre of the roadway, where such roadway was used for the purpose of carriage traffic, so that under Sub-section 1 of Section 13, the external fence or boundary wall could not be erected without the consent in writing of the Council at a distance of less than 20 ft. from the centre of the roadway. Sub-section 2 of Section 13 provided that "Where the Council, after consulting the Local Authority, shall deem it expedient in the public interest, either by reason of the length or importance of the street or way, or by reason of the street or way forming, or being so situated as to be likely to form part of an important line of communication, or for other sufficient reason, that the prescribed distance from the centre of the roadway of any such street or way should, where such roadway is used for the purpose of carriage

traffic, be greater than 20 ft., it shall be lawful for the Council to determine that the prescribed distance shall be such greater distance, not exceeding 30 ft. from the centre of the roadway of such street or way on either side, or both sides, as the Council shall see fit to determine." That sub-section was material as affecting Sub-section 3, which enacted that "In case the person intending to erect, form, or extend any such building, structure, forecourt, or space shall be dissatisfied with the determination of the Council that the prescribed distance from the centre of such roadway, and subject to such conditions and terms (if any) as they may think proper to sanction, provided that the giving of such consent by the Council shall not in any way affect any rights of the owners of adjoining land. Before giving such consent the Council shall communicate to the Local Authority their intention to give the same. Any person dissatisfied with the determination of the Council under this sub-section may appeal to the tribunal of appeal." By Section 12, "In every case where any new building or new structure is erected at a distance in any direction from the centre of the roadway of any street or way less than the distance permitted under this part of this Act, or contrary to the conditions and terms (if any) subject to which the Council or the tribunal of appeal has sanctioned the erection of such building, the Council may serve a notice upon the owner or occupier of the said building or structure, or upon the builder, requiring him to cause such building, structure, forecourt, or space, or any part thereof to be set back so that every part of any external wall of such building or structure, or of the external fence or boundary of such forecourt or space shall be at a distance in every direction from the centre of the roadway of such street or way not less than the distance so permitted, and shall be in accordance with such conditions and terms (if any) as the Council or the tribunal of appeal may have prescribed." The pre-emptory clause under which proceedings were taken was Section 200. The learned counsel said that a summons was first of all taken out against the builder, and he was convicted by the magistrate, there being no appeal from that conviction. The wall not being removed, a second summons was then taken out against the builder for continuing penalties, but that was dismissed, on the ground that the builder had ceased to have control of the building. Then, upon its being found that Mrs. Webster was the owner, a summons was taken out against her for continuing penalties for having kept up the wall in question. The first time the application was made to the Council to give their consent to the building and the retention of the wall, but he (Mr. Avory) submitted that no such thing was contemplated by the Act at all, and that the application must be made before the person erected the building.

Mr. Justice Hawkins asked if there was any mode by which the Council could consider the matter and say they would not require the wall to be pulled down, because they could give their consent subject to certain conditions, or any conditions they might like.

Mr. Avory replied that the Council had exercised their discretion. A penal notice was served on Mrs. Webster requiring her to set the wall back.

Mr. Justice Wright: What is the foundation for the notion that the Council are bound to hear the applicant before saying "Yes" or "No"?

Mr. MacMorran, Q.C. (appearing with Mr. R. J. Drake in support of the rule), replied that he was not saying that the Council were bound to hear the applicant, but they had to say "Yes" or "No."

Mr. Avory said that the Council had already said "No" in the most emphatic way it could, because it had taken proceedings against the builder for having erected the wall without the consent of the Council, and having done that, notice was served under Section 14, on Mrs. Webster, requiring her to set the wall back. She then made an application for the first time, under Sub-section 4 of Section 13, to ask the Council to give their consent, and they declined to do so, saying it was too late for the matter to be entertained. Thereupon a summons was taken out against Mrs. Webster, and then it was that she asked the magistrate to adjourn the case, saying she was going to apply for this rule. She then obtained the rule to ask the Court to make the Council consent to a thing which they had refused to do, and which he (Mr. Avory) said was an application she was not entitled to make, and certainly not entitled to compel the Council to hear after the law had been broken by putting up the erection without their consent.

Mr. MacMorran said that, assuming there had been an infringement (which he did not admit) and after the penal notice had been served upon the applicant requiring her to set back the wall, she applied to the Council under Sub-section 4 of Section 13, setting out the circumstances under which the wall had been erected and asking for the consent of the Council to have it retained. It was

within the jurisdiction of the Council to say they would give no consent and they had done so. The officers of the Council refused to allow the matter to go before the Council at all, and when the applicant could get no answer she appealed to the Tribunal of Appeal constituted by the Act. Before that Tribunal of course it was necessary for the applicant to show that this was a case in which consent might properly be given. The members of the Tribunal went and visited the place and were prepared to hear the case. When, however, the applicant got before the Tribunal objection was taken by the solicitor to the Council that the matter had never been before it or considered by it, and therefore he considered there was no "determination" as required by the Section. The proper course for the applicant was to apply for a mandamus. The Tribunal, while deciding that it had no alternative but to dismiss the appeal, said they considered it was a case which ought to have been taken to its merits. The applicant then came to that court, and the (Mr. MacMorran) contended that she was entitled to go to the Tribunal of Appeal to have the case fought on the merits. If the applicant had no merits, so much the worse for her, but she had the right to ask the Council for consent. Although the Council might decline an application the applicant had a right to have a mandamus. The applicant wanted for the Tribunal of Appeal on the matter.

Mr. Justice Hawkins: Ought we to grant a mandamus for the mere purpose of giving you the right to appeal? Mr. MacMorran: If we have the right to ask for a consent, "Yes." If we could possibly erect this without a consent, I put it to the Court, if it is not an undue restriction of the enabling Section of the Act, why you can apply for such consent beforehand, but yet you cannot get it if by any chance you have erected what might have been consented to beforehand.

After further arguments, Mr. Justice Hawkins, in giving judgment, said that he was of opinion that the Council ought not to make the rule absolute, and he seemed to him that it ought not to do so on every short and simple ground. The Sections and Sub-sections in question must be read together and read together they could not entertain any doubt that Section 13 prohibited the erection of any new building or new structure, unless the consent in writing of the Council had been previously given to such erection, and that Sub-section 4 of that Section was introduced for the purpose of enabling the Council to modify this positive enactment, and when they thought expedient "consent to the erection, formation, or extension of any building, structure, forecourt, or space, at a distance less than the prescribed distance from the centre of the roadway" as therein satisfied in his own mind, the intention of the legislature was to give under Sub-section 4 to the Council the power to give under Sub-section 4, to be given before the erection took place. He thought, therefore, that the structure which was limited to be illegal and in contravention of the provisions of the Act, must be looked upon, for the purposes of the inquiry, as being an illegal structure. He did not think that the Council of Section 13 was intended to compel the Council to consider any matter in the building, without its consent, had been improperly erected beyond the prescribed distance from the centre of the highway. Although it might be that if the Council thought fit not to enforce penalties, but to sanction a building as far as possible, they might be content to do so, but he did not think that the Court had power by mandamus to order them to entertain such an application. He was of opinion that there was a good deal to be said as to the reason why the matter was pressed by the County Council. If they were, in a case of this description, to grant their consent, or rather to be asked to grant their consent to entertain the question or whether they would grant that consent to a building which was illegally constructed, of course would be an application to legalise that which was not legal, which he did not think the Court had power to do. If the Court were to grant the mandamus he could see how the Council would be loaded with similar applications by persons who were not entitled to do so, and he thought that they were doing an illegal thing in the first instance, and one consisting of the good nature of the persons who considered those things to give their consent afterwards, he thought that the rule ought to be discharged.

Mr. Justice Wright concurred, and the rule was accordingly discharged with costs.

MEETINGS.

FRIDAY, MAY 14.

Royal Institution.—Professor H. Dixon on "Explosion and its Causes," 9 p.m.
 Anticongressors' Institute.—Annual Dinner, Hotel Cecil, 9 p.m.

SATURDAY, MAY 15.

Royal Institution.—The Rev. J. P. Mahaffy on "The Book Theatre According to Recent Discoveries," III. 8 p.m.
 Rev. Paul's Ecological Society.—Visit to the Charterhouse, conducted by the Rev. H. V. Le Bus, at 3.30 p.m.
 London and Provincial Builders' Foremen's Association (Gloucester Hall, Farringdon-road).—Visit to the

works now in progress at the Asylums' Board's New Hospital, Hillier-green.

MONDAY, MAY 17.

Royal Institute of British Architects.—Mr. F. C. Penrose on "The Parthenon and the Earthquake of 1894," 8 p.m.
 Society of Arts (Cantor Lectures).—Mr. Lewis F. Day on "Design in Lettering," III. 8 p.m.

WEDNESDAY, MAY 19.

Carpenters' Hall, London Wall (Lectures on Carpentry and Joinery).—Mr. James Bartlett on "The Setting Out and Construction of Staircases, and Joists in Joinery," 8 p.m.
 Society of Arts.—Dr. Percy F. Frankland on "London Water Supply," 8 p.m.
 Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members, 8 p.m.
 Edinburgh Architectural Society.—Paper by Mr. D. McLeod Craik, 8 p.m.

THURSDAY, MAY 20.

Society of Antiquaries.—8.30 p.m.

FRIDAY, MAY 21.

The Architectural Association.—Mr. S. S. Hellyer on "Plumbing and Sanitary Work" with Demonstrations, 7.30 p.m.
 Royal Institution.—The Right Hon. Lord Kelvin on "Contact Electricity of Metals," 9 p.m.

SATURDAY, MAY 22.

Edinburgh Architectural Association.—Visits: (i) to The Llanes, (ii) to Glasgow.
 Northern Architectural Association.—Visit to Castle Eden.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

9,100.—MATERIAL AS SUBSTITUTE FOR WOOD: J. C. North.—In order to produce a rigid, inflexible, fire-resistant, and waterproof material, which may with advantage be substituted for wood, the inventor saturates a fabric—say Canton flannel—with a gum resin, such as "gum shellac," "gum chapel," or the like, in a melted state, and subjects the whole to about 150 lbs. pressure. The inventor prefers to pass material through a vat of melted gum, and, after hardening, pass it through heated pressure rolls.
 9,084.—MACHINE FOR THE MANUFACTURE OF ROOFING TILES OR SLABS: C. Wick.—This invention relates to machinery of the kind to which was granted Letters Patent, No. 25,065, December 24, 1894, and consists of, in such a machine, the combination of a frame to contain the body of the material to form the tile, a rabbit frame hinged to turn down on the clay, a slide mounted in inclined grids upon such frame, and provided with a projecting rim adapted to enter the clay and form an undercut water groove therein, and means for depressing the slide, &c., for forming depression in the clay to receive storm fastenings.
 9,083.—HAMMERS, AXES, PICKS, AND OTHER TOOLS: M. Hillar and Others.—In order to secure the heads of heavy tools from flying off when in use, the inventor adapts a handle (of wood or otherwise) formed with a longitudinal hole, and extending through the bore of the handle, and means for fastening the end of the rod with the handle to prevent the slipping of the wedge.
 12,799.—SPARE TREADS, &c.: F. Sage.—The inventor adopts a stair tread in which the grain of the wood of which it is made, lies approximately in the direction of the movement of the feet on the tread, in place of transversely to it as is now usual.

2,491.—SYRION DISCHARGE FITTINGS FOR WATER-CLOSETS, &c.: S. Robertson.—The inventor claims the combination of parts constituting the principle starting or producing syphon action by means of two or more water valves or in locks or seals on the leg of syphon, discharge, soil, or other pipe.
 2,490.—BACK OF TILES, BRICKS, &c.: J. Jeffrey and Another.—The inventors claim the application to the backs of clay tiles, bricks, briquettes, &c., of one or more undercuts, or incisions, at acute angles, placed at intervals or in lines, curved, diagonal, triangular, or parallel, the said incisions being produced by a block plate or die with projections or teeth.

5,387.—PIRE GRATE: Sir John Smith.—The inventor forms grate of hollow fire bars or air channels of a tapering inverted trough or angular form in cross section, slotted hole for the admission of air to the body of the fuel, and either projecting into the body of the fuel or not doing so, according to form of invention. Inventor proposes to introduce these improved bars either at bottom, front, back, or side of any grate, fire-place, or furnace, although preferably at bottom.

NEW APPLICATIONS FOR LETTERS PATENT.

APRIL 26.—10,287, C. Lash, Edges for Asphalt and Similar Roofs.—10,297, A. Weston, Window Fastener.—10,301, R. Ewing, Joists of Earthenware and other Pipes.—10,309, C. Peterson, Fastener for Windows, Doors, &c.—10,317, W. Dyson, Artificial Stone.—10,320, E. Martin, Gully for Sewers.—10,349, E. Ashwell, Sash Fasteners.—10,374, C. Davis, Hinges.
 APRIL 27.—25,438, J. Kahle, Window Sashes and Frames.—10,479, W. Godfrey, Sewer Traps for Waste Pipes, &c.—10,493, R. Armitage and J. Cobb, Brick Kilns, &c.
 APRIL 28.—10,556, J. Coleman, Windows.—10,586, A. Wehler, Tongued and Grooved Bricks.—10,610, W. Wakfer, Wedges to prevent the Rattling of Sashes.—10,626, M. Vliegen, Flushing Apparatus.
 APRIL 29.—10,652, W. Day, Paint Brushes.—10,683, H. Bram & K. Gross, Portable Door Fastener.—10,698, W. Foster, Mortising Chisel.—10,709, W. Wakfer, Sash Fasteners.
 APRIL 30.—20,730, J. Williams, Decorating Walls, Ceilings, &c.—10,773, J. Bowles and C. Mitchell, Saw-sets.—10,789, C. Mellers and W. Wray, Ceilings.
 MAY 1.—10,878, M. Holt, Sliding Windows, &c.—10,907, T. Van Kannel, Storm Door Structures.—10,915, W. Tillmanns, Iron Roofs.

PROVISIONAL SPECIFICATIONS ACCEPTED.

1,712, M. Yarrow and T. Rowbotham, Chimney Pot for preventing Down-draughts and increasing Up-draughts.—1,696, J. Westhead and W. Wray, Combined Plumber's Iron, and Lamp for heating the same.—7,202, W. Borrowes, Grip Plates for attaching Hangers, Brackets, or other

Attachments to Girders, Rolled Joists, or Beams.—7,239, W. Taylor, Chimney Cowl.—8,748, O. Gilbert, Sash Fastener.—8,871, J. Duckett & Son, Limited, and J. Duckett, Slop Water-closets.—8,951, A. Clarke, Joists for Lined Pipes.—9,077, J. Ashwood, Chimney Pots and Ventilating Cows.—9,079, D. Wilson, Cement or Concrete.—9,081, J. Jones and J. Lloyd, Wood-working Machines, such as ploughs, "filisters," &c.—9,109, W. McCormick, Syphon Flushing Devices.—9,141, C. Gabriel, Ventilators or Air Contractors.—9,203, P. Davies, Closets, Cisterns, and Controlling the Water Supply thereto or therefrom.—9,263, S. Hellyer, Water-closets.—9,271, S. Lawrence, Raising and Lowering of Window and like Sashes.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

8,852, J. Walker, Opening, Closing, or Manipulating Ventilators, Sashes, &c., in places not readily accessible.—9,104, W. Nicholson, Sliding and Swinging Window Sashes.—10,620, A. Whitaker, Roofing Plates & Sheets.—13,216, A. Brown and H. Peuce, Window Sash and like Fasteners or Catchers.—22,426, W. Mason, Kilns for Bricks, &c.—4,300, L. Moses, Testing Drain and other Pipes.—4,000, B. Bally, Tiles for Kilo Floors.—8,228, J. Haskett, Anti-rattling Devices for Windows.

SOME RECENT SALES OF PROPERTY: ESTATE EXCHANGE REPORT.

April 25.—By W. HAUGHTON
 Walthamstow.—Church Hill, "Recreation Manor," and 22 a. f. £16,200
 By ERNEST OWERS
 Harrow.—Coley-rd., E.G.T., 564, 148, reversion in 97 yrs. 1,880
 Coley-rd., E.G.T., 376, 168, reversion in 80 yrs. 1,240
 Coley-rd., E.G.T., 187, 188, reversion in 60 yrs. 620
 Hampstead.—Kensington-rd., E.G.T., 156, 108, reversion in 97 yrs. 430
 Wood Green.—Crescent-rd., E.G.T., 126, 128, reversion in 66 yrs. 350
 Putney.—Northfield-ter., E.G.T., 246, reversion in 98 yrs. 650
 By SIMMONS & SONS (at Pangbourne)
 Pangbourne, Berks.—Vattendord, four building sites, 14, 27, 23 B.C. 700
 By HERBERT, SONS & FLINT (at Radlett)
 Worley, Yorks.—11, 13, 15, and 17, Stone Bridge-lane, and 2, 4, 6, and 8, Farley-cres., f. 7, E.G.T. 1,400
 By HUMBERT, SONS & FLINT (at Radlett)
 Radlett, Herts.—Park-rd., "South View" and "Park View," f. 7, 502, 780
 1 to 4, Station-rd., f. 7, 571, 478, 742
 Park-rd., &c., Sixty-two plots of building land, f. April 27.—By FIELD & SONS.
 Pinlico.—13, Palace-st., ut. 504 yrs., g.r. 304, f. 7, 702, 610
 Waltham Green.—Waterford-rd., "The Princess Royal" p-h., ut. 61 yrs., g.r. 104, f. 3004, 4,425
 Lambeth.—106, Lambeth-rd., f. 7, 557, 810
 By S. WALSH & SONS.
 Stoke Newington.—13, Springdale-rd., ut. 654 yrs., g.r. 64, 48, 60, f. 304, 400
 By W. R. HALLETT.
 Tottenham Court-rd.—72, North-cres., ut. 11 yrs., g.r. 217, 375
 By HARMAN BROS.
 Plaitow.—27 to 41 (odd), Charlotte-st., ut. 604 yrs., g.r. 406, 440
 Kibbarn.—4, Claremont-rd., ut. 83 yrs., g.r. 64, 108, f. 356, 265
 By MAY & ROWDEN.
 Bedford-row.—16, Little James-st., ut. 79 yrs., g.r. 64, f. 355, 1,050
 Gray's Inn.—1, Raymond's-bldgs., beneficial lease of suite of chambers, ut. 17 yrs., f. 217, with furniture, &c. 350
 Oxford-st.—No. 209, a profit rental of 210l. for 184 yrs. 1,750
 Oxford-st.—No. 164, a profit rental of 175l. for 14 yrs. 1,410
 New Bond-st.—No. 115, a profit rental of 75l. for 172 yrs. 580
 By B. B. HILLIARD & SONS (at Hatfield)
 Bow.—20, Bow-rd., "The New Bow Stores," ut. 494 yrs., f. 954, with goodwill 2,750
 By FLEURET, SONS & AIAIAS (at Mason's Hall Tavern).
 Oxford-st.—Berwick-st., "The Three Doves" p-h., ut. 70 yrs., f. 1007, with goodwill 10,350
 Southwark.—Sunner-st., "The Horse and Groom" p-h., and 2 houses and shops adjoining, ut. 43 yrs., f. 1304, with goodwill 7,510
 By ORGILL, MARKS & ORGILL (at Mason's Hall Tavern).
 Canford.—Southend, "The Green Man" p-h., ut. 80 yrs., f. 1007, with goodwill 15,600
 By ALFRED RICHARDS (at Tottenham).
 Tottenham.—255 and 257, High-rd., ut. 83 yrs., g.r. 156, f. 744, 650
 1, Church-rd., and "Elm Hall," ut. 23 yrs., g.r. 64, 210
 3 and 5, Church-rd., ut. 23 yrs., g.r. 57, 205
 By G. B. HILLIARD & SONS (at Chelmsford).
 Rayleigh, Essex.—Main-st., a freehold residence and cottage 700
 Eastwood-rd., enclosure of lands, 3 a. 3 r. 38 p. 215
 By BROWES & POLKES (at Berkhamstead).
 Berkhamstead, Herts.—Charles-st., nine plots of building land, f. 654
 Doctor's Commons-rd., 19 plots of building land, f. 1,211
 By F. E. TUNBRIDGE (at Swanswell).
 Loughor, &c., Glamorgan.—"Berthlywyd Farm," 41 a. 2 r. 24 p., including mines and minerals; also E.G.T. 54, reversion in 23 yrs. 1,500
 By HUMBERT, SONS & FLINT (at Watford).
 Watford, Herts.—103, Gladstone-rd., f. 7, 241, 405
 Mary Hill-lane, four freehold cottages, 140
 April 28.—By RUSHWORTH & STRIVENS.
 Pinlico.—56, Winchester-st., ut. 31 yrs., g.r. 94, f. 557, 430
 4 and 8, Westminster-rd., ut. 304 yrs., g.r. 164, f. 744, 600
 Brighton.—53, Marine-parade, f. 2,750
 By DOUGLAS YOUNG & CO.
 Briton.—5, Effra-rd., ut. 76 yrs., g.r. 247, f. 200, 740

COMPETITION, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITION.

Table with 4 columns: Nature of Work, By whom Advertised, Prizes, and Date to be delivered. Includes entry for 'Technical School' by Bootle Corporation.

CONTRACTS.

Table with 4 columns: Nature of Work or Materials, By whom Required, Forms of Tender, and Date to be delivered. Lists various construction contracts such as 'Kestling Road Metal', 'Sewer, Kerling, &c.', and 'Improvement Works, Alfred-street'.

CONTRACTS—Continued.

Continuation of the Contracts table, listing items like 'Pavilion, &c. on Recreation Ground', 'Iron and Stone-ware Pipe Sewers', and 'Paving, Flagging, &c.'.

PUBLIC APPOINTMENTS.

Table with 4 columns: Nature of Appointment, By whom Advertised, Salary, and Application date. Lists appointments for 'Surveyor's Assistant' and 'Manager of Works and Collector of Rates'.

Those marked with an asterisk (*) are advertised in this Number. Competition, pp. iv. vi. viii. & xix. Public Appointments, pp. xvi. & xix.

Main real estate listings table with columns for location, area, and price. Includes entries for Teddington, Hampton, Upton Park, and various other areas.

PRICES CURRENT OF MATERIALS.

Table with columns for material names (e.g., Teak, Birch, Fir, Pine, Oak, Deal, Lath, Dantick, Do. 2nd, Walscott, Sec. log., Oleas, cran., Deal, and do. 4th & 3rd., Da. Riga, St. Petersburg, 1st yellow, Do. white, Sweden, White Pine, Canada, Fir, Do. 3rd, Do. Spruce, Do. 2nd, Do. 1st, Battens, all kinds, 4 in., 2 in., 1 1/2 in., 1 in., Cedar, Mahogany, cargo, Merak, Tobacco, Honduras, Pine, Rose, Satin, S.D.) and prices per unit.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us not later than 10 a.m. on the day of the closing. We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

ABERFELDY (N.B.)—For the erection of distillery buildings, for Messrs. John Dewar & Sons, Limited, distillers, Perth. Mr. C. D. Calder, architect, Elgin.
Building—W. C. Duncan, Perth, £2,777 0 0
Carriage—Jesse Ross, Perth, 200 0 0
Scaffolding—James Buchanan, Perth, 289 10 0
Painting—John Menzies, Altyre, Perth, 170 0 0
Plastering—Alexander Douglas, Perth, 75 0 0
[Plastering and ironwork, &c., not yet accepted.]

ASHFORD (Kent)—For the erection of workhouse buildings, for the East Ashford Union Guardians.
Ellis Bros., £5,482 10 0 T. T. Demme, £5,466 10 0
S. G. & Micklethorp, 5,485 10 0 R. A. Radford, 5,430 0 0
Davis & Leacey, 5,415 0 0 * Provisionally accepted.

AYR—For the construction of a steel girder road bridge across the River Ayr, near Content House, for the Commissioners, Mr. J. Watson, Town Clerk, Ayr.
H. B. Black, £1,656 12 1
D. Kirkland, 8,281 14 7 Hanna, Donald, & Co., 7,660 0 0
A. J. Paton, & Co., 7,932 11 6 W. Clark & Ayr, 7,222 3 4
A. J. Beaven, 8,642 0 0 Leys & Walter, Back & Co., 8,229 11 1 T. Scott & Co., 6,955 11 5
* Accepted.

BEDFORD—Accepted for the erection of a house, Grafon road, for Mr. G. Christie. Mr. Richard Lund, architect, 8, St. Paul's-square, Bedford.
Geo. Harriss, Bedford, £1,497

BENLEY—For repairs to house and premises at Bexley, Kent. Mr. J. J. Demmes, architect, 109, Newington High-road, London.
Brightling, £220 Ellingham (accepted), £173
Best, £175

BLAIRGOWRIE (N.B.)—Accepted for the construction of a reservoir, &c., at Burreton, for Blairgowrie or Eastern District Committee of the County Council of Perthshire. Mr. W. J. Brewster, Grant, engineer, Bengerth, Rattray, interior, Quantities by engineer.
T. Taylor, 23, Balhousie-street, Perth, £1,161 3 5
[Works to be completed in three months.]

BRISTOL—For the erection of the "Cabot" memorial tower, Mr. Wm. V. Gough, architect, 24, Bridge-street, Bristol.
E. Walters, £4,419 6 1 W. Cowlin & Son, £3,350 0 0
A. J. Beaven, 3,650 0 0 Leys & Walter, Back & Co., Humphreys, 3,141 0 0 Fields, St. Paul's, 2,676 10 0
A. Findlay & Co., 2,229 11 1 T. Scott & Co., 6,955 11 5
* Accepted.

CANNOCK (Staffs.)—For the erection of sewerage works, for the Urban District Council. Mr. John Peake, Surveyor, Church-street, Cannock.
Enoch Hewitt, Hednesford, £1,749

CARDIFF—For the extension of school buildings, Albany-road, for the Committee of the Wincanton School, Mr. S. Rooney, architect, Cella Malby Chambers, Quay-street, Cardiff.
H. Gibben, £2,650 0 0
Powell & Mansfield, 8,720 0 0 J. Allen, 6,395 0 0
W. Thomas & Co., 6,679 0 0 Knox & Wells, 6,390 0 0
Cook & Barde, 6,642 0 0 Lattley, Co., 6,348 0 0
A. J. Howell & Co., 6,543 0 0 D. Davies, 6,130 0 0
Caldwell & Hoegrege, 6,000 0 0 C. C. Dunn (accepted), 5,995 0 0
[All of Cardiff.]

CARDIFF—For taking down and rebuilding chimney, Cogan-street, for the Corporation. Mr. C. H. Preece, C.E., Town Hall, Cardiff.
E. Turner & Sons, £114 8 61 T. D. Ridley, Cardiff, £222 13 2

CARNARVON—For the erection of school (Sunday) buildings, for the Committee of the Corporation, Mr. C.M. chapel, Mr. Rowland Lloyd Jones, architect, Carnarvon.
Wm. Roberts, £1,764 10 0 Hugh Hughes, New-Straight, £1,338 0 0
H. Jones & Roberts, £1,715 0 0 David Jones, 1,298 0 0 J. Thomas & W. R. Jones, 1,292 0 0
* Accepted.

COLCHESTER.—For the erection of a station for the installation of the electric light, for the Corporation. Mr. H. Goodyear, E.E. Borough Engineer, Colchester.
H. Everett & Son, £3,594 0 0
D. A. Doss, 3,740 0 0 G. Grimwood & Son, 3,690 0 0
H. Heady & Son, 3,690 0 0 Sudbury, 3,996 0 0
Barnes & Son, 3,689 * Accepted.

DEVONPORT.—For alterations to "Stoker's Arms," Marine Tower, for Mr. Hellen. Mr. H. G. Luff, architect, 64, Chapel-street, Devonport.
H. Heady & Son, £1,137 10 0 G. H. Smith & Son, £1,194 15 0
W. J. Oliver, 133 11 0 * Accepted.

DEVONPORT.—For additions to Royal Saloon's Home, Duke-street, Mr. H. G. Luff, architect, 64, Chapel-street, Devonport.
Wm. Linton, £154 10 0 J. Healy & Son, £148 18 0
G. H. Smith & Son, 152 15 0 * Accepted.

DUNDEE.—For the erection of public wash-houses, Guthrie-street, and Horse-way, for the Town Council. Mr. Wm. Mackintosh, C.E., Borough Engineer, 91, Commercial-street, Dundee.
Machinery and Bricklaying—David Critchton, Kirriemuir-street, Dundee, £253 4 4
Joinery—Gave & Cameron, N. Tay-street, 229 2 8
Scaffolding—Ramsay & Reid, Wellgate, 44 1 7
Plumbing—John Crockett & Sons, George-st., 445 13 6
Plastering—Reuch & Kilgum, Broom-street, 80 15 8
Painting—Burt & Greig, Hawkhill, 10 0 0
Iron and Smith Work—Nicol & Jack, King William Dock, 168 11 5
Engineering—Gopner & Greig, E. Dock-street, 360 15 0
£1,641 15 10

ELGIN (N.B.)—For alterations, &c., to "Commercial Hotel" Buildings, for Mr. R. Ritchie. Mr. C. Dalg, architect, Elgin.
Painting—James Young, Bishopsgate, Elgin, £416 10 0
Carpeting—Mackie & Mackenzie, Elgin, 68 15 0
Plumbing—William Taylor & Sons, Elgin, 40 0 0
Plastering—Geo. Gray, Elgin, 71 8 0
Painting—William Fordyce, Elgin, 5 14

HANWELL (Middlesex)—For new shops and stores in the Broadway, for Mr. W. H. Henton. No quantities supplied.
Penny, £2,428 10 0
A. & B. Hanson, 3,387 Loving, 3,187

KING'S LYNN (Norfolk)—Accepted for the supply of road materials, for the Corporation. Mr. E. J. Silcock, C.E., King's Lynn.
Rough Granite Lumps, per ton £0 7 9
A. & F. Manuelle, London, per ton £0 7 9
Broken Granite, per ton £0 8 3
L. Sommerfeld, Lynn, per ton £0 8 3

Croft Granite Company, Leicester, per ton 1 7 9
Do. do. per ton 1 6 3
Do. do. per ton 1 5 9

Gordon & Sons, Annaling, per foot 0 1 0
Do. do. per foot 0 1 0

KING'S LYNN.—For the erection of a covered sewer reservoir, for the Corporation. Mr. E. J. Silcock, C.E., Borough Engineer, King's Lynn.
Pedrette & Co., £5,600 0 0 R. M. Parkinson, Queen's-street, Peterborough, £4,693 0 0
H. Gibson, 4,878 * Accepted.

LONDON.—For erecting the Metropolitan School, Southampton-row, London, W.C., for Sir Isaac Pitman & Sons, Limited, Mr. G. R. Martin, architect, 3, Pall Mall East, S.W. Quantities by Mr. W. Westminster.
Excavations and Foundations, per cubic yard
J. Welch & Sons, £3,240 0 0 J. Long & Sons, £2,487 0 0
Holloway Bros., 3,020 0 0 J. Dove Bros., 2,475 0 0
J. C. Cranchell, 2,825 0 0 W. Smith, 2,445 0 0
J. Royce, 2,885 0 0 F. G. Minter, 2,430 0 0
A. H. Bennett, 2,983 0 0 Perry & Co., 2,375 0 0
B. Gray & Sons, 2,583 0 0 * Accepted.

Superstructure, Extra for Malting, per cubic yard
J. Long & Sons, £5,570 0 0
T. Hoyle, 5,650 0 0
G. H. & A. Bywaters, 5,673 10 0
H. Lovell, 5,600 0 0
Dove Bros., 5,400 0 0
Coffs & Son, 5,243 0 0
J. Grover & Sons, 5,249 0 0
A. Kellest, 5,248 0 0
J. Curmishall, 5,157 0 0
Holloway Bros., 5,190 0 0
Perry & Co., 5,190 0 0
Perry & Co., 24,020 0 0

LONDON.—Accepted for the erection of Addison park Mansions Addition-gardens, Kensington (block B), for the Kensington Freehold Land Trust, Limited, Messrs. Booth & Fox, architects, 9, John-street, Adelphi, W.C.
J. Christie, Walsby-rod Station, £3,350.

LONDON.—For alterations, &c., to 79 and 80, Bishopsgate-street Without, and 77 to 84, Houndsditch, for Messrs. J. Wisley & Co. Messrs. Edward Saunders & Son, architects, 6, Bishopsgate-street, Without, E.C.
Paterson, £3,320 Holloway, £3,988
Jerrard & Son, 3,079 Lacey, 2,978
Jerrard & Son, 3,079 Clarke & Mansoch, 2,974
Gladling, 3,023 Ashby Bros., 2,976

LONDON.—For the erection of asylum buildings, Hendon, for the Managers of the Central London Sick Asylum District, Messrs. Gibb, Gough, & Trollope, architects, 28, Craven-street, Strand, W.C.
Thomas Turner, £1,500 0 0 J. Rowbotham, £1,500 0 0
G. Wall, 89,730 0 0 G. Wall, 89,730 0 0
Bywaters & Sons, 135,737 0 0 H. Willcock & Co., 86,840 0 0
Leslie & Co., Ltd., 99,428 8 6 Waverhampton, 86,840 0 0
F. Gough & Co., 99,994 0 0 * Accepted.

LONDON.—For laying pipe sewers, &c., Kirkland Estate, Plumstead. Mr. H. H. Church, Surveyor.
Penn, £135 Thomas & Edge, £257
Safford, 281 Brewster, 255
Kilby, 279

LONDON.—For stabling and coach-house, Lucas-street, Lewisham High-road, S.E., for Plummers' Stores, Limited. Mr. J. J. Downes, architect, 709, Lewisham High-road.
Jerrard & Son, £2,590 J. S. R. Best (accepted), £2,500

LONDON.—For the enlargement of St. John's Schools, Ealing Dean, for the Educational Association of Ealing, Mr. Robert Willey, architect, 33, New Bridge-street, E.C.
Penny & Co., £2,410 J. W. Donn, £2,319
Myring, £2,335 Foord & Son, 3,161
T. Nye, 3,275

LONDON.—For rebuilding Nos. 62, 64, and 66, Belvedere-road, Lambeth, for Mr. J. W. Shimmonds, J.P., Mr. Robert Willey, architect, 33, New Bridge-street, E.C.
Thompson & Beveridge, £2,395 W. Rowe, £2,479
Foord & Son, 4,790 * Accepted.

LONDON.—For rebuilding Nos. 12 and 11, Aldermanbury, E.C., for Messrs. Broadway, Greenore, & Co. Limited, Mr. Howard Chaffield Clarke, architect, 63, Bishopsgate-street Within, E.C.
Contract No. 1
Brown, Son, & Bloomfield, Woodward & Co., £1,169
Nightingale, 11,812 Hall, Beddall, & Co., 10,265
Holland & Hamer, 11,923
Clarke & Bracy, 11,473 Ashby & Horner, 10,240
C. Lawrence & Sons, 11,405

For rebuilding No. 1A, Fountain-court, Aldermanbury, E.C.
Ashby & Horner, £2,320 * Accepted.

LONDON.—For rebuilding No. 29, Wood-street, E.C., Mr. Howard Chaffield Clarke, architect, 63, Bishopsgate-street Within, E.C.
Brown, Son, & Bloomfield, £2,495
Spiers & Son, 2,600
C. Lawrence & Sons (accepted), 2,604

MAESTEG (Wales)—For the erection of the Colonel North Memorial Hall, &c., for the Trustees of North's Gift, Mr. E. W. Burt, architect, Fossda, near Bideford.
Stephen Lewis, £1,735 Rattray & Jenkins, Ponty-llyn Evans, 1,742 Kymney (accepted), £1,489

MAIDENHEAD.—For the erection and furnishing of a new office for the Borough Surveyor, Guildhall, for the Corporation. Mr. Percy Johns, C.E., Borough Surveyor, Guildhall, Maidenhead.
Cook & Son, £1,125 J. K. Bolton, £1,110
H. E. Edwards, 125 [All of Maidenhead.]

MIDDLESBOROUGH.—For the execution of street works, for the Corporation. Mr. Frank Baker, Borough Engineer, Municipal Buildings, Middlesborough.
Richmond-street, per foot 113 3 9 J. T. Dixon, Preston-on-Tees, £89 1 2
Back Passage—Salisbury and Walker streets, per foot 129 16 6 Goodhall Bros., Middlesborough, £138 16 5
J. T. Dixon, 144 3 1 * Accepted.

MIDDLESBOROUGH.—For paving, Denmark-street, for the Corporation. Mr. Frank Baker, C.E., Municipal Buildings, Middlesborough.
J. T. Dixon, £1,738 16 4 Thos. Hunt, £1,574 0 3
T. D. Kilduff, Mid., 274 0 10
dlesborough*, 1,597 13 8 * Accepted.

NEWARK.—Accepted for the construction of cellars, adjoining brewery, for Messrs. Warwick & Richardson, Ltd., Messrs. Sheppard & Harrison, architects, 17, King's-gate, Newark.
Charles Baines, Newark-Trent, £4,395 4 0

NEWPORT (Mon.)—For pulling down and rebuilding part of "Tredgar Arms" Hotel, High-street, Messrs. Swallow & Crockett, architects, Steam Packet Companies, Dock-street, Newport. Quantities by architects.
John Lawson, £2,876 W. A. Linton, £2,879
Lawson & Co., 2,273 D. Jones, 2,000
T. Charles, 2,199 E. C. Furlon, 1,099
D. J. Davies, 2,125 Chas. Locke, 2,005
J. Moore, 2,110 Ch. Hy. Reed, 1, Malpas-2,070 road, Newport, Mon., 1,988
T. Westcott, 2,070 * Accepted.

NORDEN (Lancashire)—Accepted for the erection of a stable, for the Norden Coach Company, Ltd., Mr. J. W. Somerset, architect, Church View, Norden.
T. Ashworth & Sons, Norden, £441

LOWER BEBBINGTON.—For private streets improvements, for the Lower Bebbington Urban District Council.
Beech-place, per foot 1 1 1
Preston and George-place, per foot 1 1 1
Sea View North, per foot 1 1 1
Sea View South, per foot 1 1 1
Victoria-place, per foot 1 1 1
Buns-place, per foot 1 1 1
Many-place, per foot 1 1 1
Passage at rear of Sea View North, per foot 1 1 1
Passage at rear of Victoria-place, per foot 1 1 1

Thos. Myers, Bedford, £80 5 0
Thos. Rackferry, Lower Bebbington, 90 12 6
L. Mar & Co., 102 15 0
T. Rowland, 120 18 0
R. Becket & Co., Hartwood, near Northwich, 84 9 0

Accepted. † Sent in a lump sum of £1,311.

LONDON.—For the erection of a station for the installation of the electric light, for the Corporation. Mr. H. Goodyear, E.E. Borough Engineer, Colchester.
H. Everett & Son, £3,594 0 0
D. A. Doss, 3,740 0 0 G. Grimwood & Son, 3,690 0 0
H. Heady & Son, 3,690 0 0 Sudbury, 3,996 0 0
Barnes & Son, 3,689 * Accepted.

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Joinery—Gave & Cameron, N. Tay-street, 229 2 8
Scaffolding—Ramsay & Reid, Wellgate, 44 1 7
Plumbing—John Crockett & Sons, George-st., 445 13 6
Plastering—Reuch & Kilgum, Broom-street, 80 15 8
Painting—Burt & Greig, Hawkhill, 10 0 0
Iron and Smith Work—Nicol & Jack, King William Dock, 168 11 5
Engineering—Gopner & Greig, E. Dock-street, 360 15 0
£1,641 15 10

ELGIN (N.B.)—For alterations, &c., to "Commercial Hotel" Buildings, for Mr. R. Ritchie. Mr. C. Dalg, architect, Elgin.
Painting—James Young, Bishopsgate, Elgin, £416 10 0
Carpeting—Mackie & Mackenzie, Elgin, 68 15 0
Plumbing—William Taylor & Sons, Elgin, 40 0 0
Plastering—Geo. Gray, Elgin, 71 8 0
Painting—William Fordyce, Elgin, 5 14

HANWELL (Middlesex)—For new shops and stores in the Broadway, for Mr. W. H. Henton. No quantities supplied.
Penny, £2,428 10 0
A. & B. Hanson, 3,387 Loving, 3,187

KING'S LYNN (Norfolk)—Accepted for the supply of road materials, for the Corporation. Mr. E. J. Silcock, C.E., King's Lynn.
Rough Granite Lumps, per ton £0 7 9
A. & F. Manuelle, London, per ton £0 7 9
Broken Granite, per ton £0 8 3
L. Sommerfeld, Lynn, per ton £0 8 3

Croft Granite Company, Leicester, per ton 1 7 9
Do. do. per ton 1 6 3
Do. do. per ton 1 5 9

Gordon & Sons, Annaling, per foot 0 1 0
Do. do. per foot 0 1 0

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H. Gibson, 4,878 * Accepted.

LONDON.—For erecting the Metropolitan School, Southampton-row, London, W.C., for Sir Isaac Pitman & Sons, Limited, Mr. G. R. Martin, architect, 3, Pall Mall East, S.W. Quantities by Mr. W. Westminster.
Excavations and Foundations, per cubic yard
J. Welch & Sons, £3,240 0 0 J. Long & Sons, £2,487 0 0
Holloway Bros., 3,020 0 0 J. Dove Bros., 2,475 0 0
J. C. Cranchell, 2,825 0 0 W. Smith, 2,445 0 0
J. Royce, 2,885 0 0 F. G. Minter, 2,430 0 0
A. H. Bennett, 2,983 0 0 Perry & Co., 2,375 0 0
B. Gray & Sons, 2,583 0 0 * Accepted.

Superstructure, Extra for Malting, per cubic yard
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T. Hoyle, 5,650 0 0
G. H. & A. Bywaters, 5,673 10 0
H. Lovell, 5,600 0 0
Dove Bros., 5,400 0 0
Coffs & Son, 5,243 0 0
J. Grover & Sons, 5,249 0 0
A. Kellest, 5,248 0 0
J. Curmishall, 5,157 0 0
Holloway Bros., 5,190 0 0
Perry & Co., 5,190 0 0
Perry & Co., 24,020 0 0

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Paterson, £3,320 Holloway, £3,988
Jerrard & Son, 3,079 Lacey, 2,978
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Gladling, 3,023 Ashby Bros., 2,976

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G. Wall, 89,730 0 0 G. Wall, 89,730 0 0
Bywaters & Sons, 135,737 0 0 H. Willcock & Co., 86,840 0 0
Leslie & Co., Ltd., 99,428 8 6 Waverhampton, 86,840 0 0
F. Gough & Co., 99,994 0 0 * Accepted.

LONDON.—For laying pipe sewers, &c., Kirkland Estate, Plumstead. Mr. H. H. Church, Surveyor.
Penn, £135 Thomas & Edge, £257
Safford, 281 Brewster, 255
Kilby, 279

LONDON.—For stabling and coach-house, Lucas-street, Lewisham High-road, S.E., for Plummers' Stores, Limited. Mr. J. J. Downes, architect, 709, Lewisham High-road.
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T. Nye, 3,275

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Foord & Son, 4,790 * Accepted.

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Contract No. 1
Brown, Son, & Bloomfield, Woodward & Co., £1,169
Nightingale, 11,812 Hall, Beddall, & Co., 10,265
Holland & Hamer, 11,923
Clarke & Bracy, 11,473 Ashby & Horner, 10,240
C. Lawrence & Sons, 11,405

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Brown, Son, & Bloomfield, £2,495
Spiers & Son, 2,600
C. Lawrence & Sons (accepted), 2,604

MAESTEG (Wales)—For the erection of the Colonel North Memorial Hall, &c., for the Trustees of North's Gift, Mr. E. W. Burt, architect, Fossda, near Bideford.
Stephen Lewis, £1,735 Rattray & Jenkins, Ponty-llyn Evans, 1,742 Kymney (accepted), £1,489

MAIDENHEAD.—For the erection and furnishing of a new office for the Borough Surveyor, Guildhall, for the Corporation. Mr. Percy Johns, C.E., Borough Surveyor, Guildhall, Maidenhead.
Cook & Son, £1,125 J. K. Bolton, £1,110
H. E. Edwards, 125 [All of Maidenhead.]

MIDDLESBOROUGH.—For the execution of street works, for the Corporation. Mr. Frank Baker, Borough Engineer, Municipal Buildings, Middlesborough.
Richmond-street, per foot 113 3 9 J. T. Dixon, Preston-on-Tees, £89 1 2
Back Passage—Salisbury and Walker streets, per foot 129 16 6 Goodhall Bros., Middlesborough, £138 16 5
J. T. Dixon, 144 3 1 * Accepted.

PORTSMOUTH.—For the erection of drill-hall, for the 2nd Hants V.A. Messrs. Rake & Cogswell, architect, Prudential Buildings, Portsmouth:—
 T. W. Quick £4,823
 Light & Sons 4,751
 Dayrell 4,720
 H. Jones 4,703
 Springers Bros. 4,699
 [All of Portsmouth.]

PRESTON.—For the erection of stabling for 140 horses, shedding, &c., for Messrs. William Harding & Company, Limited, Lune street, Preston. Messrs. Garlick & Sykes, architects, 23, Winkley-square, Preston:—
 T. Croft & Sons £2,639
 Robert Denbush 2,621
 C. Hill 2,585
 J. Christian 2,580
 N. Fzackerley 2,580
 Thomas Cottam 2,578

Ironwork.
 S. Butler & Co. £2,200
 Alkup & Sons 2,139
 Thomas Dryden 2,125
 * Accepted.

RUSHDEN (Northamptonshire).—For building four cottages in Denmark road, Rushden, for Miss S. M. Lissell, Mr. Arthur Garner, architect, 66, Oakhurst-grove, East Dulwich, London, S.E.:—
 T. Wilmot, jun., Rushden £750
 [No competition.]

SEVENOAKS.—For the construction of sewerage works, Linden Chase road, for the Urban District Council. Mr. James Mann, C.E., Urban District Council Offices, Aspley-road, Sevenoaks:—
 Thomas Adams £1,538 5 6
 Edmund Hes, Mitcham Common, Surrey* 1,533 14 9
 * Accepted according to schedule of prices.
 [Surveyor's estimate, £1,074 17s. 5d.]

SOUTHAMPTON.—For the construction of sewers, &c., for the Corporation. Mr. W. B. G. Bennett, Borough Surveyor, Municipal Offices, Southampton:—
 Playfair & Toole £3,256
 B. Cooke & Co. 3,249
 W. H. Saunders & Co. 3,245
 * Accepted.

SOWERBY BRIDGE (Yorks).—Accepted for the erection of Congregational Sunday-school buildings. Mr. S. Wilkinson, architect, Sowerby Bridge. Quantities by architect:—
 Maitland, William Sutcliffe, Sowerby Bridge £2,200
Joinery, or Lewis Whitaker, Masham, Sowerby Bridge
Plumbing, Glazing, and Lighting.—James Stafford, Sowerby Bridge
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MAY 22, 1897.

ILLUSTRATIONS.

Church and Mission-room, Seughenydd.—Mr. E. M. Bruce Vaughan, F.R.I.B.A., Architect	Double Page Ink-Photo.
Sculpture at the Royal Academy:—	
"The Mountain of Fame."—By Mr. A. C. Lucchesi	} Double Page Ink-Photo.
"Isis."—By Mrs. A. Freeman Gell	
"Oceana."—By Mr. Bertram McKennal	
"Invocation to the Goddess of Love."—By Mr. H. C. Fehr	
"Atlanta."—By Mr. Gustav Natrop	
"Jowett Memorial, for Balliol College, Oxford."—By Mr. E. Onslow Ford, R.A.	
"Death of the Firstborn."—By Mr. A. C. Walker	
"Children Bringing Lilies to the Holy Child."—By Miss E. M. Rope	
"Hero and Leander."—By Mr. Frederick Thomas	
"They See the Work of their Own Hearts."—By Miss Margaret M. Giles	
Design for a Mausoleum.—Mr. John Belcher, F.R.I.B.A., Architect	Two Single-Page Photo-Lithos.

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The Blackwall Tunnel.



THE Blackwall Tunnel is now a completed work, and is to be officially opened to-day (Saturday) by the Prince of Wales. It will doubtless be remembered that the scheme, as carried out, is the outcome of an Act obtained by the late Metropolitan Board of Works in 1887. The original proposal, however, was for a tunnel of 15 ft. internal diameter to accommodate foot passengers, and two additional tunnels for vehicles. A contract was actually let for the passenger tunnel, but on the London County Council coming into existence, fresh views were put forward resulting in the present work for accommodating both passenger and vehicles, the external diameter of the tunnel being 27 ft. This gives two footways of 3 ft. 1½ in. on each side of a 16 ft. roadway, with a headway of 17 ft. 7½ in. at the centre.

The Blackwall Tunnel is situated six miles below London Bridge, one and a half below Greenwich, and three miles above Woolwich, and will give a ready means of communication between the districts of Poplar and the East and West India Docks on the north, and the neighbourhood of Greenwich and Woolwich on the south. Although in 1887 Messrs. S. Pearson & Son were entrusted by the Metropolitan Board of Works with the execution of the original scheme, it was not till the end of 1891 that the revised works were finally let to them, for the lump sum of 871,000*l.*, which amount, we are glad to hear, has not been exceeded, in fact certain modifications in the original design have resulted in a considerable economy.

Starting on the Middlesex side from the East India Dock-road the tunnel is entered by an open approach 875 ft. long, after which the tunnel extends 1,694 ft., with a gradient of 1 in 33.4 until the horizontal portion, 221 ft. long, under the river, is reached. The south approach tunnel, with a gradient of 1 in 36.2, is 1,549 ft. long, with an open approach of 860 ft., making the total length a little over one mile. The approach gradients, though somewhat steep, are no worse than that of the Haymarket, and they were, of course, determined by the

existing thoroughfares to be served, and the minimum distance under the bed of the river at which it was possible to drive the shield. Even with the level fixed upon, only 5 ft. 6 in. of gravel rests on the top of the tunnel at one portion of the river bed. This portion of the work was fraught with the very greatest difficulty, and its successful accomplishment is, perhaps, one of the most creditable engineering feats of the day.

The tunnel is circular in cross-section, being made of an outer cast-iron skin 2 in. thick, in fourteen segments, bolted together, forming rings 2 ft. 6 in. long. The metal skin is lined with cement concrete, faced with white glazed tiles. The roadway is 16 ft. wide, formed of asphalt under the river, and granite setts on the approaches. The space under the road is mainly formed into a subway for the accommodation of pipes, and for purposes of ventilating.

The cast-iron lining rendered practicable a great part of the work which, in fact, could not have been made without it. The system requires the use of a shield or wrought cutting edge portion, capable of being forced forward, as the excavation proceeds, by means of hydraulic jacks pressing against the already formed tunnel. The shield is made to overlap (outside) the end of the cast-iron lining, so that fresh rings can be added from time to time as the work progresses, and the shield travels forward. Compressed air was necessary to keep back the drainage water within reasonable limits, and air locks had, therefore, to be formed in the shield, for the passage through it of the workmen and excavated materials.

The employment of a cast-iron lining has the following advantages:—

1. As each ring is completed it is at once ready to receive the full pressure of the ground.
2. It is easily and quickly erected, as much as 12 ft. 6 in. having been completed in twenty-four hours.
3. A smaller external diameter is required for a given internal size of tunnel, thus saving excavation.
4. It can be readily made watertight from within.
5. Settlements are avoided by quickly filling in the small extra space excavated with grout, forced in under pressure.

The precise system adopted in driving the tunnel is not new in detail, except the

hydraulic erectors for fixing the lining segments in place; but, taken as a whole, the work is remarkable as being the largest shield-driven tunnel ever constructed. It is the only example of a tunnel which has been driven through gravel under a river bed, and that too, within the almost incredibly small space of 5 ft. 6 in. from it.

This performance required the very greatest skill and care. Large quantities of clay in bags were placed on the bed of the river for a width of 150 ft. in the neighbourhood of the shield in order to prevent the escape of the compressed air as far as possible, and to check the inrush of water into the shield. Notwithstanding every precaution, however, the river bed was twice blown up by the air, the water being shot up to a height of about 20 ft. The tunnel very quickly partly filled with water, but owing to the excellent and complete precautions taken, the workmen escaped without hurt or injury.

It is worthy of note that much of the clay tipped on the bed of the river found its way downwards, as the gravel was excavated, and was removed from the workings in the shield. This fortunately facilitated operations to a very great extent. It is notable that so delicate were the required adjustments of air pressure that, as the tide rose and fell, so had the pressure to be increased or diminished, in order to avoid drowning out, on the one hand, or blowing up the river bed on the other.

The difficulty of this part of the work on the tunnel may be gauged from the slow progress made, which was at the rate of only 10 in. per day of the most arduous labour, contrasted with a progress of 12 ft. 6 in. when passing through clay. Notwithstanding all obstacles, however, the river portion of the tunnel only occupied thirteen months to complete.

Some idea of the magnitude of the work may be gathered from the following figures. The shield weighs upwards of 220 tons, and required at times a force to be exerted by the hydraulic rams of something like 5,000 tons to push it forward through the wet sand and gravel. During one day of twenty-four hours over 300 cubic yards of material were frequently excavated and passed through the air lock, also 75 tons of lining have been erected and grouted. This result could only have been attained by the most perfect

organisation and system on the part of those in charge of the work.

There are four vertical shafts leading from the tunnel, two on each side of the river. They are 48 ft. internal and 58 ft. external diameter, and are placed on the centre line of the tunnel. One shaft on each side of the river is provided with a spiral staircase 6 ft. wide, for the convenience of those near the river bank. The shield was lowered down the southern shaft, and completed the whole of the tunnel right across the river to within 432 ft. of the northern end, where it was built in, the remainder of the work being "cut and cover." The tunnel is lighted throughout by electricity, provision being made for artificial ventilation should it prove desirable. Owing to the admirable provision made for ventilation, and the use of a compressed air sick chamber, for treating the men affected by working under pressure, no lives were lost during the work of driving the tunnel, and there were only three cases of any permanent ill effects. When we consider that the working pressure frequently reached 37 lbs. per square inch, and when we remember the very high death rate which, unfortunately, usually accompanies working under such a pressure, we think the very highest praise is due to those whose careful study of the subject has resulted in such a wonderful lowering of mortality amongst the workmen.

Whichever aspect of this great work we turn to, whether it be the engineering view of the case, its organisation, or the care bestowed upon the welfare of those engaged upon it, we cannot but be struck with the great ability displayed. We think we shall not be far wrong if we give the major credit of this achievement to Mr. E. W. Moir, Messrs. S. Pearson & Son's able engineer, who, as Sir Weetman Pearson has publicly stated, was practically given a free hand in organising and designing [the special plant required for the job. Mr. Moir's experience with working under compressed air originated at the Forth Bridge when sinking the caissons, and later when constructing the still unfinished tunnel under the Hudson River.

The permanent work has been designed and carried out for the London County Council by their Engineer-in-Chief, Mr. Alexander R. Binnie, M.Inst.C.E., with Sir Benjamin Baker and the late Mr. J. H. Greathed as consulting engineers. Mr. David Hay and Mr. Maurice Fitzmaurice acted as resident engineers; and for the contractors, Mr. E. H. Tabor, Mr. G. H. Halden, and Messrs. Everitt and Collingridge were chief assistants under Mr. Moir. It must be a pleasure for these gentlemen to have their names for ever associated with a work carried through from start to finish with such ability, determination, and success.

SCULPTURE AT THE ACADEMY AND THE SALONS.

HERE is no doubt that both at Burlington House and at the Champs Elysées the sculpture is this year the best portion of the exhibition. At the Royal Academy there is, it is true, no great work, but there are a large proportion of works of no little interest and artistic vitality. English sculpture as compared with French is generally smaller in scale and less bold in conception; on the other hand, it often shows a refinement of design and detail, especially in small works,

peculiarly its own. A point for remark in this year's exhibition is the considerable number of successful works by lady sculptors.

Of the sculpture in the Central Hall we have already illustrated the two works which are especially architectural in character, Mr. Schenck's "Industry" and "Sloth," part of the decorative sculpture for the Oxford Town Hall. These, which are to be placed in re-entering angles of the building, have the repose of effect and largeness of style which is fitting for decorative sculpture; in a moral point of view it is perhaps to be regretted that "Sloth" is a better composed and more attractive figure, artistically, than "Industry." In the Lecture Room is a small sketch of a series of six of the figures to go between the spandrels of the arches; one or two of these are a little extravagant in attitude, with one foot thrust against the haunch of the archivolt moulding; in an architectural sense they would be better for a little more repose of line.

As usual, some of the principal larger figures of the year are placed in the central portion of the Lecture Room. Of those which embody a poetical idea the most striking is Mr. Lucchesi's group entitled "The Mountain of Fame," where a female figure representing Fame, and holding out a wreath, is posed with that of a man sword in hand, who, with one foot planted on the higher ground, stretches up his left arm parallel with her right to grasp the wreath; this parallel action of the two arms is very effective, as also the contrast between the mocking countenance of the "Fame" and earnest expression of the other face. This is a work which it would be well worth while to carry out full size; the figures are about half life-size. Mr. Bertram Mackennal's "Oceana" is another very poetic figure, not less so because its meaning is less definite and precise; it is a nude figure of very fine and pure design, symbolising Ocean or representing an ocean nymph; there is a great individuality of character about it. Mr. Fehr's "Invocation to the Goddess of Love" is a well-designed figure which has a rather curious effect from the artificial treatment of the hair contrasting with the otherwise unadorned nudity of the figure—apparently it is meant for an ancient Egyptian woman; the odd effect of the head-dress secures attention to the work but does not improve its beauty. Mrs. Gell's "Isis," in the Central Hall, is another Egyptian subject, though of a very different stamp, a deity on a pedestal formed by a truncated cone, with wings growing from her waist, which are outstretched in front of her; it is this attitude of the wings which gives its main effect to the work. In the Central Hall is also Mr. Natorp's "Atalanta," a bronze replica of an exhibit of last year, a very well-modelled figure in a very difficult attitude, running and half-stooping sideways; her rather long legs are no doubt in character with Atalanta; a good example of the class of sculpture which interests us mainly as an able piece of modelling, though destitute of sentiment. Illustrations of these five works will be found on one of our lithograph sheets. Among figures of the same class as the last named is Mr. Colton's remarkable work "The Image Finder," a nude figure of a powerful man with a very barbarous physiognomy, who, firmly planted on both feet with his legs apart, drags with all his force at a long piece of cloth which he

has hauled over his shoulders, and the lower end of which is attached to the head of an antique statue half embedded in the soil. The motif of the work is an odd one, but it is a capital example of the representation of energy and force of action, and is perhaps the ablest thing that its author has produced. Among other figures which represent simple modelling without any imaginative element is Mr. Armstead's "Playmates" in the Lecture Room, which in character rather recalls Sir F. Leighton's little bronze entitled "Needless Alarms;" like that work, it is a study of the thin and undeveloped figure of a young girl. A stooping figure of a boy playing at marbles, by Miss Ella Curtois (Central Hall) has the same kind of interest, and is a spirited and clever work.

It is to a lady also that we owe one of the most original poetic works in the Gallery, "At the Gates of the Past," by Miss Esther M. Moore, a lady who is steadily rising in the ranks, and has not before exhibited any work so important as this. It represents a nude female figure partly turned away from the spectator and with her face turned sadly towards the "Gate" in question, which is symbolised by a bold and decorative design of flowing curves and scrolls with spaces between—a piece of drapery hanging vertically against the gate, partially behind the figure, serves to steady its lines and connect the composition. The figure is perhaps a little conventional in modelling, rather too sinuous in its lines; but the whole work is remarkable for its combination of poetic idealism with decorative effect. At the foot of the panel which forms the frame to it are engraved some lines from Browning's fine poem "The Statue and the Bust," the passage commencing—

"So, while these wait the Trump of Doom,
How do their spirits pass, I wonder,
Nights and days in the narrow room?"

The passage gives the key to the sentiment of the work, of which we hope to give an illustration after the Academy is closed, the photograph that has been taken of it so far being on too small a scale to do it justice*. Among other figure subjects in the Central Hall which deal with subjects of imagination is Mr. Simonds's bronze of "The Swan Girl," a nude figure grouped with two swans; this is graceful, especially as viewed from the right side of the figure, where the head and shoulders make very charming lines, but it strikes us that the sculptor has followed too literally the figure of a rather thin and ill-developed model; the torso is poor and the upper arms lean; and the sentiment of the work is rather spoiled thereby. The object of the nude figure in art is surely beauty, before anything else; where beauty is wanting, the *raison d'être* of the figure is wanting. A young sculptor, Mr. Wheatley, has got a good place on the walls with an alto-relief of Prometheus and the vulture; the bird is modelled with great spirit, but the conception of Prometheus is quite inadequate; he is a thin aged man struggling in terror and with his mouth wide open; a sad contrast to the sublime Titan of Æschylus and Shelley. Artists too often seem to undertake to illus-

It is one of the examples of the habitual discourtesy of the Royal Academy, in its corporate capacity, both to exhibitors and to the public, that they will allow no photograph of a work to be taken while it is on exhibition, although this might be perfectly well done before the doors are open in the morning, without inconveniencing any one. Two sculptors wished to have special photographs of their work made for publication in this journal, but they are not allowed. At the Paris Salon, in a similar case, every facility would have been given them.

trate Classic legends, or at least to give their name to a work, without having at all realised the poetry of the legend.

The most architectural work among the sculpture is Mr. Onslow Ford's Jowett Memorial, to be placed in Balliol College Chapel, an illustration of which will be found among our lithographs. Though we have given it to a comparatively large size, it is really a very small work, a kind of bijou monument, in which the recumbent figure of the late Master of Balliol is modelled in silver, with a gold mosaic background, and all the remainder of the work is composed of variously-coloured marbles and other materials. It may be questioned whether it does not look a little too much like a model of a larger work, and whether a larger treatment of a design with fewer parts would not have been more effective. However, it is unquestionably a very pretty work, and illustrates the faculty which Mr. Ford has already shown in other monuments of combining architectural and decorative detail with sculpture, a field in which there is still much to be done.

In the beautiful art of bas-relief, which one is sometimes tempted to think the last refinement of sculpture, there are some very charming works, the finest of which is undoubtedly Mr. Thomas's "Hero and Leander," of which we give an illustration; another work which illustrates the union of decorative line with poetic sentiment. The balanced attitude in which the two recumbent figures are depicted is not a natural one, it is carefully contrived to follow the lines of the panel, but it is sufficiently natural under the conditions of the design, which is all one has a right to demand; the business of ideal sculpture is not to imitate nature, but to adapt nature to artistic conditions. Mr. Walker's "Death of the Firstborn" is a good bas-relief, also more or less symbolical, but not so simple or with so much artistic unity as the last named. Mr. Goscombe John exhibits a metal bas-relief in very low relief, in a marble frame, a memorial to the late Canon Guy (not "Grey," as printed in the catalogue); a work which suggests something new in decorative effect. Miss Giles's alabaster group identified with a line from Shelley (the application of which we do not quite understand) is a delicate work in detail but wants coherence as a whole, and has a little too much realistic touch in some of the details. Miss Rope exhibits a prettily composed group of "Children bringing flowers to the Holy Child" (see illustration), "A Guardian Angel" which we have before illustrated (see *Builder* for July 20, 1895), and a spirited little relief entitled "A Dream of the Sea," which is perhaps the best of the three, though of course it is not the most popular in subject.

Among busts there are some fine ones, and it is remarkable how changed this department of the exhibition is since the days when whole rows of uninteresting and commonplace portrait busts formed a feature of the Academy Exhibitions. Now we find portrait busts of high artistic interest, such as Mr. Goscombe John's "Mrs. Cory" and Mr. Mackenall's "Miss Dunham," remarkable for its broad free handling and the decorative treatment of the pedestal and the dress over the shoulders, which, by a pretty fancy, is half conventionalised into sculptural ornament. We have also ideal busts, such as

Mr. Drury's charming "Age of Innocence" * and others which might be mentioned. In purely decorative art there are two or three things to be noted. Mr. Gilbert, who seems to have almost given up sculpture proper for goldsmiths' work, exhibits a gold medal for annual presentation at St. Bartholomew's Hospital, which designers of that kind of work should look at for its noble simplicity of design on a small scale; and a large ewer and rose water dish, silver, with a St. George and the Dragon on the top in various coloured materials. It may be a question whether Mr. Gilbert is not pursuing freedom of line in this kind of work a little towards the point of losing definite line altogether; the ewer has a little too much the appearance of having been in the fire till it was half melted, and then taken out and cleaned up. A little bit of work by Mr. Reynolds Stephens, a silver bon-bon dish of very simple design, with a figure at each end leaning back against it, should not be passed over.

The sculpture at the Salon is of course of less immediate interest than that at our own exhibition, and it would be hardly possible, besides, to attempt anything like a review of that vast assemblage of marble and plaster figures in the central court of the Palais de l'Industrie; one can only take account of a few works and of the general tendency displayed. The general level of French sculpture this year is far higher than that of painting, and moreover a certain tendency towards grotesque and sensational subjects, which threatened to invade the sculpture salon two or three years ago, seems happily on the decline, and the majority of the work exhibited is of a fine and sculpturesque character. M. Verlet's monument to Maupassant, indeed, with its colossal young woman in a modern dress seated with a book in her hand, appeals only to the popular mind, and is moreover far too big for its subject; but it is an exception among the leading works of this year. We see the higher class of monumental sculpture in M. Mercier's beautiful monument to Madame Carvalho; a figure in low relief on the face of a stele, with hands upraised, the whole artistic style of which reminds one rather of the Greek funeral stela, which is nearly the highest praise one could give it. A monument by M. Puech, in which a winged female figure leans against a stele carrying a bust of the deceased person, and tenderly puts her arm round it, is another example of the fine feeling which French sculptors can bring to bear upon works of this kind; and it may be observed that in their favourite employment of a bust or medallion portrait only of the person commemorated, instead of a whole figure, they at once escape the ever recurring difficulty of modern costume in a full-length monumental figure; a lesson which it is to be wished were more followed in England.

As with the pictures, a great deal of the sculpture at the Salon is on a larger scale than we ever have room for in London. In comparison with the extent of the exhibition there is perhaps less variety of style and subject than at the Academy, and there are not wanting works in which the nude figure is used in violent and forced attitudes; but on the other hand there are not a few works showing real grandeur both of thought and

* We will illustrate this shortly; the photographs which have been taken give too much shadow under the chin and spoil the effect; the artist has kindly had another one taken from the plaster model.

execution. M. Falguière, whose principal work always faces the main entrance, has this year tried an equestrian figure, "Poetry" seated on a winged horse; there is a great style about it, but we have seen finer heads on this sculptor's figures. Among works which are specially interesting from their poetic significance in the use of the figure may be named such as M. Vital Cornu's "Spleen," a beautiful nude figure half crouching under the shadow of a rock which seems to weigh her down; M. Dormay's "Le Soir," a colossal male figure seated and looking forward into the night (that is evidently the idea) with an abstracted expression; M. Brenner's pathetic group of Adam and Eve; M. Roze's "The Republic bringing Children up to Instruction," a part of a projected monument—the figure of the Republic very calm and noble in style; M. Icard's group of the Foolish Virgins, under the title "Trop Tard!" a group of nude figures in various attitudes of despair, one of them wildly beating a great knocker on the closed door; M. Perron's "L'Epave," a fine figure of a man with hair blown in the wind, about to step into the sea; and M. Capiet's "La Désespérance," a figure of a seated woman bending her head disconsolately over a broken anchor. These and others exhibit a great deal of that novelty and impressiveness of idea which renders French sculpture so interesting. We see also some fine examples of the treatment of human labour in sculpture, which has had much attention from the French of late, such as M. Hugues's "Un Potier," a powerful nude man seated and turning a vase on the wheel, and M. Houdain's "La Pesée," two men, apparently of primeval type, throwing their whole weight on a lever to raise something from the ground. The pre-Adamite man is a favourite subject of late, and M. Frémiet returns to it with his group of a man who has killed a bear and drags off the cub by its ears; M. Frémiet is always life-like and spirited, but is apt, as in this case, to be rather brutal. M. Peyre has devoted himself to realising the architect of the Sainte-Chapelle, Pierre de Montreuil, a seated monkish figure holding a model of the chapel; if this is intended for a monument to be erected somewhere it is very suitable, but as sculpture it is certainly not interesting in itself.

Sculpture occupies a much smaller place at the Champ de Mars Salon, but there are three noticeable works there. One of these is a large bronze group by M. Dalou, "The Triumph of Silenus," which looks exactly like a picture by Rubens done into sculpture; a description which will at once indicate that it is not, in the true sense, a very sculpturesque work. Then there is the full size execution in stone of the dead figures and the angel watching over them, forming the lower portion of that immortal work (for we think it can never be forgotten) of M. Bartholomé, the "Monument aux Morts" for Pere la Chaise; and lastly, a charming fancy by M. d'Ilzsch, nine life-size heads in coloured wax symbolising the nine Symphonies of Beethoven; a kind of idea one would never expect to meet with from any but a French artist, and which certainly seems a great puzzle to the English visitors.

CITY HOSPITAL, COLINTON MAINS, EDINBURGH.
—A new hospital is being erected at Colinton Mains, from plans prepared by Mr. Morham. Provision will be made for 600 beds.

NOTES.

St. Bartholomew's, Smithfield.
THE Restoration Committee of
 St. Bartholomew's, Smithfield, is a body whose untiring energy now presents us with a fresh pleasant surprise every few years. There was a long pause after the first restoration in 1863-66, but since 1884 the work of rescue—for that is, perhaps, the best term to use—has gone on almost uninterruptedly, and in '86, '92, '93, and '95, successively, we have had to record the opening up and rededication of different parts of the building. The latest portion restored to use is the Lady Chapel, which was reopened on Tuesday last by the Bishop of London, as a morning service chapel. Any one who saw the poor old mutilated and desecrated building prior to 1863, without transepts, the lower part buried, a school in the triforium, and a factory on the site of the Lady Chapel, and projecting into the apse, would have found it difficult to believe that before the end of the century it would be described, as the bishop described it in his sermon, as "the most beautiful church in London." Whether the description is just or not may be, to some extent, a matter of opinion; but it is certainly one of the most beautiful, as well as one of the most interesting, of London churches; the oldest, except the chapel in the Tower, and well worth the care and the money which have been spent upon it, and that which, it is to be hoped, will yet be spent—for much remains to be done. It is satisfactory to see that the Committee pride themselves upon the preservation of all worked stone in the restorations they undertake; and we think Mr. Aston Webb, their architect, may as justly congratulate himself upon the success with which he has preserved the spirit of the old work, and the harmony of the whole, without condescending to any ridiculous attempt to make his modern rebuilding and repairs look as if they were parts of the original.

Dr. Rowand Anderson on Architectural Education.
THERE is a great deal in Dr. Rowand Anderson's address to the Edinburgh Architectural Association (a portion of which is reported on another page) with which we sympathise; more especially his remarks towards the close of the address, in which he maintained, quite rightly, that the founding of such places as hospitals and infirmaries as memorials of the Jubilee Year was a very one-sided measure, and that what was much more wanted was some provision for enabling the poorer classes to have more happiness, more of the enjoyment of beautiful things in their lives, than they have a chance of obtaining at present. But Dr. Anderson's remarks on the education of architects and on the movement for the registration of plumbers, are what we call wrongheaded. We have no doubt that the Registration movement for plumbers has been productive of a great deal of improvement in the general capacity of plumbers to do their work efficiently, and in rooting out the inefficient ones. And we do not know that there is any abstract objection to the registration of architects; the objection to recent attempts to bring it about lay more in the faulty and absurd manner in which it was proposed to be carried out. Dr. Anderson repeats the old objection, met and disposed of long ago, that you cannot examine people in art. No sensible person ever wished to do so. Architecture is more than an art, it is construction also, and there

is nothing illogical in having a system to test the knowledge and efficiency of those who are to construct buildings—so far as construction is concerned. To a great extent registration of architects practically exists in France, and the French are in most respects a much more artistic nation than the English.

The Under-ground Railways and the Jubilee.
WHILE precautions against accidents in the temporary stands and balconies and along the route of the Procession on June 22 are being taken, we may express a hope that the authorities have not overlooked the Metropolitan Railways. The crowds on both the District and the Metropolitan lines are likely to be extraordinary, but most of the stations are, in regard to approaches and platforms, singularly unfitted for large crowds. The staircases are too narrow, and a severe pressure from the top might easily cause accidents, either by forcing passengers off the platforms on to the lines, or crushing those that are lowest against the barriers. It appears to be obvious that, having regard to the inadequacy of the platforms and stations, barriers should be placed outside so as to prevent more than a certain number of passengers from being in the stations at one time.

Balconies on Jubilee Day.
 It is to be hoped also that there will be some inspection or examination of balconies on the line of route of the procession on June 22, as there is no doubt that many of these will be crowded in an exceptional manner, and that they have probably been originally constructed with no view to their supporting any great weight; indeed, the construction of balconies in the older houses is probably often of a very flimsy and unscientific character. Unless this matter is looked to, we fear there will be some bad accidents from the fall of balconies.

Bacteria in London Water.
THE paper read on Wednesday last (19th inst), by Dr. Percy Frankland, F.R.S., at a meeting of the Society of Arts, entitled "The London Water Supply," was an interesting summary of the progress made during the last thirteen years in the scientific examination of the water supplied to the metropolis, but it contained much controversial matter which was largely dismissed as though the theories involved were facts, and we cannot help thinking that some of the statements made are misleading. We are told that the aim of a bacteriological examination of water is not so much to detect the presence of harmful bacteria as to ascertain to what extent filtration removes bacteria generally; and we are again asked to believe that the percentage method is the best one for gauging the quality of water. The author's experiments show that by storage-subsidence and filtration the London water companies remove from 97 to 99 per cent. of the bacteria which were contained in the ordinary river water. We may observe, however, that these figures are not borne out by other investigators, though every one admits, of course, that the water is improved by being filtered. Dr. Frankland relies on the percentage method, as the search for harmful bacteria in potable water is like the proverbial "hunt for a needle in a haystack." But the fact that harmful bacteria are difficult

to find by methods at present adopted does not warrant examiners in giving up the hunt. There is the other side of the question, namely, that bacteria which do no harm may as well be allowed to remain in the water. For, in any case, assuming that filtration on the large scale, as practised by the companies, really does remove up to 99 per cent. of the bacteria, the water no sooner emerges from the filter bed than it is replenished by micro-organisms in the water-main and service-pipes, and, in fact, as many bacteria may be found in it by the time it reaches the consumer as were there before filtration. For a bacteriological examination of water to possess any real value, we maintain that it must be able to distinguish between harmful and harmless bacteria, and to indicate when the former are present. The percentage method is of little or no use in serious work.

The Institution of Electrical Engineers.
THE discussion on Mr. Raworth's paper on the "Generation of Electrical Energy for Tramways," at the Institution of Electrical Engineers last week, did not greatly advance our knowledge. Mr. Carter showed that Mr. Raworth's amendment of Willans's law could hardly be taken seriously. Various speakers talked of the iniquities of Corporations in wanting to sell their power at outrageous rates to tramway companies, but hardly anything was said worth repeating. The few members who remained to hear Professor Sylvanus Thompson read Mr. Trotter's paper on "Disturbance of Submarine Cable Working by Electric Tramways" were, however, repaid for having had to sit through such an uninteresting debate. The paper, although a little obscure on one or two points, was excellent and most instructive. It was an account of the disturbances caused in the cable of the Eastern and South African Telegraph Company by the electric tramway started at Capetown last autumn. The disturbances were so serious that, for some months, it was impossible to read the tape of the siphon recorder, although one could tell from the tape when the electric cars started and stopped. A great many ingenious remedies were tried, but the only successful one and the one finally adopted was to take a cable from the receiving office at Capetown five miles out to sea directly over the old cable and put the far end of it to earth.

Our Insanitary Rural Districts.
A REPORT by Dr. St. George Mivart to the Local Government Board on the recent prevalence of diphtheria in Huntingfield and Halesworth, in the Blything Rural District, states in regard to Huntingfield that the two worst dwellings were two cottages adjacent to the schoolhouse, and the property of the parish. A little group known as "Crossway Cottages" are ownerless at present; "the late owner at his death bequeathed them to a relative, who renounced the legacy owing to the state they were in." The inhabitants of this group of cottages have no water for drinking purposes other than that which they can obtain from a stock-pond close by, which was in a filthy condition. The village is supplied exclusively from wells, which are generally dry-steined and fitted with hand-pumps. Since the epidemic, privies have been, generally speaking, put into better repair, but they are generally placed as near to "the Brook" as possible, and

the watercourse is used from time to time as sewer by emptying excremental matter into it.

Universal complaint was made of Huntly Brook, the condition of it and the sewer given off from it in dry weather being most offensive. In Halesworth the cottages are of flint built, and so out of general repair as to be unfit for habitation. They have no "through" ventilation at all, having no windows at the back. There is no public water service for any part of the town, and no regular system of drainage. The inhabitants obtain drinking-water from wells, a great number of which have been condemned by the Authority, and others, though not condemned, are so notoriously unwholesome as to be shunned by the cottagers. In some of the dry-stained wells the process of free soakage into them of liquid from the ground around and on the higher level could be seen going on actively.

St. Pancras Works Department.

THE Report of the Chairman of the St. Pancras Works Committee touches on two or three important points. One of these is the discovery recently of so many quasi-sewers, that is to say, defective combined drainages, and the Report expresses regret at the failure to obtain amendment of the Interpretation Clause on this point, the attempt having met with a serious check owing to the withdrawal of the Public Health (Sewers and Drains) Bill by its promoters, on account of its inherent defects," a sad reflection on the capacity of those functionaries who pretended to devise a remedy for the difficulty." In regard to street paving the Report sums up very adversely to asphalt, maintaining that "by the use of close-jointed Australian wood we get all the advantages of asphalt without its attendant dangers;" we think this is putting it rather too strongly; asphalt is a much more sanitary pavement than wood in a crowded city; whether its advantages are sufficient to outweigh this is the great advantage is another question. We observe that the Report speaks very strongly about the present bad accommodation for the Parochial Staff; some of the offices have been improved, but the fact still remains, in the words of the Report, that "one of the principal and most extensive parishes in the Metropolis is the worst provided with municipal offices."

Low-street, the (old) Police Station.

THE lease to the Commissioners of Police having expired, the old Station in Bow-street is now being converted by Messrs. Howard & Co., of Russell-street, Covent Garden, into premises for, we are informed, Messrs. Elder, Dempster and Co, of Long-acre, fruit salesmen. On the building of a new Police-court and offices between Broad and Marllett courts, the old Station was adapted for constables' lodgings, and when the lease fell in about a year since, quarters for unmarried men were established in the Park's-buildings, St. Giles's High-street. In one of the cells, now demolished, was a boundary mark of the parishes of St. Martin-in-the-Fields and St. Paul, Covent Garden. The site, we understand, is on the Bedford-square, as was that of the former Police-court opposite, pulled down after the opening of the new Court—Mr. John Taylor, architect, of which we published plans and a view on June 21, 1879. A Police-court was

first established in Bow-street in 1749; the house there, for long occupied by Sir John Fielding, and wherein his brother wrote "Tom Jones," was sacked and burnt by the "No Popery" rioters on Tuesday, June 6, 1780. Its successor, Nos. 4 and 4A, had railings with terminals in the shape of Roman fasces.

THE Council of Almoners of the "Old Bell," Holborn.

Christ's Hospital offer for sale a building lease of the site—about 7,200 ft. super—now occupied by Nos. 123-4, Holborn, subject to rebuilding at an outlay of not less than 10,000*l.* No. 123, the "Old Bell," is one of the very few remaining inns in London which retain their old wooden galleries and "boxes"—those features may be seen around two sides of the courtyard of the "Old Bell."* We are informed that the front portion of the premises was built in 1720; the inner courtyard is of a much earlier date. On the south wall, facing Holborn, is a tablet bearing the coat-arms of Fowler, of Islington; the Fowlers were lords of the manor of Barnsbury. The same arms were affixed to what is believed to have been a lodge of Sir Thomas Fowler's house in Cross-street, Islington, in a ceiling of which were the Royal arms, with E. R. and "1595" in stucco, also the initials F. T. I. (for Thomas and Jane Fowler) with fleurs-de-llys and other ornamentation. The "Old Bell" has been tenanted for some while past by the Bunyer family. The lease will run for eighty years from next Michaelmas, at a ground-rent of 750*l.* per annum.

THE so-called "Exhibition of Dramatic and Musical Art" at the Grafton Gallery.

The Grafton Gallery can hardly be taken very seriously. The title is a misnomer to begin with. The exhibition consists mainly of a number of portraits of eminent actors of the past and present, with a very few portraits of musicians interspersed; pictures of scenes from various old plays introducing portraits of the actors, and some cases of relics, autographs, and presentation objects. A few good and well-known recent portraits of modern actors and musicians are to be found there, which have been seen in recent years in other exhibitions. The majority of the older pictures are more interesting in a historical than an artistic sense, though a few celebrated works are to be found; Lawrence's melodramatic portrait of Kemble as "Hamlet," Hogarth's "Garrick as Richard III," the Stratford-on-Avon portrait of Garrick by Gainsborough, and the same artist's "Miss Linley (Mrs. Sheridan) and her Brother," and Reynolds's "Garrick between Tragedy and Comedy," which it appears is now the property of Sir Henry Irving. Among the most important modern theatrical portraits are Millais' of Mr. Hare; Mr. Sargent's "Miss Ellen Terry as Lady Macbeth," and Mr. Whistler's "Sir Henry Irving as Philip II," a very characteristic work. Perhaps the two items of most special interest in the gallery are a miniature of Beethoven as a boy (about the age of sixteen apparently), which we have never seen before, and which, if authentic (though we rather doubt it), is of great value; and Zoffany's scene from "The Alchemist," with Garrick as "Abel Druggier,"

* The "Black Bull," next adjoining had similar galleries, removed some years ago for tenements.

his most celebrated comedy part. The picture gives a vivid impression of Garrick's power of facial expression. A collection of old play-bills in the back gallery is of some interest. But the exhibition as a whole is a curiosity show rather than an art-exhibition.

THOSE who predicted that the introduction of female students at the École des Beaux-Arts would be a troublesome matter to carry out have proved to be only too much in the right. The young "gentlemen" who work in the ateliers of painting sculpture and engraving have raised an insurrection against the movement, and gave vent to their feelings by chivalrously mobbing the girl students as they emerged from their classes, and pursuing them with shouts of ridicule as far as the Rue Buonaparte, where they had to take refuge in shops while the "agents de police" arrested the most prominent of the rioters. M. Dubois, the Director, has ordered the closing of all the ateliers pending the decision of the Department of Public Instruction as to the course to be taken. The architectural students are not implicated, not however we fear because they are necessarily more orderly than the rest, but because their work at the schools takes place at a different hour. That some such result was to be feared from the general character and habits of the École des Beaux-Arts students was predicted in one of our letters from Paris some time since, in alluding to the proposal to admit female students; and if the plan is to be carried out it is evident that the Government will have to take severe measures to enforce order.

ROYAL SOCIETY CONVERSAZIONE.

ALTHOUGH the exhibits at the conversazione of the Royal Society at Burlington House on Wednesday last (10th inst.) were more varied and interesting than usual from a general standpoint, there were comparatively few which call for a notice in our columns.

The most remarkable exhibits, perhaps, were those relating to the micro-structure of alloys, a method of investigation suggested, and we may add to some extent dealt with, in the columns of the *Builder* two or three years ago in a series of articles in our "Student's Column." Mr. J. E. Stead, of Middlesbrough, had a number of photographs illustrating the micro-structure of alloys of lead and antimony, tin and antimony, tin and phosphorus, tin and arsenic; tin, antimony, and copper; and tin, arsenic, and antimony. These demonstrated the fact that when fluid mixtures of metals and non-metals cool down from the liquid to the solid state, crystals of definite chemical composition fall out of solution, and may be clearly seen under the microscope after the polished surfaces have been etched by dilute acids, or tinted with suitable re-agents. This condition has been demonstrated by Professor Roberts-Austen by an entirely different method of research. The last-mentioned observer exhibited an apparatus consisting of a microscope and camera arranged for obtaining photographs of metals and alloys under high magnification. The illustrations accompanying this demonstrated the existence of carbon in steel, including the diamond form of carbon. Messrs. C. T. Heycock and F. H. Neville showed some X-ray photographs of sodium-gold alloys, proving that crystals both of gold and sodium occur in the mass, although the alloys appear to be homogeneous. The importance of a knowledge of the structure of mixed metals and alloys generally cannot be over-rated, though but very little is at present known, in spite of the impetus given by Sorby's researches in reference to the structure of steel some years ago. Apart from the scientific interest attaching to the three exhibits mentioned, as throwing light on the genesis of crystallisation, and the demonstration as to how far metallic alloys may be crystalline substances or merely mechanical mixtures, they

are of much practical importance. It will be perfectly possible in time, no doubt, to impart greater strength to many alloys by inducing direction in crystallisation in them, and by turning a granular into a more or less fibrous form. But, in these exhibits, we did not notice any attempt to study micro-structure of the metals after these latter had been subjected to great pressure; judging from analogy in regard to rock-structure, that method of research would have still greater beneficial effects, as pressure is as much an agent in modifying crystallisation as is rapidly incooling—we suggest this to the exhibitors who appear to have approached their subject from one side only. Many of the structures now, for the first time, demonstrated to occur in alloys, may be paralleled in the vitreous, devitrified, and hemi-crystalline igneous rocks, and in slags. Not the least interesting circumstance is the resemblance between the etched surfaces of the alloys and that of meteorites.

Passing to the electrical exhibits, which were numerous, as usual, we may note that by Mr. J. W. Swan, demonstrating stress effects produced by electric discharges on the surface of a viscous mixture of resin and oil. Mr. J. Wimshurst had a powerful electrical influence machine with twenty-four discs, each three feet in diameter; they were so arranged as to furnish three poles, one of which may be negatively charged, the other two poles positively charged, or, at pleasure, the reverse order may be followed; by this arrangement two separate streams of discharge may be in use at the same moment. Cathode and X-rays were well in evidence in the exhibit by Mr. A. A. C. Swinton, which showed, amongst other things, that the penetrative value of the X-rays is independent of the material of which the anti-cathode surface is made; not so, however, the quantity of the X-rays, which is greatest with anti-cathode surfaces of high atomic weight. Dr. Gore showed an apparatus for investigating the influence of proximity of substances on voltaic action.

In other demonstrations of physics we noticed a model of a Hertz wave transmission exhibited by Professor Silvanus Thompson. This model was a simple wave-motion apparatus, transmitting a transverse vibration along a row of leaden balls suspended so that each ball gives a portion of its energy at each oscillation to the next in the series. The oscillator is a heavy suspended mass, to which a blow is given; the resonator is a circle of brass hung on a trifilar suspension. Both oscillator and resonator were timed to the same period. Messrs. E. Edser and H. Stansfield exhibited an apparatus showing the phase change of light reflected at a glass-silver surface; Mr. J. Gould made some experiments on the transmutation of sound vibration; and Mons. C. E. Guillaume, of the Bureau International des Poids et Mesures, exhibited a compensated pendulum of nickel steel, also the results of experiments with highly dilatible and nearly non-dilatible nickel steel.

An improved hatchet planimeter was shown by Mr. E. K. Scott. In this instrument the hatchet edge or keel consists of a sharp-edged wheel, thus avoiding cutting the paper and side-slip, and, by reducing friction, enabling irregularities of the figure to be readily followed. The same exhibitor also had an instrument for describing arcs of circles of large radius, called cyclograph, principally intended to take the place of the wooden curves commonly used. It can be adjusted instantly to give any radius of curvature. The curve traced out is not an approximation, but it is truly an arc of a circle.

There were a larger number of natural history objects than has been usual in recent years.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

THE PARTHENON AND THE EARTHQUAKE OF 1894.

A MEETING of the Royal Institute of British Architects was held at No. 9, Conduit-street, Regent-street, on Monday, Professor Aitchison, A.R.A., President, in the chair.

The minutes of the last meeting having been taken as read, Mr. F. C. Penrose, past President, read a paper entitled "The Parthenon and the Earthquake of 1894," of which the following is an abstract—

Mr. Penrose said he had undertaken to describe the result of his recent examination of the Parthenon, the object of which was to advise the Greek Minister of Public Instruction,

and the Archaeological Society of Athens, as to certain repairs which were required in consequence of the damage done to the building by the earthquake of 1894. Three international consulting architects—namely, Mr. Penrose himself, Professor Dürm (of Karlsruhe), and M. Lucien Magne (of Paris)—had been appointed to confer with a local committee, presided over by M. Cavadias, the Government Superintendent of Antiquities, and consisting of several Greek members of the Athens Archaeological Society and some associated members including Dr. Dörpfeld, M. Troump, a resident French architect, and the Government engineer, M. Balanos, who was to superintend the repairs.

Having referred at some length to the principal events which had reduced the building to its present insecure condition, and also to what he considered the ill-advised re-erection of some of the damaged portions of columns, Mr. Penrose went on to say that when he arrived at Athens last year Professor Dürm and M. Magne had already made their reports. The former had gone very fully into the question of the defects and remedies, and his report was a valuable contribution to the study of the subject. That of M. Magne was a brilliant and well-illustrated memoir on the construction and ornaments of the temple rather than a more technical report on the defects and remedies; but he called attention to one very important detail, namely, the instability of the angles of the pediments. The local committee had already made arrangements for several 14 ft. architrave stones being prepared on Mount Pentelicus. The part of the temple which demanded the most immediate attention was the hexastyle portico of the Posticum. The state of the Posticum was such that it was impossible to execute any satisfactory repair without replacing at least five of the architrave stones. Of the six columns composing the portico, four only were free; two of them were more or less embedded in the mass of masonry containing a staircase which was once surmounted by a Turkish minaret. This mass secured the southern columniation. The architraves supported by the four free columns consisted of twelve stones. Of these twelve, only five were free from very great defects; but if five of them could be replaced with new material, two could be so pinned together to their neighbours that they might be supported sufficiently well. The worst defects were on the eastern side of the portico. With one exception the western stones were sound, which was fortunate, as they supported the portion of the Panathenaic frieze still left on the temple. With regard to the defective one—namely, that which once connected the north-eastern column with its neighbour—the simplest remedy would have been to replace it with new; but its removal would endanger a portion of the precious sculptures, and it would have to be keyed to a new stone placed alongside of it. Professor Dürm in his report suggested that the reason of this part being in so much worse condition than any other was that the original builders had used for an interior part of the fabric a very much worse material than they had provided for the exterior. It was true that the marble of these architraves was more streaky than could be found on the exterior; but streaky marble of similar quality had endured well on the temple of Jupiter Olympius. Another and more effective cause could be assigned to it, namely, fire, which had consumed all the inflammable part of the structure, and had very much calcined the whole of the superstructure of the Posticum, as the state of the surface of the marble showed. It had also weakened the lintel of the great western door, and some of the columns of the Posticum, especially on the eastern side, had also suffered. Many portions of the capitals and of the architrave stones in this part retained traces of iron plugs, which could only have been used to fix some material for the purpose of repairing the surfaces which had been split off by the action of fire. This completely explained why the architrave stones of this portion of the building, although much less subject to ordinary weather vicissitudes, had become so much more cracked than those of the peristyle. A large piece from the middle inter-columniation fell down in the earthquake of 1894, split off apparently at an ancient flaw. The course of deep stones above the architrave, which formed the back of the Panathenaic frieze, and ranged with it in level, was also very much cracked and dislocated, so much so that only two pieces in the whole length were in a fit condition to be retained.

These pieces, however, were neither so difficult to handle nor to replace as the main architrave stones, which had a length of about 13 ft. 9 in. each.

The lecturer then referred to the difficulties attending the removal of the condemned blocks and fixing those which were to replace them, and showed by the aid of diagrams how the operation could be performed. With regard to the lintel of the great western door, the two ends remained in the wall, but the rest was gone, and the place was occupied by an exceedingly unsightly brick arch. This, it was hoped, would be replaced by marble; but there was not the slightest prospect of a 20-ft. beam being found, nor could it be brought to Athens with existing appliances. The plan recommended by the lecturer, and accepted by the Athenian Committee, and by Mr. Penrose's French and German colleagues, was explained by a diagram. The insecure condition of the angles of the temple was to be traced to the great over-hanging stones which supported the angular acroteria having a tendency to slip downwards and drag the neighbouring portions of the superstructure with them. The worst crack in the architrave was over the north-west angle column, where, owing to the fall of a large piece at the corner of the abacus, the bearing of the outer stone of the architrave was reduced to little more than a point. Between the fourth and fifth columns, reckoning from the south, a crack through the architrave had been produced by a cannon-shot, and the abacus of the fourth column had been so much shattered that it gave a bearing to no more than about half the thickness of the architraves which rested upon it. The exfoliation of iron cramps connecting the architrave stones at the top had also injured all but one of the vertical joints, but beyond the brackings of the large splinters which had fallen, the injury at these places did not seem likely to extend. Among the diagrams shown by the lecturer was one illustrating the curious construction of parts, and another showing how the angles could be secured from slipping by connecting the great horizontal corner-stones by means of strong gun-metal cramps with the main cornice at a sufficient distance, so as to provide an adequate amount of weight to resist the tendency to slip. Few of the new stones proposed to be introduced would make any difference in the general view of the temple, and scarcely any of the steel or bronze work; and the new stone could be stained with copperas so as to be almost indistinguishable from some of the old time-stained marble.

Professor Ernest Gardner, in opening the discussion, said he was in Athens at the time of the 1894 earthquake, and the first thing he did was to go to the Acropolis to see the fragments that had fallen from the architraves of the columns. Some three or four years before that an International Commission was appointed, on which he served, which was for quite different purposes from those of the present Commission, whose work was concerned with the architectural necessities of the restoration. It was a Commission to consider the Parthenon from the aesthetic point of view, and to decide what was desirable in the way of restoration, and of clearing away more recent additions, and so on; and on that occasion he visited a good many of the buildings. As to the result of the earthquake, he certainly confirmed one point which Mr. Penrose mentioned. As regards these fragments, certainly the damage was not done by the earthquake itself. He examined the fragments very carefully from this point of view immediately after they had fallen, and there was hardly any trace of new fractures upon them; in fact, the greater part of the surface within the cracks was overgrown even with lichen, and it was considerably discoloured, so that it was obvious that the cracks were old ones, and the pieces were hanging on, almost by chance, and the slightest shake was bound to bring them down. The earthquake really did good by calling the attention of everybody to the extremely precarious condition of the building, especially of the corners, and the architraves and other portions. But certainly from the appearance of the blocks as they had fallen nobody could imagine that the earthquake had really broken anything at all; they were simply hanging very loosely, and they would fall at the very lightest shake. There were, however, two or three points as to which

should like to ask a question of Mr. Penrose, the first was as to the foundation of the minaret, the lower part of the minaret, the great eastern door, and the columns, and the innering of the great door. As regards the columns and the possibility of their re-erection Mr. Penrose had already spoken in a tenour which he was quite sure was in accordance with the general feeling of that meeting, nothing could be more discordant, and even doubts, than those kind of mangled remains of columns that had been built up again upon the north side of the Parthenon. The reason it was of course well known to all architects, that it was impossible to place the pieces of a fluted column one above another after they had been fluted. The fluting in the Greek buildings was made after the columns were erected. The result of any attempts to build them up again was most disastrous, as he was sure everybody would agree who had seen some columns. To compare those mangled remains of columns built up with those not so, one felt how hideous they were; and he thought it would be quite impossible to rebuild a whole of the Parthenon. There was not material for it unless they cut a great many wall blocks, and he did not suppose that any one would propose that; and to cut a few blocks would simply destroy the symmetry of the building. The explosion had produced a kind of symmetry of the columns descending on each end towards the middle. He wished that Mr. Penrose had recommended that those columns set up should be pulled down again; certainly they disfigured the building very much as they stood now with brick patches that had been put into them. With regard to the great western door, now covered by a brick arch supported with an iron support below, which was extremely ugly, he was very glad to see that there is a proposal to replace that in a much more adequate manner. What he should like to ask in regard to that was, What would Mr. Penrose propose as regards the sides of that door? The present jambs of the door, on which the brick arch rested, were put inside the original jambs of the door. These were thin casings which were put up, most probably when the Parthenon was converted into a church; and he remembered it was proposed some three or four years ago, if possible, to remove those iron jambs. He did not know whether it could be considered desirable, either from the architectural or historical point of view, to move them; but there was one consideration, that the blocks which had been built in by those who altered the Parthenon into a church had long inscriptions on the back of them which were at present hidden, and those inscriptions would be a most valuable document from a historical point of view. Of course, he would say, Do not damage the building in any way; but he should like to hear the opinion of Mr. Penrose as to the advisability or possibility of removing them. There was another point as to which Mr. Penrose had already expressed an opinion—at least, by implication—and that was as to the lower part of the minaret that still remained. Mr. Penrose said might possibly be that the staircase—this great block of masonry containing the staircase might belong to the time of the Christian church, and not belong to the mosque necessarily. It afforded a great deal of support to defective architraves there. He (the speaker) remembered it was discussed some four or five years ago whether that should be removed as being a later addition. He expressed a very strong opinion from the historical point of view that it was undesirable to remove it. They did not notice this masonry in the outside, and certainly, after what they had heard from Mr. Penrose, it would be a serious danger to the building to remove it. He thought, on the whole, the amount of newness and the amount of restoration that was necessary must be very reassuring to most of the Parthenon carefully must have been extremely alarmed at the cracks all over the building, and at the most inadequate way in which the heavy blocks were supported.

Mr. Phéné Spiers said that it had been of the greatest interest to hear from Mr. Penrose that he recollected so clearly the dimensions and the work he did fifty years ago, and which had led his name so connected with the building. (The speaker) felt when he visited Athens all the different dimensions that could be made had been made. It was impossible in any direction to adopt the motto of Wm.

Burges, "To measure and plot on the spot." In the speaker's days "to measure and plot on the spot" was not a recommendation made to every student, as it was now. He had been looking carefully at the drawings again, and the photographs. He saw, as a matter of fact, that there had been very little change in the structure. All the stones of the west front, the angle stones, seemed to be very much the same. Slight differences which were to be met with were near to the north-east angle. The crack there seemed to have been increased a great deal since he was there, and there must have been some greater damage done to the abacus of the columns than what was seen in his drawings. There were two questions he should like to ask Mr. Penrose, as he did not quite follow him. Mr. Penrose spoke of certain stones being laid on the tiles. He supposed Mr. Penrose meant the marble tiles.

Mr. Penrose: Yes.

Mr. Phéné Spiers: The other question he wished to ask him was, What was the actual cause of the discolouration of certain parts of the sculpture? What those beautiful yellow tones were due to? Whether to the decomposition of the material of the marble or to discolouration of the iron dowels inside, or to lichen? He did not think it had ever been analysed to find out what its composition was like. There was one thing which struck him when drawing the east front, and that was the trace remaining of the shields there. The shields, originally gold, replaced by bronze about the third century before Christ, and taken away in our era; but although so many years had passed—more than fifteen hundred years—a trace of them was still visible. He was sure they must all have heard with the very greatest pleasure that their President and Mr. Penrose were both asked to form part of this International Committee, and they felt that in the proposition Mr. Penrose had made he had dealt with the building in a sparing way as far as the restorations were concerned. Mr. Spiers then proposed a vote of thanks to Mr. Penrose for the detailed account of his discoveries and for the drawings which he had made so as to show what he proposed to be the restorations.

Mr. T. J. Willson seconded the vote of thanks, and said that the whole architectural world might be congratulated on the fact that the damage to the Parthenon by reason of the earthquake was not so bad as they thought it was. They had the testimony from Athens that pieces had come down, but they were not actually split at the time of the earthquake—they were old cracks. He hoped that Mr. Penrose would find that all the repairs and cautions which he had recommended would be realised.

Mr. John Hebb said that when he came into the room he had some apprehension that what had been done, or was proposed to be done, might be mischievous to that wonderful monument which every age had admired; but he had been most agreeably reassured by the very lucid statement that Mr. Penrose had made of the methods he had employed for repairing, and not for restoring, the Parthenon. He was very gratified to find that he reprobated that very unwise attempt to set up any of the frustums of the columns. There was no doubt about it that this course could only result in injury to the building. As to the general procedure which had been employed, he was cordially in harmony with it. He thought nothing could have been better than the ingenious way in which the architrave was raised and the lintels were placed underneath. He was not afraid of seeing the brick arch that was placed over the western doorway; that was unquestionably a modern repair; but he should certainly feel great diffidence about colouring the marble so as to make it imitate the colour of the old work; he thought anything of that sort was an extremely risky proceeding. Nature would soon colour the marble, or, at any rate, if not soon (he saw that Mr. Penrose shook his head) Nature had a wonderful habit of taking old buildings to itself, and of colouring them in harmony with the landscape, and he should hope that in a short time this would take place. He hoped Mr. Penrose would forgive him for these merely trivial criticisms, as he was cordially in agreement with him as to the way he and his colleagues had carried out the work of restoration.

Mr. Hugh Stannus said that, while accepting Mr. Penrose's suggestions, and thanking him for them, he desired to submit for consideration whether this restoration of the Parthenon

might not be carried one or two steps further." Mr. Penrose had suggested also the covering up of the tops of the walls and the iron work, and protecting them, of course, from the disintegration produced by plants or moisture. He remembered that many of the walls of Pompeii were covered with tiles. That, of course, was a very proper thing at Pompeii, because the walls themselves were brick and there was a certain fitness and sympathy between the tiles and the bricks of the walls. But in the case of the Parthenon, if the tops of the walls were rendered in cement so as to throw the rain off, that would protect them for many years to come; and taking advantage of that interesting little staircase in the south-western angle of the Opisthodomus one might arrange for periodical inspection of the whole of the tops of the walls. He should also like to ask whether we might not only retain the columns that had been re-erected since the Bavarian kingship, but also re-erect such columns as exist in the frustra lying on the ground. In dealing with the Parthenon we ought to think, not what an "anti-scrape" would propose, but what Iktinos would wish in the present condition of affairs. We had the materials for half the number of columns; and he would suggest that such as we had might be put up. Undoubtedly they were damaged at the joints, and they knew that when first built up and the flutes carved in them, they had microscopic joints; but these broken joints, when the columns were built up, would be similar to other broken joints up and down the Parthenon. He would go one step further. He would like the cella wall itself to be built up all round. One felt that a building which was intended to be one great whole was in two pieces. He would like those two pieces to be joined even by a wall of sandstone, so that they might have that solid mass against the sky as it was left in the year 438 B.C. If the cella wall were joined it would have two advantages in addition to what he had just spoken of, viz., the making of one grand group on the horizontal line against the sky which should compose with the lines and contour of the Acropolis itself; and a grand mass against which the columns would tell as light against dark. And if it were a solid wall made of the same thickness as the old wall, they might bring gun-metal stay-rods to the top of the columns so that they should be steady.

Mr. Alex. Payne said that, in his opinion, if anybody could restore those columns that had fallen down into the same state as the columns that had never fallen down, then possibly there would not be any objection to putting them up again. But anybody looking at the Parthenon could pick out in a minute those two or three columns on the north side which had been built up, on account of the bad fitting of the joints; there was a stone and then a slight variation, and then another stone and another slight variation. The whole had a jagged outline, very different from the perfect columns, which appeared as if made of a single stone. The case was different with the columns which had been cut into to get out the metal dowels, but in which the original outline was not disturbed. The restored columns in this case, with their jagged outlines, certainly destroyed the harmony of the building. If these columns could be set up like the others no one could object. Comparing some photographs taken during a visit to Athens twelve years back with Mr. Penrose's drawings, he desired to ask Mr. Penrose a few questions. Taking the west front in his photograph, part of the top of the capital of the two right-hand columns was gone. The third column was just like Mr. Penrose's drawing. The fourth column likewise, but (he supposed it was the effect of the earthquake) the central lintel at the time he got that photograph was comparatively perfect except for the cannon-shot. The next two were like the photograph; but as to the last one, the corner of the capital appeared to have gone since the photograph was taken. He desired to mention an additional advantage in the Elgin Marbles being safe in the British Museum, and that is, that not only was the Parthenon subjected to bombardment, but the Turkish soldiers made the figures that remained targets for practice!

Mr. J. M. Brydon asked how much of the frieze of the cella still remained. Mr. Penrose incidentally referred to part of it remaining on the western portico. But how much actually did remain—was there one end of it nearly complete, or what? With regard to the frieze, it

must have struck many of them how it was that the Greeks spent so much skill and labour on it where it was so badly seen; that was to say, it was placed up inside of a wall behind a colonnade at which one had to look up at a very acute angle to see it, in a very imperfect light—it might be a reflected light. It had been suggested that when Pericles had the Parthenon designed originally it was designed as a cella wall with a portico at each end, and the frieze was in the external wall, but finding that the public money that he used so well came in in great quantities, the design was altered, and he made it more magnificent by adding the porticoes all round, and a certain support was given to that in the fact that the outward portico was not in alignment with the inner portico. The eight pillars at each end were not quite in line with the six behind. He would like to hear Mr. Penrose's opinion on that point; it was entirely a German theory.

The Chairman said, it appeared to him to be a very sad thing that the Greek Government had not covered over the portion that was now left uncovered between the outer porticoes and the Posticum where the portion of the Panathenaic frieze still remained. There were torrential rains occasionally in Greece, and, of course, this more or less soaked into the marble. The consequence was that the whole of the surface of this marble was gradually being destroyed, and if merely colours were put on it would be a very expensive thing to do. Of course this Panathenaic frieze was seen in a reflected light; if left open to the sky they got another effect altogether.

Mr. F. C. Penrose, in reply, said that Prof. Gardner had asked particularly about the inner lining of the great doorway. He (the speaker) had always supposed that it was desirable not to disturb any historical part of the building where it did not greatly interfere with the classical, and even then with very great compunction. For instance, it did not refer to the Parthenon exactly, but he was extremely sad that the Frankish tower was taken down, and with such feelings he should regret that that inner lining of the great doorway, which explained itself perfectly, should be taken down; but there should be no difficulty in taking out any pieces of it that might contain valuable inscriptions, and putting them back again after noting them. As to the suggestion of covering over the lintel with marble beams, to which he had already called their attention, they were supposed entirely to rest upon the old wall without any help from this inner casing. Of new stones that would be visible there would be very little indeed. There would be of the front of the Posticum portico not one stone. It would be when they got inside and looked up that it would be possible to see them from the inside. Between the Opisthodomus walls and the column, but not generally, no doubt the lintel of the great door would be seen, and that was the only one. Mr. Spiers had asked about the cracks. He paid a great deal of attention to that during his stay at Athens and this he was able to do by means of ladders, and in these he did not find any change at all from cracks which he had measured and very carefully recorded in 1846; but the rest he examined by binocular, and he could not satisfy himself that there had been any alterations. There was a very remarkable difference of colour in the surface covered by the shields; but they might suppose that those shields, especially the bronze shields, might have been there down to a tolerably late date, and therefore 500 or 600 years of natural discoloration went on outside them and not inside them. He thought that was enough to account for the difference of the stone inside and outside. The discoloration entirely came from the iron, which was invisible in the fresh Pentelic marble, but which was present in all marble when brought out by the oxygen and other vapours of the air. The Pentelic marble was the natural marble to use both on account of its local value and from the fact that it was more easily accessible.

A Member: Is there any Pentelic marble which will serve?

Mr. Penrose: The colours of the metallic marble would suit the old when it is a little timeworn, but originally the Pentelic marble was certainly stained. They had records that staining was used on marble, and the fresh marble was almost unsupportably bright in the Attic sunshine. Therefore time had given them an advantage on the building which the ancients never had in that one

respect. The covering up for the protection of the iron which he had supposed to be done with cement, and which the Committee were anxious to do, was simply pointing with cement, a very quiet and dull cement (because that had been duly discussed) on the top of the joints. He had already pretty well brought forward his own opinion as to the propriety of reinstating of the ancient columns, however done. There were several capitals on the west front which, he had no doubt, were in a worse state of repair than was shown in the drawings exhibited, those fractures only being noted on them which seemed to affect the stability. Of the sculptured frieze a very small return remained on the south side; over one columniation, he thought, a matter of fourteen or fifteen feet. Then it went as far as the fifth column of the hexastyle portico of the posticum, and there it was broken off. If the covering this portion over could be done efficiently, and without looking modern and weak and poor, there would be a great advantage to the sculptures, no doubt, in doing so. He had no doubt that the marble, if protected above, as it was, by the overhanging moulding, would bear a great many centuries of disintegration from Attic storms and tempests.

The Chairman then put the vote of thanks to Mr. Penrose, which was carried unanimously.

The Chairman announced that a special general meeting will be held on the 31st inst. for the consideration of the report of the Council on the election of candidates for fellowship.

The meeting then terminated.

The Annual Dinner.

Owing to the Diamond Jubilee celebrations in London and the provinces, and the probable inconvenience to country members in attending the annual dinner, which was proposed to be held on June 17, the Council have considered it desirable to postpone it till next November.

DR. ROWAND ANDERSON'S ADDRESS TO EDINBURGH ARCHITECTS.

AT the annual general meeting of the Edinburgh Architectural Association, held on the 12th inst., after the general business had been disposed of, Dr. Rowand Anderson delivered his valedictory address. In the few remarks he had to make before resigning his office of President, he did not feel he could do better than recapitulate, and, if possible, emphasise some of the questions he had dealt with from that chair. When he took office two years ago, one of the questions prominently before the profession was that of education, combined with efforts to make their application a close one. He explained his views fully to them, and he had heard nothing on the other side since to lead him to think differently. At the bottom of this controversy lay a misconception of the nature of their business as compared with the professions of divinity, law, and medicine. The divine had to subscribe to a creed, his historical and philosophical knowledge of which must be tested. The lawyer had to administer the laws of the country according to the fixed principles and form of those laws, and his qualifying knowledge of such must be ascertained. The physician or surgeon had to deal with disease in all its forms, and none could be successful unless he had acquired an intimate knowledge of the anatomy and functions of the body and all its parts, as also of the experience of the past and the various methods used in combating disease. They had not to provide what the public wanted in the same sense as a picture painter or dealer, or as an architect, in designing a house or other building, had to meet the individual wants and desires of a client. The public dealt with architects on a totally different footing. While it was true that a client might go to one architect rather than to another, because he was known or believed to be a better educated man in his work than others, yet, taken generally, the architect was but the interpreter of the public idea of art at any given time, and he had to provide what the public wanted and was prepared to pay for. No compulsory examination or diploma could alter this. The law could not and would not protect the public from bad art, because the public could and must at all times protect itself, and if it got bad art it got what it wanted, and the only thing it was able to appreciate. The one hope for art—and he spoke of art in its widest sense—was an

educated public. When the public were able to distinguish good from bad, and when they came to look at art not as a question of mere ornament and as a thing apart from structural and functional truth, then the bad architect would naturally disappear, and no artificial aid would perpetuate his kind, or find work for him. While little had been heard lately of converting the architect into a certified professional man, their friend, the registered plumber, was still well to the front, and he was now asking the Legislature to pass a Registration Bill as a means of protecting the public health against the ravages of the incompetent man. How the passing of such an Act could do this he could not comprehend. If the Legislature could ensure plumbers good prices for their work, they might be something in it. That registration would show that a man was competent, and a guarantee to the public that good work would be done, was a fallacy. Nothing could make a good plumber or any other tradesman but employment on good work and under competent foreman and master, and receiving proper payment for his work. Stuffing a lad with a lot of data about his work would no more make a good plumber than attending a class on navigation would qualify one to take a ship to sea. So far from the public requiring to be protected against the inferior plumber, it was the respectable plumber who required to be protected against the public. The keen and excessive competition which was stimulated by the demand for cheap work, the pitting of men of substance, experience, and character against men who had not these qualifications, was the real cause of bad work, and until that state of things was altered the registered plumber would only intensify the present unsatisfactory state of things. This claim to protect the public health was rather an arrogant one. The plumber was only a link in the chain, and if registration was necessary for him, it was equally so for other tradesmen. The mason and the Irish labourer who laid the drains were in every respect as important to the plumber, as far as health was concerned. The State could not protect the public from incompetent tradesmen unless it controlled both parties to the contract—that was to say, the work and the price to be paid for it, and attempt to do this would, of course, be absurdity. He had looked over the Plumber Registration Bill, and all he could see in it was an arrangement for the appointment of secretaries, treasurers, and auditors, and the collection of fees, but nothing whatever would add to the protection of the public or ensure a higher standard of work, and for that very good reason, which knocked the bottom out of the whole thing, that no provision could be made for insuring payment for good work. But the State could do a good deal of work which was already bearing good fruit in improving everything that concerned public health, and structures of all kinds, and by the appointment of public health officers, the passing of Public Health and Pollution Acts, and by the powers conferred on health officers, borough engineers, and sanitary inspectors. The enforcement by law of these Acts alike against the public, the plumber, and the architect was the true and only way of bringing about a better state of things. While he was entirely opposed to all artificial distinction, hall-marking of a man because he had undergone an examination on subjects which were admittedly not those that tested the real qualifications that fitted a man for his calling, he was all in favour of education. Give every young man a fair opportunity of equipping himself for his life's work; then let him swim or sink on his own merits or want them. The young man who had good sense in him would educate himself up to the standard of his time because he knew that to do was the only passport to success. But this must provide the means of his doing this, and as far as art work was concerned, that was the reason for establishing their Applied Art School. Now that he had said something about the public, he had something to say about the public. Their Association did a good deal for the public. They did not exist, like other associations, for the benefit of the architect only. Their strong point was that they existed chiefly for the benefit of architecture and allied arts. The association of a large number of non-professional members in their midst was a feature that he hoped would never be surrendered. The more they could interest the public in art, the better for them and for art, and if all other institutes and associations would

do as they did, the architect and his work would be better understood and appreciated. This was an eventful year in the history of their country; it marked a long period of progress, prosperity, and comparative peace under the beneficent reign of their gracious Sovereign Queen Victoria, and in all those benefits they had shared. A great advance in architecture, and, indeed, in all the arts, had taken place during her Majesty's reign; and much of the improvement might be attributed to the direct influence and fostering care of the late Prince Consort. This Association was, therefore, in common with all the subjects of the British Empire, greatly interested in the question of the day as to the most fitting expression to be given to this thanksgiving and Jubilee for the long and prosperous reign of her Most Gracious Majesty. He was aware that the suggestion which commended itself most highly at this time was the equipment or endowment of institutions for the relief of the sick and suffering. But, apart from the fact that infirmaries, hospitals, and kindred institutions commanded at all times national sympathy and support, irrespective of any special occasion like the present, he would like to point out that this was to a certain extent beginning at the wrong end. There was a well-known proverb which said that prevention was better than cure. Applying it to this case, he said—Do something to keep the people healthy and happy in mind and body, and there would be less need for infirmaries, nursing associations, &c. He would, therefore, like in a word or two to repeat what he dwelt on at greater length in a former address regarding the provision of a suitable place for amusement and relaxation for the masses of people whose means did not admit of their procuring such for themselves. In his opinion nothing could better mark this year of Jubilee, or be more in accordance with the expressed wish of her Majesty and the touching letter of the Princess of Wales—in which she pleaded that when schools, hospitals, and other charitable institutions had been properly provided for, the poor should not be forgotten—than the inauguration of a movement to bring into the lives of those whose means were only sufficient for the bare necessities some of that brightness and pleasure which were the outcome of comfortable and cheerful surroundings and innocent recreation. He thought that the institution of a great free place of recreation for the people would be found to have the most potent influence, not only in preserving the people from many habits which led to loss of health, but in refining and educating them, and in promoting that cheerfulness and contentment of mind which was the enemy of all social disturbances; and he did not think that the municipality could in this year of Jubilee enter on any scheme which would have more far-reaching or more beneficial effects.

THE LONDON COUNTY COUNCIL.

The usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, Dr. Collins, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend the Battersea Vestry 1,700*l.* towards the cost of providing sanitary conveniences at Battersea Park, and the Wandsworth and Clapham Guardians 5,100*l.* towards the cost of furnishing the Home for aged and infirm at Tooting.

The Architect's Department.—The General Purposes Committee reported as follows, the recommendation being agreed to:—

"On May 19 last year the Council adopted the following report:—On December 10 last we reported that Mr. Blashill, the Superintending Architect, had attained the age of sixty-five years, and on our recommendation the Council passed the following resolution, viz.—"That, as the retirement of Mr. Blashill would cause inconvenience to the public service, he do continue to hold his appointment for another year, and that it be referred to the General Purposes Committee to report what (if any) changes in the work of the Architect's Department it is now desirable, under the circumstances, to make." A sub-committee whom we appointed for the purpose of dealing with the above reference have been going thoroughly into the whole question of the present organisation of the Architect's Department. We have had an interim report from the Sub-Committee, from which it would appear that some rearrangement of the duties devolving upon the Department is necessary. We have, however, recently received from the Housing of the Working Classes Committee the following resolution, passed by that Committee, viz.—"That, having regard to the rearrangement of the work of the Architect's Department now under the consideration of the General Purposes Committee, it is not desirable to make the Architect responsible for the planning and designing of working-class dwellings to be erected by or for the Council, and that accordingly (any former resolution of the Committee notwithstanding) outside architects should for the present be employed for all such dwellings, except those on the remaining sites on the Boundary Street area, and on the Brook-street, Cable-street, and Cotton-street sites." We concur in the proposal of the Housing Committee, and, as it will be carried out probably affect the problem of reorganising the department, we think that before taking any definite step in the matter of reorganisation it would be well to wait and see the result of the arrangement. We have accordingly adjourned the further consideration of the question of reorganising the Architect's Department for six months, and we recommend:—"That the course taken be approved." The six months having expired, we have again had the matter under consideration. We have received a further resolution from the Housing Committee as follows:—"That, having regard to the fact that sketch plans for the dwellings proposed to be erected on the area comprised in the Mill-lane, Deptford, scheme, have been prepared by the Council's architect, and that such plans are satisfactory to the committee, the committee's previous resolutions on the subject of the employment of outside architects be amended, so that the architect may be instructed to proceed with the working drawings in accordance with such sketch plans, and that the architect be instructed accordingly." We will therefore be seen that the view of the Housing Committee have, to a considerable extent, changed with regard to the preparation of plans, &c., for the erection of artisans' dwellings. We have also had before us the proposals of the Establishment Committee referred to in the report of that committee to the Council with regard to the promotion of unclassified officers. The result of opinion that was expressed in regard to the views of the Housing Committee now tending towards the constructional work as regards the artisans' dwellings remaining, to a certain extent at any rate, with the architect of the Council, there is no need at the present time for making any important change in the organisation of the Architect's Department, and that, therefore, so far as they relate to the classification of duties the proposals of the Establishment Committee might be adopted. We recommend—

That no change be made at present in the organisation of the Architect's department.

The adjourned report of the Establishment Committee relating to the promotion of unclassified officers, contained the following paragraph relating to the Architect's Department, the recommendations being agreed to:—

There are at present in this department six unclassified officials, viz.—Building Act Branch—Assistant Architect, 700*l.*; Chief Clerk, 500*l.*; one Senior Assistant, 450*l.*; one Senior Assistant, 350*l.*; Dangerous Structures Branch—Senior Assistant, 400*l.*; Street Nomenclature Branch—None. Theatres and Music-halls Branch—None. Works and Improvements Branch—None. Fire Brigade Branch—Chief Assistant, 475*l.* Housing of Working Classes Branch—None. The question of the organisation of the Architect's Department is under the consideration of the General Purposes Committee, but we have thought it well, while dealing with the other departments, to also consider the position of the unclassified officials of the department. In doing so, however, it has been impossible to avoid dealing with the question of organisation, and we have forwarded our proposals to the General Purposes Committee. The main question of reorganisation has been in connexion with the constructional section of the department, which arose from the proposal that some of the work should be given to outside architects. This proposal was initiated by the Housing of the Working Classes Committee, but since it was intimated that committee have, we understand, to a large extent modified their opinion. This will doubtless facilitate dealing with the question of re-organisation. The work of the department consists of three classes, which may be described as follows:—(1) The administration of the London Building Act, 1894. This includes all dealings with streets and buildings, the examination of the returns of district surveyors, dealing with dangerous structures, and the naming and numbering of streets. (2) The administration of the Act relating to the safety of the public in theatres and music-halls, and of workpeople in factories, workshops and laundries. With this class of work is connected at present the architectural questions arising out of public improvements, questions of loans to local authorities, and the reporting upon designs for buildings upon the Council's land. (3) The design and superintendence of erection of new buildings for the fire brigade, for the housing of the working classes, and for parks, coroners' courts, weights and measures offices, gas-meter testing-stations, and for other purposes. The maintenance of the Council's offices, and fire-brigade stations, and the preparation of schemes under the Housing of the Working Classes Act. We recommend—

(1) That the Superintending Architect do remain, as now the responsible head of the whole department;

(2) That there be a chief assistant architect in place of the present assistant architect, and a chief clerk as at present;

(3) That the work of the department be considered as apportioned between two divisions—(A) the administrative division, and (B) the constructional division, as follows:—

I. Administrative division:—(1) Streets and buildings branch—Chief assistant architect, 500*l.* to 700*l.*; Chief clerk, 350*l.* to 500*l.* (2) Dangerous structures branch—One senior assistant, 400*l.* to 450*l.* (3) Street nomenclature branch—One assistant (first class), 300*l.* (4) Theatres, &c., branch—One senior assistant, 300*l.* to 400*l.* (5) Factories and workshops and improvements branch (including for the time being matters connected with corporate property and improvements and applications for loans or for contributions towards improvements)—One senior assistant, 300*l.* to 400*l.* II. Constructional division:—(1) Fire brigade branch—One assistant architect, 350*l.* to 500*l.* (2) Housing branch—One assistant architect, 350*l.* to 500*l.* (3) General branch—One assistant architect, 350*l.* to 500*l.*

Sale of Plans of Schemes.

The General Purposes Committee also reported as follows, the recommendation being carried:—

"The Housing of the Working Classes Committee have informed us that they have decided that plans of schemes under the Housing of the Working Classes Act, 1890, should be supplied to persons interested therein at a charge which they are advised would cover the cost of preparing and lithographing the plans; and they have suggested that, in view of the fact that there are various plans other than those of schemes under the Housing Act, it might be desirable that arrangements should be made whereby copies of all such plans might be supplied to persons interested at a reasonable charge. We have had reports thereon from the officers of the Council, and have come to the conclusion that the suggestion of the Housing Committee might be adopted. We think, however, that it is of importance, having regard to the nature of the plans proposed to be placed on sale, that all sales should be effected by one department only, and that that department should be the valuer's, which is the one mostly concerned. We recommend—

"That lithographed plans of improvements and schemes be sold, subject to the direction of the officers of the Council, at a price to be fixed in each case by the committee concerned, and that the custody and sale of such plans be left in the hands of the valuer of the Council."

The Works Department.—Sir A. Arnold, Chairman of the Special Committee of Inquiry into the Works Department of the Council, stated that he intended to postpone for a week the motion that the Report of the Special Committee be received.

The Improvements Committee recommended:—

"That the working drawings, specification, and estimate of the cost (9,153*l.*) of the paving and other works required for the new street from Evelyn-street to Creek-road, Deptford, be referred to the Works Committee with a view to the work being carried out without the intervention of a contractor, but that in the event of that committee not being satisfied with the sufficiency of the estimate, the Improvements Committee be authorised to invite tenders for the execution of the work."

Mr. Marks, M.P., moved that the consideration of the committee's recommendation be adjourned.

Mr. Campbell seconded the amendment.

The Council divided, and the amendment was rejected by 54 votes to 49.

Mr. Westcott thereupon moved a further amendment to refer the matter back, in order that tenders might be invited.

Lord Onslow seconded the amendment.

Mr. Hoare observed that the Works Department had not yet been condemned. He thought the Council would save money by entrusting this work to the department, which was now rather short of employment, if it could be undertaken at anything like a reasonable estimate. It was only common-sense to send a certain amount of work to the department, in order to keep it fairly employed.

Mr. Burns, M.P., said this was just the kind of work which the department had been able to execute at a profit. He hoped therefore it would be allowed to go there; indeed, it had hitherto been automatically customary to send such work to the Works Department.

Mr. Boulnois, M.P., said that the Council had been too automatic in these matters in the past, being actuated by a blind belief that the execution of the works would come out in agreement with the estimates. It was now known, however, that in several instances the estimates had been enormously exceeded. The half-yearly report of the Works Committee, and almost the whole agenda of the Council for that day, bristled with indictments against the department, and he thought the Council should pause before entrusting any further work to the department.

Lord Mountmorres supported the amendment, and deprecated any attempt by the Progressives to prejudice the Council's verdict on the Works Department by giving the department another job meanwhile. Their policy

was to heap work upon the department, with the view of ultimately saying that the stake in the department was so large that it could not conveniently be abolished.

The Council divided, and the amendment was rejected by 57 votes to 50.

The recommendation of the Committee was then agreed to.

On the report of the Works Committee, Lord Onslow asked that a return of the works completed, up to the latest possible date, should be circulated to councillors before being placed upon the agenda.

Dr. Longstaff inquired whether it was a fact that the manager of the Works Department had been ordered to sell a quantity of timber of the estimated value of 2,000*l.*, such timber having been four years in stock, but being of so inferior a quality as to be useless to the Council.

Mr. Hoare replied that the return referred to by Lord Onslow would be circulated the following day. As to the timber, the suggestion of the hon. member was not correct, but the manager had been ordered to report what timber unsuitable for its purpose the Council had now in stock.

The consideration of the half-yearly return of works completed by the department was postponed with the other matters affecting the department.

The Council's List of Wages.—The Works Committee reported as follows, the recommendation being agreed to:—

"The Central Association of Master Builders of London having informed us that at a meeting of the master builders of London and the representatives of the labourers and navvies, held on May 4, 1897, it was decided that the rate of wages of labourers and navvies employed in the building trade should be raised on June 1, 1897, from 6½*d.* to 7*d.* per hour, we have to recommend—That the rate of wages of labourers and navvies employed in the building trade given in the Council's list be altered on June 1 next from 6½*d.* to 7*d.* per hour."

Cases Decided by the Tribunal of Appeal.—The Building Act Committee reported as follows:—

"We have to report, for the information of the Council, that the Tribunal of Appeal has allowed the appeal made by Messrs. Perry & Reid, on behalf of Messrs. Hoare & Co., against the following condition attached to the Council's consent to the erection of the 'Eight Bells' public-house, at the corner of Collingwood-street and Meymott-street—'that the portion of the new building on the site of No. 19, Meymott-street and a part of the kitchen at the rear of the public-house do not exceed 16 ft. in height'—and has otherwise varied the Council's order, and that the Tribunal has allowed the appellants' costs in the matter. The reason for the decision appears to have been that the Tribunal was of opinion that the condition was more onerous than the conditions prescribed by the Act for domestic buildings erected after January 1, 1895, in a street laid out before the Act came into operation, inasmuch as the condition made by the Council in this case appeared to require an open space about 16 ft. wide, and the Tribunal considered that the Act only required 10 ft. The Tribunal was also of opinion that the owners had a legal right to build to the height they wished if 10-ft. air-space were left at the rear above the height of 16 ft.; and the order of the Tribunal, in effect, allows the owners to cover the 10-ft. rear air-space with a building 32 ft. high."

Mr. Emden asked if the cases heard before the Tribunal could not be printed for the use of professional men.

Mr. Payne (the Chairman of the Committee) replied that when sufficient cases had been heard they could be printed as suggested.

Having transacted other business, the Council adjourned.

ARCHITECTURAL SOCIETIES.

THE EDINBURGH ARCHITECTURAL ASSOCIATION.—The Edinburgh Architectural Association recently visited Hopton House. Dr. Rowand Anderson pointed out that the house had apparently been the work of three hands, the western side being erected in the beginning of the eighteenth century by the first Earl, who employed Sir William Bruce of Kinross as his architect, the side wings with the connecting colonnades being by William Adam, father of the brothers Adam, and the attic story and east front being perhaps the work of other hands.—The annual general meeting of the Association was held on the 12th inst. in the Royal Institution, The Mound—Dr. Rowand Anderson, the retiring President, in the chair. Several reports were submitted to the meeting. Office-bearers were elected for the forthcoming

year as follows:—President, Mr. Thomas Ross, F.S.A., Scot.; Vice-Presidents, Mr. John Watson, architect, and Mr. James Bruce, W.S.; Hon. Secretary, Mr. T. Fairbairn; Hon. Excursion and Syllabus Secretary, Mr. A. Hunter Crawford, architect; Treasurer, Mr. John Johnston, C.A.; and members of Council, Messrs. J. A. Carrae, J. D. Cairns, the Rev. P. M. Herford, David Robertson, A.R.S.A.; William Rae Macdonald; and R. Morham. It was reported that at this time the membership stood at 302, which was practically the same as at the end of the year 1895-96. Dr. Anderson then delivered his valedictory address, a report of which will be found on another page.

DEVON AND EXETER ARCHITECTURAL SOCIETY.—The Devon and Exeter Architectural Society held its annual meeting at Devonport on the 15th inst. Mr. Arnold Thorne (President) occupying the chair. Messrs. Anstis, G. Bewes, Harbottle Reed, and B. P. Shires were elected from associate members to members, and Mr. Geo. H. Lake was elected an associate. The financial statement showed that, after an expenditure of 38*l.* 12*s.*, there was a credit balance of 2*l.* 8*s.* in hand. The annual report of the Council, presented by Mr. Harbottle Reed (Hon. Sec., Exeter), stated:—The Plymouth, Devonport, and Stonehouse branch having asked for support in their action with regard to paid officials undertaking private work, they were authorised to send the following letter to the various Local Authorities:—"The architects practising in Plymouth, Devonport, and Stonehouse and surrounding district, as represented by the Three Towns branch of the Devon and Exeter Architectural Society, humbly submit to the various Local Authorities in the district that professional men labour under great hardship and disadvantage from the fact that some of the officials and their assistants in the employ of such Local Authorities are in the habit of undertaking a large amount of private work which should be executed by professional men in private practice. They submit that this is prejudicial, not only to private professional interests, but also to public interests, inasmuch as all public servants ought to occupy a perfectly impartial and disinterested position in the administration of their departments. They venture to hope that the various authorities will take such steps as they think necessary to prevent effectually the continuance of this practice. They would also suggest that those Authorities which require plans to be submitted should discourage the acceptance of any plan not signed by an architect or surveyor." At the general meeting the prize offered for a measured drawing by pupil associates was adjudged to that submitted by Mr. J. H. Vincent, Plymouth. It was resolved that the prize should be again offered. The Royal Institute of British Architects having asked the allied societies to join in the presentation of an address to her Majesty the Queen on the occasion of the Diamond Jubilee, the Council signified their intention of identifying themselves with it. The roll of membership now stands as follows:—Members in 1897, 48, against 43 in 1896; associate members, 11, against 13; and honorary members, 4, against 3; a total of 79, against 70. The report having been adopted, Mr. E. M. Leest (Local Hon. Sec.) moved that the rules be altered so as to admit architects who are not eligible as members, and all assistants who have duly served articles and are over twenty-one years of age, as associate members of the Society. He pointed out that, under the present system, assistants of any standing were classed with students. Mr. Luff seconded *pro forma*. The motion was negatived. The Chairman in his address said the report was an indication of the growth and vitality of the Society. His address was now a valedictory one, and in their new President he was sure they would elect one whose services would reflect lustre on the office and distinction on the Society. The profession laboured under various disabilities, and whether the Registration Bill was the best remedy, he was not prepared to enter upon. They suffered from undue competition from men who were not restrained by any rules, who had no obligations of esprit de corps, and who felt themselves entitled to tout for work unblushingly, and who offered to do work at less than the rates which those present considered were properly remunerative, eking out their earnings by following callings which were not, in their opinion, of a nature likely to dignify the profession of architecture. The Chairman then moved that Mr. J. Hine, F.R.I.B.A., be President of the Society for the

ensuing year. Mr. Luff seconded, and it was carried by acclamation. Mr. J. Crocker, F.R.I.B.A. (Exeter), was re-appointed Vice-President. Mr. C. King was appointed to the Council, vice Mr. Hine; and Messrs. G. S. Bridgman (Paignton) and Tate were elected to fill vacancies. Votes of thanks to the retiring Chairman and to the officers were unanimously agreed to. The members at the conclusion of the meeting drove to the Keyham extension works, where they were received by Mr. Elliot, the Superintending Engineer.

Illustrations.

CHURCH AND MISSION ROOM, SEUGHENYDD.

THE illustration shows a characteristic form of church of the South Wales mining districts, where many such buildings have been erected during the last few years. In this case, as in most others of the same class, one of the main objects has been to provide large accommodation for a comparatively small outlay.

The church is arranged to seat 500 persons, and the walls are of native stone with yellow dressings, the roofs being covered with green slates.

The cost of the church and room will be about 4,000*l.* The contractors are Messrs. Cox & Burdo, and the architect Mr. E. M. Bruce Vaughan, both of Cardiff.

SCULPTURE AT THE ROYAL ACADEMY.

THE illustrations of sculpture at the Royal Academy are mostly from photographs kindly supplied to us by the artists, whose names are given under the respective illustrations. The works are all mentioned and commented on in the article on another page, on "Sculpture at the Academy and the Salons," and we need not therefore say more in regard to them here. There are one or two other important sculptural works of which we shall be able probably to give illustrations at a later date.

DESIGN FOR A MAUSOLEUM.

THIS design, the exterior perspective of which is exhibited at the Royal Academy, is for a mausoleum to be erected in Warwickshire, to be carried out in Portland stone. The interior is arranged for five monuments.

Externally the building is to be surrounded by a dry moat and approached by a bridge.

The architect is Mr. John Belcher, who sent us a plan of the building, which unfortunately arrived too late for publication. It is very simple. There are four internal piers near the angles of the central space, which is domed; the piers leave an aisle round them, the angle spaces of which have domical roofs.

THE TRIBUNAL OF APPEAL.

THE Tribunal of Appeal, Mr. Arthur Caves presiding, sat at the temporary offices, Savoy Hill, on Wednesday last week, to hear an appeal made by the Rev. Sir Talbot H. B. Baker and the Governors and President of Queen Charlotte's Lying-in Hospital, against a certificate of the Superintending Architect of Metropolitan Buildings, dated March 30, 1897.

The appellants were represented by Mr. Glen, and the Superintending Architect by Mr. Graham Berry. The Marylebone Vestry was represented by its Chairman, Major A. J. Hopkins, the certificate appealed against being in respect of buildings on the north side of Marylebone-road.

In his opening statement, Mr. Glen said his client, the Rev. Sir Talbot Baker, owned the freehold of ten houses on the north side of Marylebone-road, three of which were held on lease by his other clients, the Governors of the hospital. The Marylebone-road, formerly known as the New-road, was made under a statute passed in 1756, to connect Islington with the Edgware-road. It contained a stipulation that no building should be erected within 50 ft. of the roadway. That statute was repealed by Section 75 of the Metropolitan Management Act (1862), the road thenceforth coming under Section 22 of the new Act, the effect of which was to prevent buildings being erected so as to project beyond a general line. Application was made in March, 1890, to the London County Council by Sir Talbot Baker for permission to erect buildings on that site. That application was referred, by the Council, to the Marylebone Vestry, which recommended the Building Act Committee to accept a scheme fixing the general line of buildings at a distance of 7 ft. at the western end and 15 ft. at the eastern end, beyond



THE BUILDER. MAY 22. 1897.

DESIGN FOR
A MAUSOLEUM
BY
JOHN BELCHER-AGEE





THE BUILDER, MAY 22, 1897.



INVOCATION TO THE GODDESS OF LOVE—MR. HENRY C. FERGUSON.



ATALANTA—MR. GUSTAV NATORFF.

BY PHOTOGRAPHY BY G. S. CASPARI, 100 WEST 42ND ST., N. Y. C.

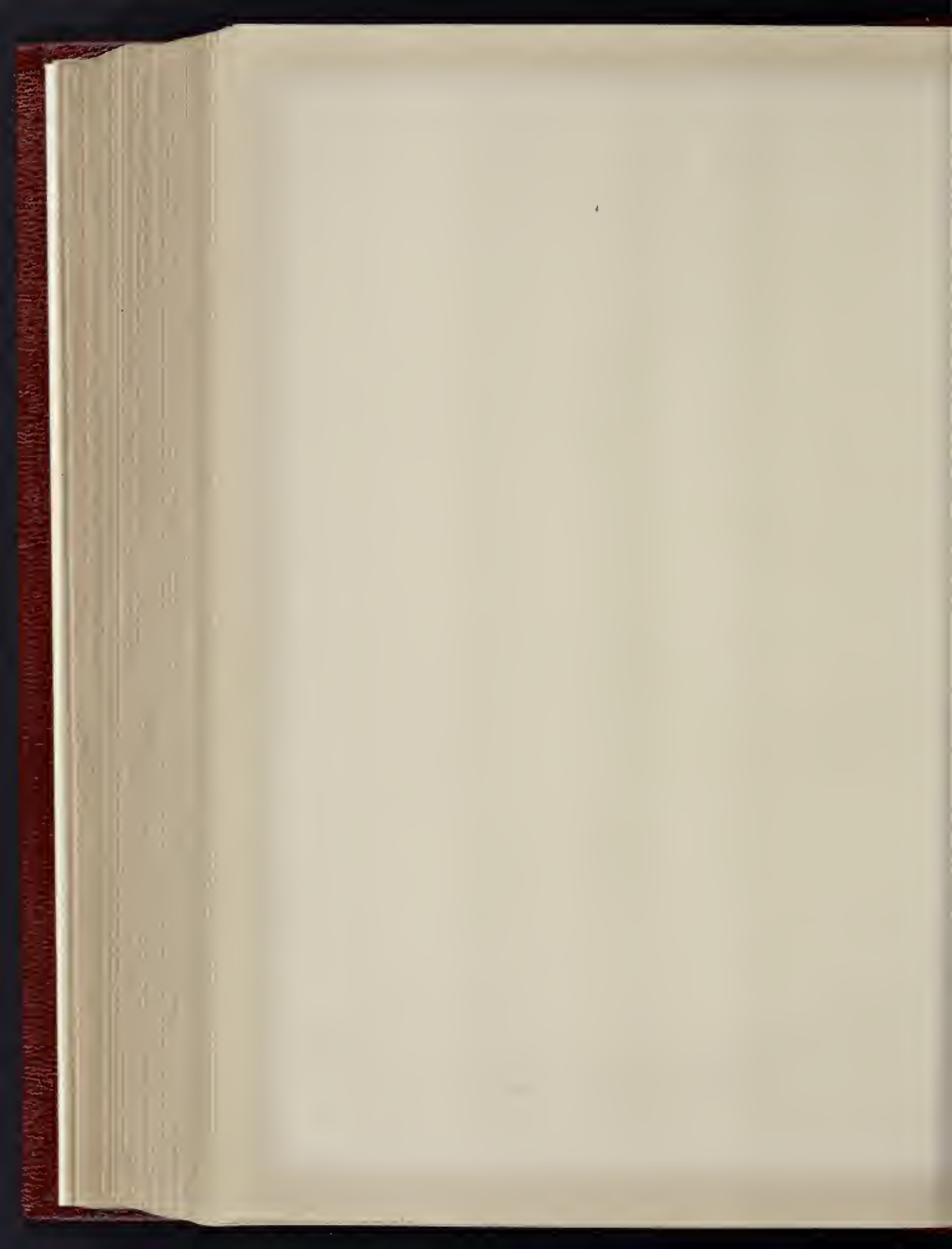


OCEANA—MR. HERBERT MCKENNA.

SCULPTURE
AT THE
ROYAL ACADEMY.



ISIS—MISS A. FREEMAN GELL.







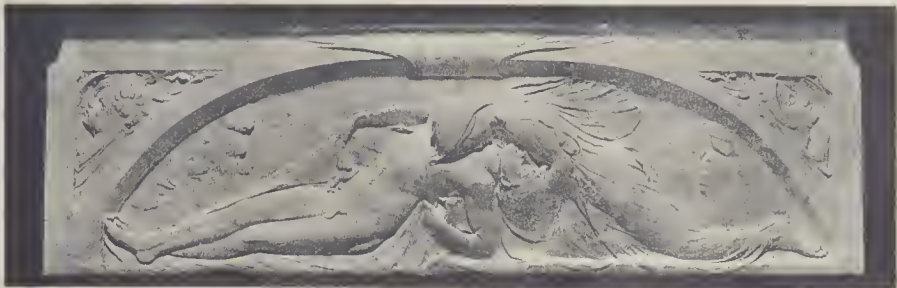
JOWETT MEMORIAL, FOR BALLIOL COLLEGE, OXFORD.—MR. E. ONSLOW FORD, R.A.



DEATH OF THE FIRST-BORN.—MR. A. G. WALKER.



CHILDREN BRINGING LILIES TO THE HOLY CHILD.—MISS E. M. ROSS.



HERO AND LEANDER.—MR. FREDERICK THOMAS.

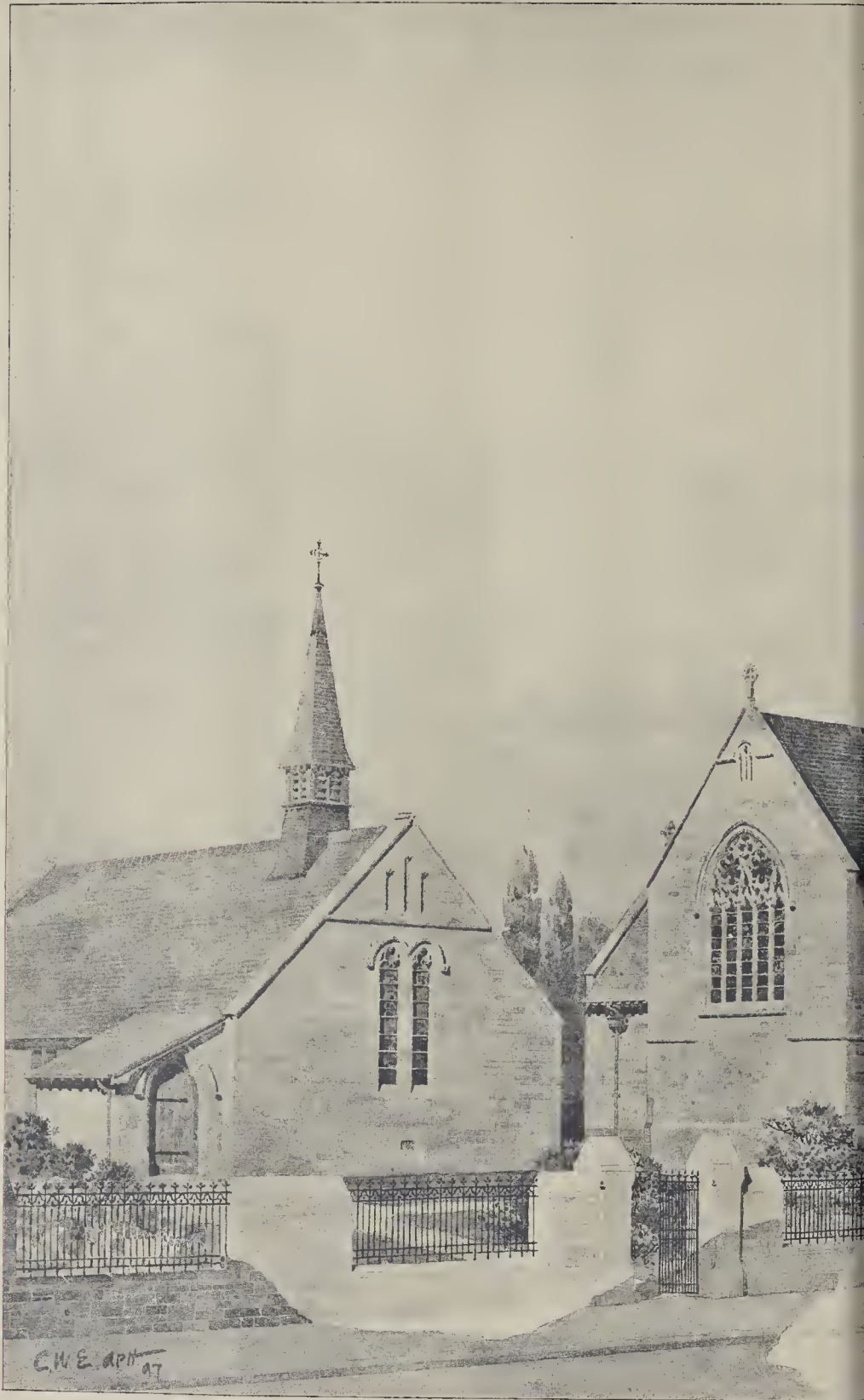


"THEY SEE THE WORK OF THEIR OWN HEARTS."—MISS MARGARET M. GILES.

SCULPTURE
AT THE
ROYAL ACADEMY.







CHURCH AND MISSION ROOM, SEUGHEN



INK PHOTO, SPRACUE & CO 44 & 45 EAST HARDING STREET FETTER LANE E.C.

M. BRUCE VAUGHAN, F.R.I.B.A., ARCHITECT





DESIGN FOR A MAUSOLEUM
INTERIOR VIEW

PHOTO-LITHO SPRAGUE & CO. 488 EAST HARDING STREET, FETTER LANE, E.C.



line of the old buildings. The Council rejected his application under the impression that the title of 1756 was still in force. In 1864 the owner made a fresh application, which the Committee approved and recommended to the London County Council, but owing to opposition in the Council the Committee subsequently withdrew the recommendation. In his scheme the owner proposed to give up 3,350 superficial feet of land to the public, and in a minute dated January, 1867, the Building Act Committee itself pointed out that if the application was granted it would effect a great improvement. The minute added that the scheme appeared to be desirable, particularly as it was likely that the new station of the Manchester, Sheffield, and Lincolnshire Railway would be made in the immediate vicinity. Notwithstanding this, when the matter again came before the Council in January 1868, a recommendation was adopted that the consent of the Council be not given. This necessitated an application for the certificate of the Superintending Architect. But the portion of the road selected by the architect for his demilition extended beyond the site, and it fixed the general line of the demilition 50 feet from the highway. Against that decision the owner now appealed, and the Ordnance map of the portion of the Marylebone-road in question was put in to show that the decision was not correct in fact. Mr. Glen submitted that if the line taken was extended beyond the site at all, that portion of the road west of the site as far as Edge-road could not be set aside. He contended that the Superintending Architect was wrong in making 50 ft. as the distance, because in portions west of the site, the buildings came close up to the pavement. To follow out the line of the Superintending Architect would penalise the appellant, because it would compel him to set back the buildings 50 ft. from the centre of the highway, as against buildings along other portions of the road which were only 80 ft. from the centre. At the western end of the road the buildings set back only 5 ft., while at the Metropolitan Railway Station they were no distance at all from the pavement.

Mr. Glen called as his first witness Mr. Gruning, architect, who said the line laid down by the Superintending Architect did not represent the general line of buildings. The witness had laid down the plans put in two alternative lines—one short and straight, showing the true line of buildings opposite the site in question, and the other much longer with tangential curves following the contour of the road. In reply to Mr. Graham Berry, the witness said that even assuming that the Superintending Architect had taken the right portion of the road, his demilition was still incorrect because he left out of consideration the links which occurred at the road. In the part taken it was admitted that in some parts of the road the majority of the houses were set back 50 ft., but on the shorter line marked on the plan extending past twenty-two houses, eight of them had fore-courts of only 5 ft.

Mr. J. Bolton deposed to making the applications in 1867 and 1869. He agreed with the evidence of Mr. Gruning.

Mr. F. W. Hunt, Surveyor to the Portland Estate, deposed to making in 1864 the application that had been referred to the Marylebone Vestry. A minute of the Building Act Committee of November 24 recommended the scheme to be approved, but it was withdrawn later, the reason given being merely that it was considered inexpedient. By concessions from the Metropolitan Board of Works the building line had been advanced at Oxford and Cambridge Mansions, Madame Tussaud's, and other places, while Baker-street station had been brought right up to the pavement.

Major Hopkins on behalf of his Vestry had no objection to the scheme which proposed a line setting back 7 ft. at one end and 15 ft. at the other, in fact the Vestry approved it, because it would throw 12 ft. into the roadway. The question of the building line did not go before the Vestry. They only considered the advantage of the public. He was not in a position to go beyond that statement.

Mr. Graham Berry said he was instructed to support the certificate of the Superintending Architect. The Council considered this a most important act. He must very seriously ask the Tribunal to consider whether they would allow these buildings to come forward. The corner which the architect had selected was a very suitable point from which to consider the general line.

Mr. Glen said that by the repeal of the old Act, the law practically said, You are only prohibited from building if in doing so you come in advance of the general line of the street. The Tribunal had not to consider the Act of 1756, but it was for the Tribunal to decide how much of a street should be taken in defining a general line. Once the line was defined by the Tribunal there could be no encroachment. No one could come in front of it. The line laid down would govern all future cases.

The Chairman inquired whether there was any possibility of a compromise being arrived at. The appellants virtually said, If you will allow us to come up to the line we propose, we will give so much land to the public, and the Committee had declared that this was a desirable thing to be done. Major Hopkins suggested that if the decision of the Tribunal was postponed till a further application could be made to the County Council, the matter might be arranged.

Mr. Graham Berry said that he would not take the initiative, but he would raise no objection to that course.

The Chairman said, if both sides were willing, the Tribunal would suspend its decision, say, for a fortnight, to enable the parties to agree.

A brief consultation which then took place not producing the desired result, Mr. Cates announced that the Tribunal would at once consider its decision, and communicate it to the parties interested.

Correspondence.

To the Editor of THE BUILDER.

FORM OF BUILDING AGREEMENT.

SIR,—The attention of the Council of the Royal Institute of British Architects having been drawn to that part of the report, contained in your issue of March 27, of a general meeting of the Institute of Builders regarding the issue by this Institute, "on their own account," of an agreement and conditions of building contract, I am instructed by them to make the following statement:—

A form of "heads of conditions" settled in 1870, which was not, and did not purport to be, a set of conditions available for use, but only "heads" or suggestions, having been found to be obsolete in some respects, and deficient in many particulars on which disputes had been found likely to arise, the Practice Standing Committee of the Institute, some six or seven years ago, decided to prepare a document suitable for general use, and invited the Institute of Builders to negotiate with them with a view to agreeing on the form. This invitation was accepted, and for nearly five years the Committee was in constant communication with the Institute of Builders, and conferences were held between the two bodies.

All the conditions were agreed upon save two or three. But, as it was found impossible to come to terms over these two or three conditions, after repeated efforts to effect a settlement negotiations were broken off and the Royal Institute issued the new form.

In the report of the Institute of Builders published by you, it is stated that the Council of that body have taken certain steps "in the interests of the Members of that Institute and the trade generally."

The architects, in what they did, had to consider not only the interests of the builder, but also those of the employer—the other party to the contract—their sole endeavour being to act justly between the employer and the builder.

The Standing Committee were advised all through by Messrs. Waterhouse, Winterbottom & Harrison, solicitors, who in their turn were advised by counsel.

Afterwards the Council of the Royal Institute independently sent the draft form to Messrs. Markby, Stewart & Co., the solicitors to the Royal Institute, by whom it was settled and approved.

The instructions given to the solicitors from the first were to make a form of contract which should be strictly fair as between employer and builder.

It is of course quite conceivable that the builders might desire certain alterations in the document in their favour, but it is equally conceivable that the employers might desire alterations in the other direction.

Before the issue of the new form the Royal Institute gave notice to the Institute of Builders that they no longer sanctioned the old "heads" of 1870. Notwithstanding this reputation, and without mentioning the fact, the Institute of Builders now state that they have prepared fresh prints of these 1870 conditions, but have "corrected" them "to bring them up to date."

Since the publication of the new form by the Royal Institute of British Architects a year and a half ago, some thousands of copies have been sold—an evidence that the form is greatly appreciated.

W. J. LOCKE,
Secretary, Royal Institute of
British Architects.

R.I.B.A. ELECTIONS.

SIR,—There is one aspect of the question which does not seem to have been noticed by your correspondents "from York" and elsewhere, viz. That the nomination by the Council is always made from among those Fellows and Associates who have either in the Institute or the Architectural Association, rendered active and valuable services. There are, for instance, on the Institute Council at present

no fewer than eight Past Presidents of the Architectural Association, and they, with the other members, have acted for years on minor Institute Committees. By the laws of the R.I.B.A. the Council are requested to put in nomination at least twenty-two names, from among whom only eighteen can be voted for. In searching for new names, the Council naturally select those of members who have already worked on Committees and are therefore acquainted with the work of the Institute. Mr. Brooks, Mr. Aston Webb, and Mr. Graham would, I suppose, be recognised at once as valuable members. Mr. Wormum and Mr. Keith D. Young have acted for years on the Board of Examiners, and Mr. W. Young on the Art Standing Committee, giving up to the work of those committees a vast amount of valuable time, and Mr. Statham in the papers and lectures given to the Architectural Association, and by his frequent communications on important subjects to the Institute, shown the great interest he takes in the working of those two societies. But what have Mr. Bibby or Mr. Delissa Joseph done? They have never been members of the Architectural Association, and they have never served on any of the Institute Committees; it is doubtful whether they ever attend even the Institute meetings. There is no reason why Mr. Joseph should not have rendered valuable services on the Board of Examiners, and if he will now join the Board, in four or five years time he may have some claim on the votes of the members. Mr. Bibby, I believe, gave up active practice two years ago, and is now, I am informed, a clerk in the Architectural Department of the London County Council. Surely he cannot be regarded as a representative of the practising architects of the Institute, whether Fellows or Associates.

Y.
* * But as the Council have proposed the names of Mr. Delissa Joseph and Mr. Bibby, we presume, on the argument in the foregoing letter, that they had a good reason for doing so. We may add that Mr. Delissa Joseph was present at the last annual general meeting at all events, for he was the mover of a resolution on that occasion, as our correspondent should have been aware.—ED.

SIR,—In reference to your note at the foot of my letter published in the *Builder* of this day, may I direct attention to another aspect of the matter?

There are sixteen architectural societies allied to the Institute, but only nine of these, at a time, are allowed representatives upon the Council, and this is by an election under the provisions of By-law 30. Last year there was no contest, but on previous occasions three or four representatives of societies were defeated.

As, therefore, four representatives of allied societies did not attend even one of the twenty-eight meetings of the Council held last session, there is good reason why they should retire in favour of the defeated representatives of other allied societies.

But what those who are acting with me demand is that there shall be periodical retirements from each class of the Council, and that, after his third year of office, each member shall withdraw, unless elected as a Vice-President.

We are, therefore, voting only for the seven new candidates, leaving the present members of the Council and the friends of the old system to decide as to which eleven, or more, candidates shall be selected from the existing Council to remain in office.

A FELLOW OF THE INSTITUTE.
London, May 15, 1897.

The Student's Column.

SPECIFICATIONS.—XXI.

PAINTER.

MATERIALS.—(In specifying the materials for the painter's trade it should be noted that the highest quality is not that described as "Best.") The oil colours are to be prepared with genuine old white lead and genuine Baltic linseed oil. The paint to be mixed on the premises, and all the materials to be tested, as the architect may direct, at the expense of the contractor. Each coat to be of a different tint, and the finishing coats to be in approved tints.

The wood is to be well rubbed down to a smooth face after each coat of colour; and no coat of paint is to be followed by another until it has been seen and approved by the architect. The varnish is to be obtained from Messrs.

at the following p.c. price:—
Per Gal.

Hard oak varnish, at the p.c.	.....
price of	.....
Pale oak varnish	.....
Copal varnish	.....
French oil varnish	.....

It is always desirable to specify a given make of varnish with the p.c. price; as it is almost impossible for the architect to determine the precise quality of any varnish

that may be brought upon the premises by the contractor.)

Ironwork.—All ironwork before being painted is to be thoroughly cleaned, and if necessary pickled and all rust and scale completely removed.

All ironwork is to have the first coat painted with red lead and oil mixed in small quantities and used fresh.

All ironwork is to have the first red lead coat and two subsequent coats applied before the work is fixed, and the finishing coat only is to be applied after fixing.

The whole of the external ironwork is to be painted with three coats of oil colours after the first red-lead coat, and is to be finished in the following colours. (Describe the various colours which are to be used for various parts of the work, unless the same kind of tint is to be used throughout, in which case, of course, it would be necessary only to mention the one tint.) Eaves gutters are to be painted inside as well as out, and the interior of the rain-water pipes is also to be painted (if desired).

The iron railings to boundary wall to be painted in three coats of Wolston's Torbay paint.

The internal ironwork is to be painted with three coats before fixing, and where visible one coat after fixing.

Woodwork.—All woodwork before being painted is to be knotted, stopped, and primed. The knotting to be used is to be red-lead and size knotting, allowed to remain on at least forty-eight hours, and then rubbed down smooth. No patent knotting is on any account to be used. (This, of course, is a matter for the judgment of the individual architect to determine whether or not he is prepared to allow the use of patent knotting.)

No woodwork is to be sized before priming, but the priming coat is to be mixed with oil.

The paint for external woodwork to be mixed with boiled oil, that for the internal with raw oil.

Paint the external woodwork in four coats of oil colour of the following tints. (Give a list of the various tints which are to be used, and the work to which they apply.)

The internal woodwork to be painted as follows:—The woodwork in drawing-room and dining-room to be painted in four coats of oil colour to approved tints in party colours, and afterwards varnished with copal varnish.

Woodwork of morning-room and smoking-room to be painted in four coats of oil colour, gaine imitation walnut, and varnished with pale oak varnish.

Woodwork of offices to be painted in four coats of oil colour of approved tints and varnished with hard oak varnish.

The woodwork of staircase to be twice sized and twice varnished with hard oak varnish, as long a time as possible being left between the two coats of varnish.

Similarly specify any other variations there may be in the method of carrying out the painting of the internal woodwork.

Painted Walls.—The walls of principal staircase are to be painted in as many coats of thin oil colour as may be required to enable the work to bear out over the whole surface, after which they are to receive two coats further of oil colour, and to be finished with a flatted coat to approved tint.

Oiling Woodwork.—The wrought wainscot woodwork is to be brushed down with a clean, soft brush, and once oiled with a coat of olive oil.

French and other Polish.—The mahogany woodwork in is to be stained and French-polished to match an approved sample. The woodwork of is to be dull polished with egg-shell gloss. Woodwork of is to be ebionised and polished.

Gilding.—The surface of is to be dead gilded in oil size with best English double gold. (Gilding of woodwork is done in oil size, that of plaster in water size.)

Stencil Decorations.—Frieze in is to receive stencil decoration, full-size cartoons of which will be supplied by the architect, and they are to be prepared and cut out by the contractor and returned to the architect after using. The ties in stencilling are not to be painted out but to be left. (If the stencilling is to be done in more than one colour it should be stated.) The workman in stencilling is not to attempt to produce an even tone of colour, but to leave same in a naturally broken state.

Lettering.—The following lettering is to be included in the contract and carried out as

directed. The letters on glass panels of doors to offices to have the following names in block letters $\frac{1}{2}$ in. high in black. (Describe also any other lettering stating the material on which the lettering is to be, the size of the letter, character of the alphabet, and the colour of the lettering.)

Completion.—Touch up all painted work on completion, make good all defects, and leave perfect; black stoves, scrub floors, clean windows; and leave the whole of the premises clean and ready for occupation.

OBITUARY.

MR. JOSEPH KYLE.—Mr. Joseph Kyle, of Newcastle and Barnard Castle, contractor, died at his residence at the latter place on the 13th inst., in his eightieth year.

MR. JOHN HUTCHINSON.—On the 9th inst. the death took place at his residence, Prudhoe-terrace, Tynemouth, of Mr. John Hutchinson, a local builder and contractor. The deceased was sixty-three years of age.

GENERAL BUILDING NEWS.

ST. MARYLEBONE WORKHOUSE.—NEW ADMINISTRATIVE BLOCK AND SPECIAL WARDS.—In consequence of their dilapidated and insanitary state and irregular disposition, the Guardians decided to pull down all the remaining parts of the old workhouse in Northumberland-street, Marylebone, W., and to erect new administrative and ward blocks on the site. The total accommodation will be thereby increased to 1,000 inmates of all classes. The reconstruction of the workhouse was commenced thirty years ago, when the first new chronic ward blocks were erected from the designs of Mr. H. Saxon Snell, who was also responsible for all the other new buildings on the site, including the laundry and Guardians' offices. The sick poor were removed from the workhouse about fifteen years ago to the Marylebone Infirmary, erected at Notting Hill from Mr. Snell's designs. The new administrative block, of which the foundation-stone was laid on the 10th inst. by Mr. Edward White, L.C.C., Chairman of the Visiting Committee, is placed in the centre of the site, opposite the entrance gates. The building comprises the following accommodation, viz.: Visiting committee room, with inmates' waiting rooms attached; offices for master, matron, clerks, &c.; general kitchen for cooking for the whole of the establishment; dining hall to seat over 1,000; matron's stores; needle and work rooms; men's work rooms, tailors' and bootmakers' shops, &c. All the above are on the ground floor. The basement is almost entirely devoted to extensive kitchen and general store rooms. There is a bakery also, to be fitted with four of Mason's patent ovens; also boiler, engine rooms, &c. On the first floor there will be a chapel to seat 500. This (and also the dining hall) will be faced internally almost entirely with coloured glazed bricks. The first and second floors of the north and south wings will be devoted to temporary sick and lying-in and convalescent wards. The whole of the building throughout will be finished in the best manner. All walls of corridors and staircases are faced with glazed bricks or tiles, and the floors are fireproof, finished in tiles or mosaic. The buildings generally will be faced externally with white Arlesley facings, relieved with thin red bands. The front of the chapel and the offices beneath will be faced with red pressed bricks relieved with Portland stone dressings. The old chiming clock and bells have been preserved, and will be re-erected over the east end of the chapel. It is hoped that the buildings will be completed and opened in May next. The building is being carried out by Mr. Charles Wall, of Chelsea, whose contract for the work amounts to 48,500l. The architect is Mr. Alfred Saxon Snell, and the clerk of works is Mr. Frederick W. Lee.

NEW SYNAGOGUE, CARDIFF.—The new synagogue in Cathedral-road, Cardiff, an illustration and description of which appeared in our issue for March 13, was opened on the 12th inst. The architect of the building was Mr. Deliss Joseph, of London, and the contract was carried out by Mr. W. Lissaman, jun., of Cardiff, at 5,164l.

TRAYN'S SCHOOL, CARDIFF.—At a meeting of the joint committee of the Cardiff and Barry School Boards last week the sketch plans prepared by Mr. W. H. Dashwood Caple, architect, of Cardiff, for this school were approved, and the architect was instructed to proceed with the contract drawings. The proposed school is to be erected jointly by the Cardiff and Barry School Boards, and is roughly estimated to cost 15,000l.

NEW CHURCH, CLYDEBANK, GLASGOW.—A new church has just been opened under the auspices of the Evangelical Union congregation of Clydebank. The edifice, which occupies a site at the corner of Dumbarton-road and Miller-street, is to be known as the Morrison Memorial. The buildings, which are of Ballochmyle red sandstone, are two stories in height, comprising a large hall and other rooms on the ground or semi-basement floor, while the church proper is above. The structure has been designed by, and carried out from plans of, Messrs. Steel & Balfour, architects, Glasgow.

BUILDING IN ABERDEEN.—At a meeting of the Plans Committee of the Aberdeen Town Council held on the 6th inst., plans were submitted for approval of twenty-four new buildings and extensions in various parts of the city. Among the plans were those of a new north aisle for St. John's Episcopal Church, Crown-terrace. Mr. Arthur Clyne is architect for this extension.

GOLF CLUB HOUSE, EDINBURGH.—Lord Rosebery opened, on the 11th inst., the new club house of the Edinburgh Burgess Golfing Society, which has been erected at the entrance to their green at Barnton, and in immediate proximity to Craigmoad Brig Station. Mr. K. M. Cameron was the architect, and the building is in the Early English style. The club house is for the most part two stories in height. The chief apartment on the ground floor is a dining-hall, 50 ft. by 30 ft., with arched ceiling. On the opposite side of the vestibule is a smoking-room, 26 ft. by 22 ft., and on the same level are an office for the secretary and a drying-room; and, in addition to lavatory accommodation, a box-room, with 650 boxes. This room is an annex, one story in height. It is lighted from the roof, so that the whole wall space is available for boxes. Upstairs there is a billiard-room, a ladies' room, and committee and card rooms. The total cost of the club-house will be between 5,000 and 6,000l.

ODDFELLOWS' HALL, STONEHOUSE.—New headquarters for the South Devon district of the Ancient Independent Order of Oddfellows (Kent Unity) have been opened at Stonehouse. The premises are situated in Edgcombe-street, at the corner of Market-street. On the right of the entrance is the district office, and in the same locality are ladies' and gentlemen's cloak-rooms, a card-room, lavatories, &c. In the basement are the kitchen and sculleries; and on the first-floor is a hall capable of accommodating from 250 to 300 people. A platform has been built at one end of the hall, and beneath this an emergency door leads to Market-street. In other parts of the building are ante-rooms, a lodge-room, and quarters for the caretakers. The builder is Mr. A. N. Coles, and the architect Mr. A. W. Dehnam.

MANSON ON THE TROUP ESTATE, NEAR ABERDEEN.—Mr. W. Davidson, New Pittligo, has been entrusted with the contract for the mason work of a new mansion-house for the laird of Troup. Mr. R. G. Wilson, Aberdeen, is architect.

GOLF CLUB, MURRAYFIELD, EDINBURGH.—A golf clubhouse is to be erected on a site at the top of the road leading from the Kavelston Dykes to Murrayfield, and will consist of a general room, 31 ft. by 19 ft. 6 in., ladies' room, and gentlemen's room, with lavatory accommodation off each, kitchen, &c., with a verandah 9 ft. 6 in. wide round three sides of the building. The walls will be constructed of brick, with a dado of pressed facing brick, the upper portion covered with red tiles. The architects are Messrs. Cooper & Taylor.

SCHOOLS, STONEHAVEN.—Plans have just been sanctioned for the erection of additions to the Episcopal Schools. These comprise large class-rooms, teachers' retiring room, cloak room, and lavatories, also new staircases. The elevation to High-street is of Gothic design, and the front finishing is to be of Brechin stone. All the inside finishing is to be of pitch pine. The architect is Mr. J. Augustus Soutar, Aberdeen.

LIBRARY, EDINBURGH.—The first of the Nelson Hall and Public Branch Libraries, to be erected by the Nelson Trustees in connexion with the Public Library Committee, has just been completed. The site of this building, which will be called the Nelson Hall and West Branch Library, is at the corner of Murdoch-terrace and Dundee-street. The Nelson Hall occupies the whole of the west side of the building, and will be used as a news-room and recreation-room. It measures 75 ft. long, 33 ft. wide, and 37 ft. high. The library is in the centre of the building. The upper floor consists of staff workroom, committee-room, and a hall for small meetings. Above this and facing the south is the caretaker's house. The work has been superintended and carried out by Mr. Harry R. Taylor, architect, of Messrs. Lessels & Taylor.

BOARD SCHOOLS, IVER, BUCKS.—New Board schools, erected at a cost of 4,000l., have just been opened at Iver. The schools are designed with separate departments for boys, girls, and infants, and contain accommodation for 565 children, in three blocks. Each contains a school room to hold 100 children, and large class-rooms, with cloak-rooms and lavatories. Double entrances are provided for each block, and board and teachers' rooms are provided. Covered playsheds have been built for use in wet weather. A master's house has been built on the site facing the High-road, designed to correspond with the school buildings. The infant school and class room have been designed for use as an assembly hall for concerts, &c. The works have been carried out from the designs, and under the superintendence of, Messrs. Eves & Hardman, of Uxbridge, and have been erected by Messrs. Fasnidge & Son, builders and contractors, of Uxbridge.

CATHOLIC SCHOOLS, BLACKBURN.—The foundation stone of new day schools in connexion with St. Anne's Roman Catholic Church, Blackburn, was laid recently. The building, which is being erected by Messrs. Keeley & Sons, contractors, Blackburn, from plans prepared by Mr. Oswald C. Hill, will be

of two stories. The infants and boys' departments, and two class-rooms for boys, will be on the ground floor, while upstairs will be the girls' school. Accommodation will be provided for 1,000 scholars, and, including furnishing, the building will cost 7,000l.

PROPOSED CRAMIE HALL, PERTH.—It is proposed to erect a Public Hall in the Craig district of Perth. The hall will be about 57 ft. by 28 ft. 6 in., and will accommodate 350 persons, with space for a platform at one end. At the east end there will be one or two minor rooms and lavatory accommodation. The architect is Mr. George Young, Perth.

BOARD SCHOOLS, WHEATLEY, DONCASTER.—On the 13th inst. new schools were opened at Wheatley. The contract amounted to 2,660l. The builders were Messrs. Mullins & Richardson, and the architects Messrs. Athron & Beck, of Doncaster.

ADDITIONS TO ST. PAUL'S CHURCH, DERBY.—At St. Paul's Church, Derby, the foundation stone of the new aisle has been laid by Lady Haslan. The cost of the addition will be about 800l. The new aisle will accommodate about a hundred extra worshippers. Like the original portion of the fabric, the new part will be of Cobeneth stone. The architect is Mr. Percy Curry, Derby; and the contractors being Messrs. Joseph Parker & Son, of Derby.

PRUDENTIAL BUILDINGS, NOTTINGHAM.—The new buildings of the Prudential Assurance Company, Ltd., which form the junction of King-street and Queens-street, Nottingham, are now open. The principal entrance is surmounted by a tower and spire. The architects were Messrs. A. Waterhouse & Son, and the builder was Mr. J. Hutchinson. There are entrances to the building on each side of the upper end of the slope, from King-street and from Queen-street. A great portion of the building is covered with slate. Prudential Company occupy the main floor, which also contains the departments of the resident inspector and the district inspectors. The building externally has a plinth of red Aberdeen granite 9 ft. high at the tower end, with facings above of red Burmantofts terra-cotta and red bricks of special size. The tower roof is of lead, but on the other parts of the roof red Knaob tiles form the covering, with slate on the internal slopes.

PROPOSED NEW WORKHOUSE, HUNTSLEY, YORKSHIRE.—The Huntsley Board of Guardians, at their meeting on the 5th inst., further discussed the desirability of erecting a new workhouse for the Union. Block plans, prepared by Mr. E. J. Dodgshin, architect, were submitted by the Visiting Committee, showing how the area of the present site might be adapted for the erection of the proposed buildings. Explaining the two plans to the Board, Dr. Hawkyard (Chairman of the Visiting Committee) said that one design showed a workhouse on what was known as the pavilion system. The administration block was in the centre of the building, while the porter's lodge and receiving-rooms were in Hillside road. The rear of the workhouse were the laundry and the infirmary, the latter being only 15 ft. from the Midland Railway. Then provision was made for the erection of a row of cottages for aged couples. The vagrant wards were right at the back. This new workhouse would provide accommodation for 280, while there would be room in the infirmary for 20 beds. The suggestion of the second plan was for a less costly building, though one which would lend itself better to classification purposes. Both schemes embraced three-storied buildings. The only part of the present structure proposed to be preserved was the lunatic ward. It was agreed to appoint a committee, consisting of the whole Board, to consider the question.

ALL SAINTS' CHURCH, CHILCOMB, HAMPSHIRE.—The first portion of this church, comprising of the two western bays, was dedicated by the Bishop of Guildford on Assension Day, 1890, and on Good Friday, 1891, the second portion, consisting of the nave and side aisle, with a roughly boarded east end, was first used for service. The erection of the chancel has now been finished. The edifice, however, is not yet complete, for eventually a tower and vestries will be added. The church is of thirteenth century character, and consists of nave, 23 ft. wide by 64 ft. long; side aisle, 21 ft. wide and 80 ft. long; chancel, 22 ft. wide and 38 ft. long, the walls being 23 ft. to wall-plate and over 40 ft. to points of roof inside. The roof is of Memel timber boarded with rich pine on the back of the rafters. The angles are of chalk from Mr. L. J. Carter's quarries, the walls of rough chalk, faced outside with flint and plastered inside; the altar is raised seven steps above the nave, and a low plain wall divides the nave from the chancel. The architect is Mr. J. L. Pearson, R.A., and the builders, Messrs. Shillitoe, of Bury St. Edmunds. The fittings—altar table, rails, desks, and raneling at the east end—are of old Cathedral oak from the nave roof of the Cathedral, and are the work of Messrs. Thomas & Co., from designs by Mr. G. H. Kitchen; the gas fittings and pendants with brackets in the altar rails were entrusted to Messrs. Dicks & Sons—Hampshire Chronicle.

REOPENING OF LANKESHAM PARISH CHURCH.—The opening of Lankesham Parish Church has just been reported after restoration, and the new altar, memorial pulpit, and windows have been dedicated. The restoration, which was carried out at a cost exceeding 1,000l., embraced the clearing away of the old square pews and replacing them with new ones, laying new floors, building a new chancel arch,

opening out the transept, and the removal of the plaster ceilings from the nave, transept, and chancel, exposing to view the original mediæval oak roof, which it was found necessary to repair. The pulpit was designed by the architect, and executed by Mr. Clarke, of Landaff. The windows are the work of Mr. Savill, of London. The architect was Mr. C. B. Fowler, Cardiff, and the contractor Mr. W. A. James, Cowbridge. During the progress of the work many interesting remains were discovered, amongst them being the altar slab found under one of the angles of the tower, and the crypt, containing over 200 human skeletons, besides other interesting relics of mediæval times.

ADDITIONS TO WESLEYAN METHODIST CHURCH, MARSDEN, YORKSHIRE.—Memorial stones were laid recently of new vestries, &c., at Marsden Wesleyan Chapel. It is proposed to lengthen the chapel 15 ft., the sitting accommodation being increased about 130 sittings, and to add an organ recess, minister's vestry, choir vestry, and lavatories. The additions to the school consist of a young men's class-room, a young women's class-room, four small class-rooms, and an addition of 15 ft. to the length of the present assembly room; also a kitchen, with lift; heating chamber, and an open stone staircase. The increased school accommodation will be for 220. The new buildings will be built of local stone, in character with the existing chapel. The work is being carried out by the following contractors:—Masons, Whitehead, Fielding, & Bradbury; joiner, James Schofield; plasterer, painter, and concreter, John Bottomley; plumber, F. Goodall; ironfounders, R. Taylor & Sons, all of Marsden; and slaters, Pickles Bros., of Huddersfield, from the plans, and under the superintendence, of Messrs. John Kirk & Sons, architects, Huddersfield and Dewsbury. The total outlay will be about 12,000l.

FREE LIBRARY, MOSS SIDE, LANCASHIRE.—The public free library and news-room which has been erected by the Free Libraries Committee of the Moss Side District Council was opened recently by the Marquis of Lorne, M.P. The building has been erected from designs prepared by Mr. Acton, the Surveyor to the District Council, the cost being about 2,500l. It includes a large public room, which may be used for meetings, concerts, &c.; a library and news-room; and, in the basement, classrooms, in which some of the technical instruction classes held under the District Council may be carried on.

PROPOSED PRIMITIVE METHODIST CHURCH, NEW BROMPTON.—The Primitive Methodists of New Brompton purpose to celebrate the Diamond Jubilee by erecting a new church. The proposed building will seat over 400 persons. Mr. E. J. Hammond, of New Brompton, is the architect for the new church.

CATHOLIC SCHOOL-CHAPEL, BOOTHSTOWN, TYLDESLEY, LANCASHIRE.—A new Catholic school-chapel at Oak Lea, Chadock-lane, Tyldesley, has just been opened. It has been planned for a mixed school, and consists of a schoolroom 48 ft. by 22 ft., and divided from it by sliding glass partition is a class-room 27 ft. by 18 ft., with porches and cloak-rooms for boys, girls, and infants, and the usual offices. A portion of the building will be screened off as a sanctuary. The architects were Messrs. Simons, Simons, & Powell, of Manchester, and the contractor, Mr. Frank Clarke, St. Helens.

PRIMITIVE METHODIST CHURCH, TREDGAR.—The memorial stones of a new church now being erected in Walter-street, Tredgar, for the Primitive Methodists, were laid recently. The architect is Mr. W. S. Williams, Tredgar.

PARCHAL INSTITUTE FOR ST. JOHN'S, CHATHAM.—The foundation stone of the new Parchical Institute and Victoria Soup Kitchen, in course of erection in Pagitt-street, Ordnance-place, for the parish of St. John's, Chatham, was laid recently. The building will comprise a hall 43 ft. long by 20 ft., soup kitchen, scullery, stores, lavatory and offices. The architect is Mr. E. W. Betts, and Mr. E. W. Filley is the builder.

PROPOSED NEW HOTEL, SHOEBURYNES.—Mr. Edward Wright, architect, is preparing for Messrs. Baillie & Co., of London, the drawings for an hotel, which is to be situated in front of the railway station. The building is to be a three story one, and it is estimated that it will cost between 7,000l. and 8,000l.

NEW THEATRE, IPSWICH.—A Theatre of Varieties is to be erected at Ipswich. The Grand Hotel and Theatre of Varieties Company, Limited, will acquire the Grand Hotel at Ipswich, and will establish on a convenient site adjacent what will be known as the Grand Theatre of Varieties. Mr. Frank Matcham is to be the architect of the theatre. The hotel itself is to be enlarged by the erection of a wing.

BOARD SCHOOL BUILDINGS, BARTON, NEWPORT, ISLE OF WIGHT.—The new school buildings at Barton have just been opened. The new erection, constructed at the east end of and adjoining the Barton boys' school, provides accommodation for 280 girls, whilst the boys' department has been extended so as to accommodate eleven pupils, more pupils. The building is built of red brick, with both stone dressings and slate roof. The girls' school comprises the main room, 48 ft. by 22 ft., and three class-rooms to accommodate 104, 72, 48, and 30 respectively. The interior fittings are of pitch pine, supplied by Mr. G. F. Quinton. There is a detached building consisting of lavatory, sanitary offices, and

a large play shed. The buildings have been constructed by Mr. T. Jenkins, under the supervision of Mr. E. A. Swane, of Messrs. Swane & Clark, architects. The contract price was 2,351l.

SANITARY AND ENGINEERING NEWS.

SANITARY MATTERS, NEWCASTLE.—The City Engineer of Newcastle, Mr. W. G. Laws, has issued a report for the year ended March 25, 1897, to the Town Improvement and Sanitary Committees of the Newcastle Corporation. He gives the particulars of work done for and money spent by the two committees, so far as the Engineer's department is concerned. The report deals in detail with sewers, private drains, paving and flagging, paving roads, macadam roads, scavenging, street watering, &c. Under the head of scavenging, Mr. Laws says there has been no great amount of unemployed labour to provide for. "Indeed, the applications for work have been fewer than usual, and during the winter every one who applied was put on;" and even then, adds Mr. Laws, "we could have taken more men." The paper nuisance is again referred to. It is, if anything, increasing, and complaints of the untidy state of the streets arising therefrom are more numerous. At the refuse-destroyer at Byker, 20,016 tons were burnt, at a cost of 757l. 7s. 9d., or a fraction over 8½d. per ton. From Mitford-street, 22,374 tons of refuse were sent to sea, at a cost of 1,700l., or is. 6½d. per ton. As to the water supply, the report states:—"Owing to the wet season, the reservoirs have been full for the first time since 1893, viz., on March 24 and 25, when there were 3,062 millions in store, so that for the coming year we are fairly safe. There are signs, however, that the yearly increase in the daily consumption has been fully maintained." A series of tables is appended to the report. The population of the city in 1896-97 was 238,000, the rateable value was 1,075,153l., and the Town Improvement and Sanitary Committee's expenditure was 68,022d. per head, or 1s. 26d. in the £. There are known to exist in the city 42 miles 1,248 yards of brick and stone sewers. There are, besides, 6 miles 1,401 yards of oval drain pipes, 113 miles 620 yards of circular pipes. Including drains for surface water only, the total mileage of sewers is 166. There are 5,000 manholes. Newcastle has 36 miles 827 yards of macadam roads, 82 miles 1,066 yards of paved front streets, and 43 miles 1,500 yards of paved back streets; giving a total of 126 miles 806 yards of formed streets and roads. There are 11 miles 1,602 yards of unpaved front and back streets. There are 29,931 water closets, as compared with 44,917 privy pans and 2,770 privies and ashpits. There are 4,076 dry ashpits, 15,154 ashbins in yards, 305 ashbins cleaned from small doors in back streets, and 4,330 tubs set out in front of shops, with the shop refuse, &c. With a population in the city of 217,555, there were 30,521 inhabited houses, the average number of people in each house being 7.13. The parks and open spaces in the city cover an area of 2,268 acres, the churchyards and cemeteries 78 acres, and the private grounds and open spaces 26 acres.

LOCAL SEWERS IN LONDON.—The Main Drainage Committee of the London County Council have sanctioned, subject to a condition recommended by the Engineer, the construction of local sewers as follows:—Birkenhead (detached)—885 ft., 400 ft., 655 ft., 2,605 ft., 7,085 ft., 1,920 ft., and 475 ft. of 6-in. pipe sewers in Alexandra Park-road, Barnard's Hill, Birkbeck-road, Colney Hatch-lane, Middleton-road, Muswell-avenue, and Muswell-road respectively, and 375 ft. of 12-in. pipe sewer for surface water only in Colney Hatch-lane. St. Martin-in-the-Fields—247 ft. of 4 ft. by 2 ft. 8 in. brick sewer in Bedfordbury.

STAINED GLASS AND DECORATION.

WINDOW, PARISH CHURCH, YOULGRAVE.—A memorial stained glass window has been fixed in the chancel of this church by the family of the late Rev. R. C. Roy, M.A. The window was designed by Sir E. Burne-Jones, the subject being St. James, St. Peter, and St. John. It was supplied by Messrs. Morris & Co., of Merton Abbey, Surrey.

WINDOW, ST. JOHN'S CHURCH, LOWER CAVERSHAM, READING.—The large east window in St. John's Church, Lower Caversham, has been filled with stained glass. The window was dedicated by the Bishop of Reading recently. The subject in the three centre lights illustrates the adoration of the Magi. In the two side lights are figures representing St. Peter and St. John. Immediately over the centre in the upper part of the window, surrounded by rich tracery, is another light in which is represented our Lord in majesty. The window has been executed by Mr. Arthur J. Dix, London.

SCREEN, BEAUFLET CHURCH, HANTS.—A wrought-iron screen has been placed on the dwarf-wall separating the choir from the body of this church. The work is from the design of Sir Arthur Blomfield, and is executed by Messrs. Hart, Peard, & Co., of London. The screen or rail is 2 ft. 6 in. high on the 2 ft. wall. It is divided into twelve panels, six on each side of a pair of gates, which open inwards to the choir.

FOREIGN.

FRANCE.—The regulations for the 1900 Exhibition have just been published. According to this document the exhibition will open on April 15, 1900—that is to say, fifteen days earlier than in 1889—and will close on November 5. To the contemporary exhibition will be added a retrospective exhibition, showing the progress accomplished since 1860. The products will be grouped in eighteen groups, and subdivided into 120 classes. The prices of admission will be decided by the Commissariat-Général before February 1, 1899.—The Daru staircase in the Louvre Museum has been finished; and the work of altering the Salle des Etats, where are hung the series of large pictures by Rubens, is now being carried on. Unfortunately there is not money enough to finish all these works for some years. The new architect who has the superintending of the work in place of the late M. Paul Blondel, is M. Gaston Redon, "grand prix de Rome" in 1882, and professor of architecture at the Ecole des Beaux Arts. It was he who designed the Casino at Royau. He received in 1890 the "medaille d'honneur" at the Salon for his splendid restoration of the Temple of Eschbeck. For two years he was architect to the Gobelins.—Owing to the liberality of Madame de Castellane (*née* Gould), a large permanent building is to be erected on the site of the Charity Bazaar which was burnt a few days ago. There is to be a chapel adjoining, in memory of the terrible event.—The pupils of the Ecole des Beaux Arts, belonging to the outside studio of the late Paul Blondel, have just chosen, as a successor to their late master, M. Scellier de Gisors, who obtained the "medaille d'honneur" at the Salon of 1896 for the "Dépôt des postes and telegraphes," of which we published an illustration last month.—The journal *Le Bâtiment* has opened a public competition between architects and French constructors, for "Construction démontable, incombustible, et à bon marché." For several years the work of building a tower to surmount the Abbey of Mont Saint Michel has been going on. This granite tower is at last finished, and now a wooden spire 40 metres high is being made. It is to have on the top a statue of St. Michel in bronze, 4 metres high, the work of M. Fremiet.—There is talk of an English Society which has just been formed with a view to finishing the Boulevard Haussmann, the cost of which is estimated at 35,000,000 francs for compensations, and 25,000,000 for construction.—Important works are to be undertaken for the improvement and enlargement of the Hospital at Macon. The expense is to be limited to 130,000 francs.—A committee, presided over by M. Puvion de Chavannes, has just decided the competition opened by the "Association Co-operative des Sciences, des Lettres et des Arts" for the designing of art tickets. The first prize has been awarded equally to M. Payen and M. Wilder.—The death is announced, at the age of seventy-eight, of M. Louis Renaud, member of the "Société Centrale des Architectes," and pupil of Léon Vaudoyer. His long and honourable career was almost entirely given up to the works of the company of the Chemin-de-fer d'Orléans, to which he was the principal architect. He built the Administrative buildings for the company in the Rue de Londres, and the new Gare d'Orléans, on the Quai d'Austerlitz and the Boulevard de la Gare.

GERMANY.—We record with regret the resignation of Professor Ende from the architectural chair at the Royal Technical College at Berlin. Professor Ende, who has again been elected President of the Prussian Royal Academy of Arts, has lately suffered from ill health, and will have to reduce the scope of his work. The old firm of Messrs. Ende & Boeckmann has practically ceased to exist.—The Society of Berlin Artists have definitely decided to take new premises in the Bellevue Strasse. The existing building, on their new site, will be materially altered under the direction of Mr. Hoffacker.—At the Arts and Crafts Museum, a special Exhibition of Drawings of the new Imperial Law Courts at Leipzig has been opened. There are one hundred and eight architectural drawings by the architect, Herr Ludwig Hoffmann, and thirteen sketches by Mr. Seliger; a number of photographs have also been exhibited.—The design of the new monument at Dresden, in honour of King Albert of Saxony, has been the subject of a competition. The first premium has been awarded to Professor Baumbeck, at Berlin, a sculptor of considerable repute.—The new City Engineer at Berlin, Herr Krause, has entered on the duties of his office.—It is understood that Prince Bismarck proposes erecting a mausoleum for his family at Frederichsruh.—The Art Exhibition at the Lehrte station has now been opened. There was no ceremony of particular importance in connection with the opening.

AUSTRIA.—The well-known outdoor establishment in the Austrian capital, known as "Venice in Vienna," has again been opened, and this time shows a well-arranged miniature picture of the Grand Canal.—Rapid progress is being made with the new Metropolitan Railway at Vienna, and there is considerable probability of the new line being opened at an earlier date than was originally expected. There is little doubt that the new railway will entirely change the traffic arrangement in Vienna, and that the old

omnibuses, which have long been an eyesore to the capital, will have to make room for this new means of communication, and for the new electric tramways.—Vienna is to follow the example of Berlin, in erecting a number of new churches, and a special commission has been nominated under the auspices of the Government to decide on the sites for the new places of worship.

RUSSIA.—An International Competition for a Grand Stand on the racecourse, near Moscow, has been decided, and the first premium will be awarded to M. Klein, of that city. The second premium was awarded to a Moscow firm of architects, and the third to a firm practising at St. Petersburg. The amount to be expended on the grand stand had been limited to 350,000 roubles, and accommodation is to be afforded for 3,000 spectators. The grand stand in Russia is not the kind of erection we are used to under that title, but a substantial structure, with reception rooms, &c., for the Sporting Club, under whose auspices the competition was arranged. Though the competition was an International one, there do not appear to have been many candidates from foreign countries, nor were foreigners represented on the Committee of the Assessors, though the jury were composed of fifteen members. There were nine architects on this Committee, and six laymen, and the competition conditions had been framed by the Moscow Architectural Society. The premiums are of the value of 3,000, 2,000, and 1,000 roubles respectively.

BOMBAY.—The *Times of India* states that a syndicate has been formed for obtaining a concession for the erection of blocks of dwelling-houses in Bombay for the labouring classes.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—The business of Messrs. Richard Moreland & Son, engineers of No. 3, Old-street, Aldersgate, has been incorporated as a Limited Liability Company. Mr. David Elder is the Secretary.—Messrs. F. A. Putz and Co., 11, Queen Victoria-street, have been appointed sole agents for the United Kingdom for the "Verminige Electrica Actien-Gesellschaft" in Vienna.—By the death of Mr. Chas. Hall, the managing partner of the Rugby Portland Cement Company, the position of works' manager became vacant, and the directors of the company have unanimously selected Mr. Isaac Brooks for the post. Mr. Brooks had been actively engaged assisting Mr. Hall for upwards of twenty-five years, and the success of the firm was in no small measure due to his energy and enterprise.

THE SANITARY INSTITUTE.—At an examination in practical sanitary science held in London on May 7 and 8, the following twelve candidates were granted a certificate in practical sanitary science:—S. I. Adams, Southend-on-Sea; F. W. Bradley, Cockfosters, New Barnet; E. H. Collier, Ipswich; W. P. Costain, Blundellsands; F. W. Jarman, Croydon; W. H. Knight, Hornsey; A. Morrison, Edinburgh; J. Sanderson, Islington, N.; A. Styles, New Cross, S.E.; A. A. Turfitt, Aberdeen; S. Walkden, Tavistock; A. Wigley, Newington Green-road, N.

KING'S COLLEGE, LONDON.—The annual dinner of Old Students of King's College, London, will be held at the Holborn Restaurant on Monday, June 28, when Lord Kelvin will take the chair. The Duke of Cambridge, K.G., has intimated his intention of being present.

EMPLOYERS' LIABILITY AND THE BUILDING TRADE.—Lord Claud Hamilton presided on Thursday last week at the annual meeting of the Employers' Liability Assurance Corporation, Limited, at Winchester-house. In moving the adoption of the report, the Chairman referred to the new Bill dealing with the question of Employers' Liability, which had been introduced into Parliament by the Home Secretary. Although it was not proposed, he said, to interfere with the existing Acts of Parliament, the new measure introduced a principle which was scarcely contemplated by the general public. It contained clauses of far-reaching character, and imposed responsibilities on employers far in excess of any hitherto known in this country. He had no doubt that in the present temper of the House of Commons the Bill would become law during the session, and although various trades were exempted from the provisions of the measure, there was every prospect that vigorous attempts would be made to bring certain dangerous trades under the operation of the Act. If, for instance, the building trade was included, he did not see how any small builder in the country could continue to exist without availing himself of the benefits offered by insurance. One serious accident would be sufficient to exhaust all his capital, and send him to his bankers for a very extensive loan. In the event of the building trade being included in the provisions of the new Bill, it was evident that every builder would be compelled to insure against his liability for accidents.

SANITARY INSPECTORS' MEETING IN LIVERPOOL.—The first meeting of the eleven sanitary inspectors of the North Western and Midland Sanitary Inspectors' Association, founded in 1887, was held on the 8th inst., at the Royal Institution, Colquhoun-street, under the presidency of the newly-elected Chairman, Mr. William Urquhart, Chief Sanitary Inspector, Crewe, who delivered an address. He said that the past year of the Association had been most successful, not the least pleasant feature of which had been the

amalgamation of the Stafford Association with their own. The Association now numbered over 200 members, and would be known in future as the North Western and Midland Sanitary Inspectors' Association. Sanitary science was making rapid progress, and it was absolutely necessary for the members to keep themselves up to date. Local governing bodies had largely ceased to look upon medical officers of health and sanitary inspectors who deviated in the slightest degree from the beaten track as cranks or faddists, and were beginning to recognise that in the great majority of cases, by the adoption of sanitary precautions a vast amount of sickness could be prevented, and even death itself almost indefinitely postponed. He hoped that before long the Education Department would insist upon at least the rudiments of hygienic science being taught in every elementary school under their control. The speaker next alluded to the small remuneration paid to sanitary inspectors compared with the risk and importance of the work which they had to perform, to the Scotch Public Health Bill now before Parliament, the Plumbers' Registration Bill, and to the proposed amendments in the Food and Drugs Act, and, as these measures all tended in the right direction, they must wish them success. He also urged that pressure should be brought to bear on parliamentary representatives with a view of securing their help towards the passing of the Local Authorities' Superannuation Bill. On the proposition of Mr. E. Worrall, seconded by Dr. M. Young, a vote of thanks was given to the Chairman for his address.

ROMAN REMAINS IN THE CITY.—Recent excavations for building purposes in Queen Victoria-street, near the corner of Walbrook, have resulted in the discovery, about 26 ft. below the surface, of a small but interesting group of relics of the Roman occupation of the City. This "find" consists of a Laguna, a bronze balance, and a large iron nail. The Laguna is a gracefully-formed, two-handled vase of fine buff ware, about 8 in. high by 7 in. at its greatest diameter. The neck is simply ornamented with two parallel grooves, and a single groove runs down the centre of each handle. The balance, or *libra*, is made of bright yellow bronze, and is about 14 in. in length.—*Standard*.

PULPIT, CANTERBURY CATHEDRAL.—On the 15th inst. Dean Farrer inaugurated a pulpit of carved English oak, which has been erected in the nave of Canterbury Cathedral to the memory of the late Dean Payne Smith. The pulpit was designed by Mr. G. F. Bodley, A.R.A.

CARDIFF BUILDING BY-LAWS.—The sub-committee appointed to consider the new building by-laws for the Borough of Cardiff submitted their report to the Public Works Committee recently. The sub-committee had held eight meetings, and had pursued a policy of making as few alterations as possible in the models, with a view of expediting the passing of the by-laws. Among the recommendations of the sub-committee were the following:—Every person who shall lay out a new street, which shall be intended for use as a carriage road, which by reason of its length or importance, or in consequence of its forming or being so situated as to be likely to form part of an important line of communication, shall, if called upon by the Council, make such a street of a width not less than 60 ft. Every person who shall lay out a new street, not being a continuation of an existing street, and not being intended to form part of an important line of communication, which shall be intended for use as a carriage-road, shall so lay out such street that the width thereof shall be 40 ft. at the least. Every person who shall lay out a new street which shall be a continuation of any existing street which is of a greater width than 40 ft., and which shall be intended for use as a carriage road, shall so lay out such new street that it shall be of the same width as the street of which it is the continuation. The recommendations were adopted.

DIAMOND JUBILEE FOUNTAINS.—The Diamond Jubilee has brought many orders to Aberdeen for granite fountains. Drinking fountains have been, or are being, constructed for Bristol and Manchester (Beswick Park), and for the following villages and small towns in Scotland:—Stonhaven, Craik, Tillycultry, St. Andrews, Rosneath, Aberchirch, Torphins, &c. An ornamental fountain is being made for Manchester standing on a three-stepped platform 34 ft. across at ground level. A memorial fountain has likewise just been sent to Penrith, and a 600 ft. ornamental fountain is being manufactured for a town in the South of England.

APPOINTMENT OF SANITARY INSPECTORS.—The Local Government Board has sanctioned the appointment of Messrs. F. H. Hudson, N. Males, and A. H. Gray as sanitary inspectors in Hampstead, Kensington, and Lewisham respectively, and the re-appointment of the sanitary inspectors in Camberwell.

THE WOOL INDUSTRIES OF CANADA.—This is a volume issued by the *Timber Trades Journal*, giving a good deal of information as to the work done in timber cutting and working in various districts in Canada, with some account of the principal firms concerned in the trade.

PUNCH AND THE JUBILEE.—Messrs. Bradbury, Agnew, & Co. are preparing a collection of cartoons from *Punch*, illustrative of events in the long reign in which her Majesty's personal connexion has suggested the subject for the week's picture. "To-by,

M.P., has written the letterpress explanatory of each cartoon, in its continuity forming a record of the Queen's reign. "The Queen and Mr. Punch," which will be published on June 1, contains sixty pictures by Leech, Tenniel, and Linley Sambourne. The last-named artist has drawn a special picture of the Queen for the cover of the book.

NEW CROSS, HARTLAND.—A new cross, with a square gabled head and octagonal shaft of Portland stone, was erected last week in Hartland Churchyard, on the old foundation of the three Churchyard cross. The cross, including the three steps and the base, is fifteen feet in height, and the carving was executed by Messrs. Farmer & Brindley, who took for their base of operations the "History of Hartland, its Church and Abbey," by the Vicar of Hartland, Exeter. Underneath the old base were discovered a silver coin of Queen Elizabeth's reign, an old Saxon font, and an altar slab, with five crosses, on which the font rested. A portion of the font was found four feet below the surface. On the side of the second step of the new cross is the inscription, "Restored 1897." The first step rests on the original base of the altar slab, on a new block of cement concrete.

CAPITAL AND LABOUR.

PLASTERERS' STRIKE, LIVERPOOL.—The plasterers in Liverpool gave six months' notice, expiring on May 1 last, to the employers for an advance of 7½d. per hour, from 9d. to 9½d., and a new code of rules, the chief amongst which were clauses limiting the number of apprentices on any one job, and that plasterers to be allowed to do plasterer's work (which the operatives contended includes cement flooring, floating for tiles and wood blocks). Several meetings have been held between the masters and men, and as a result thereof the employers made an offer to the operatives for an advance in wages to 9½d. per hour, the present code of rules as worked out by the other trades being offered, with an undertaking that only plasterers be employed by master plasterers to do plasterer's work, concrete and cement flooring, floating for tiles and wood blocks to be considered the work of specialists, and that all apprentices be bound. This was refused, and the men to the number of about 150 ceased work on May 1. A further offer by the masters to submit the whole matter to arbitration was also declined.

THE CARPENTERS' AND PLASTERERS' STRIKE, PLYMOUTH AND NEIGHBOURHOOD.—There is very little to report in reference to the strike of carpenters and plasterers in the Three Towns. The master builders met at the Central Exchange on the 13th inst., and held a protracted debate upon the communication from the Plymouth Chamber of Commerce suggesting that the matters in dispute between the masters and men should be submitted to the Standing Conciliation Committee for settlement. General approval of adopting this course was expressed by the speakers. A resolution formally accepting the offer of the Chamber was unanimously adopted, but it was made conditional that before any representations—which it was required should deal with the whole of the points at issue and as they affected all the trades concerned in the dispute—were laid before the Conciliation Committee an arbitrator to be mutually agreed upon should be appointed.—In conjunction with the plasterers, several carpenters have signified their intention of starting building operations at St. Budeaux at an early date.

STRIKE IN THE BUILDING TRADE, REDHILL.—In pursuance of a notice given to the masters by the men employed in this district six months ago, about 200 carpenters and bricklayers have ceased work in the Redhill district. Some twelve months ago, it seems, it was decided to ask for an advance of 7½d. per hour, but on the representation of the masters the matter was not pressed. A local society was afterwards formed and a code of working rules drawn up and submitted to the masters, together with a demand for an additional 1d. per hour, to take effect at the expiration of six months. That period expired on May 1.

THE PLUMBERS' STRIKE, SCARBOROUGH.—The strike of plumbers at Scarborough is at an end, the masters having agreed to pay the men 8d. an hour, which is 7½d. advance on the old rate of pay. They have further consented to give another advance of 7½d. per hour twelve months hence.

LEICESTER STONEMASONS AND THEIR EMPLOYERS.—As the result of negotiations which have recently been taking place between the Leicester operative stonemasons and their employers, an advance of wages, amounting to a halfpenny per hour, dating from the present month, has been agreed upon. In future stonemasons will receive 9d. instead of 8½d. per hour, and stonemasons' labourers are advanced from 6d. to 6½d. per hour. Some new regulations have also been agreed to by the employers, the most important of which is the limitation of apprentices to practically one to each firm. In future, too, all boys employed in the trade must be properly apprenticed.

JOINERS' WAGES, MIDDLETON.—The Middleton master joiners having been approached by their men, have consented to an advance of one halfpenny per hour, which brings the rate of pay up to 8½d. per hour.

MASONS' AND PLASTERERS' STRIKE, WESTON-SUPER-MARE.—The masons and plasterers of

Weston have come out on strike. The masons some time ago demanded an increase in their rate of pay, insisting upon 8d. an hour instead of 7d., and a fifty-four instead of a fifty-six and a half hours' week. The plasterers have practically been forced into idleness in consequence of the action of the masons in resolving to reduce their scale of pay from 7½d. to 7d. The struggle promises to be a prolonged one, as both sides are determined to hold out. It is asserted, however, that the masters might have effected a compromise so far as the masons are concerned, as they would have been satisfied with being met half-way. Work at the new Council offices has ceased to a large extent as a result of the strike.—*Weston-super-Mare Gazette.*

SLATERS' STRIKE, ABERDEEN.—This strike is almost over, most of the employers having agreed to the by-laws put forward by the men.

THE PRESTON BUILDING TRADES DISPUTE.—The stoppage in the Preston building trade, owing to the strike of the bricklayers for an advance of 1d. per hour, still continues, and many important contracts are at a complete standstill. As this is the busy season, and there is a great demand for labour, a number of workmen have left the town for various parts of the country in quest of employment.—*Preston Herald.*

BRICKLAYERS' WAGES, TYLDSELEY, LANCASHIRE.—The master builders and contractors in Tyldesley and Atherton have acceded to the request of the Bricklayers' Society for an advance in wages from 9d. to 9½d. per hour.

BUILDING TRADES, ST. IVES, CORNWALL.—Masters and men engaged in the building trades at St. Ives met recently. Mr. James Burrell, who was voted to the chair, explained that the object of the meeting was to discuss the advisability of ceasing work at one o'clock on Saturday, and adopting the hour system. It was elicited that the majority of the men were agreeable to work on the hour system at 5½d. per hour, the short hours to commence six weeks before Christmas, and finish six weeks after Christmas. Replying to a question, the Chairman said 5½d. per hour would only be paid to competent men. After considerable discussion, the meeting decided to act on the suggestion of Councillor John Pearce, and appoint a committee representing the various trades, draw up a code of rules and regulations, and submit the matter to the masters for consideration.

JOINERS' STRIKE, CREWE.—Following the strike of painters, the joiners of Crewe have struck work for an advance of 7½d. an hour in their wages. Several of the masters have conceded their demand, but others hold out.

THE BUILDING TRADE IN PORTADOWN.—The members of the Portadown Branch of the Bricklayers' Society recently made a demand on their employers for an increase of wages and a reduction of the hours of labour. The notice having expired, a conference of the masters and men was held in the Town Hall for the purpose of endeavouring to arrange an amicable settlement, and thereby avert a strike. The men asked that their wages be advanced from 6½d. to 7½d. an hour, and that the hours of labour be reduced from fifty-seven to fifty-six hours a week. After discussing the matter for an hour and a half the masters offered to increase the wages to 7d. an hour for a fifty-six hours' week, which the deputation representing the men unanimously agreed to accept.

WORKING RULES FOR BRICKLAYERS, BARRY.—A meeting of the Barry Master Builders' Association was held at the Glamorgan Restaurant, Barry Docks, recently. The codes of working rules for bricklayers and for navvies and general labourers, which had been amicably settled with the Bricklayers' Society and the Navvies' and General Labourers' Union respectively, were signed. A communication was read from the Carpenters' Society bearing upon the new code of working rules, and the Secretary (Mr. E. E. Bryant) was instructed to reply to the same.

SETTLEMENT OF THE BLACKPOOL DISPUTE.—The labour difficulties at Blackpool have been smoothed over. It was arranged at a recent meeting of the master builders, plumbers, painters, &c., that a lock-out should not be enforced. The joiner over whom the dispute originated resigned his position, and the whole body of strikers, comprising bricklayers, joiners, plasterers, painters, &c., will return to work. The dispute has been in progress about a month.—*Liverpool Mercury.*

LEGAL.

A QUESTION OF LIGHT.

CASE IN THE DIVISIONAL COURT.

THE case of *Brawn v. Revitt* came before a Divisional Court of Queen's Bench composed of Mr. Justice Day and Mr. Justice Lawrence on the 17th inst., it being the plaintiff's appeal from the decision of the learned County Court Judge of Northampton, dismissing his action brought on account of an alleged injury caused to the light of his house by the defendant's building.

Mr. Levett, Q.C. and Mr. Geo. Henderson appeared for the appellant, and Mr. Stanger, Q.C., and Mr. Ryland Atkins for the respondent.

Mr. Levett stated that there was no dispute as to the facts that defendant had erected a building on certain property near Northampton, which had

obstructed the plaintiff's light, and which he had objected for ten years prior to the erection of the premises belonging to the defendant. The question in the case was what grant of light by virtue of the Conveyancing Act passed to the plaintiff by the conveyance of the property. The learned County Court Judge decided the matter on the authority of a case which he thought precluded his coming to any other conclusion, but the learned counsel stated that a recent decision in the Court of Appeal was clearly in favour of Mr. Brawn being entitled to the rights he claimed.

Their Lordships, after hearing Mr. Stanger on behalf of the respondent, dismissed the appeal with costs.

THE CLAIM AGAINST THE ST. PANCRAS GUARDIANS:

CASE IN THE COURT OF APPEAL.

THE case of *Drew-Bear & Co. v. the Guardians of the Poor of St. Pancras* came before the Court of Appeal, composed of the Master of the Rolls and Lords Justices A. L. Smith and Chitty, on the 17th inst., it being the appeal of the plaintiffs from the decision of a Divisional Court of Queen's Bench, consisting of Mr. Justice Grantam and Mr. Justice Wright, on the 13th ult. The history of the case is as follows:—The plaintiffs, the trustees of creditors of Mr. Wm. Brooks, a builder and contractor of Folkestone, sued the Guardians and their architects, Messrs. A. & C. Harston, for a balance of 24,267l. or alternatively 24,262l., alleged to be due on a contract for the completion of the St. Pancras Workhouse. The plaintiffs' case was that, some years ago, the Guardians resolved to reconstruct the Workhouse in King's-road, and appointed the Messrs. Harston as their architects. The contract for the work was at first taken by Messrs. Kirk & Randall, of Woolwich, but disputes having arisen, that firm requested to be relieved of further work under the contract. Fresh tenders were then invited for the unfinished work, and that of Brooks was then accepted for 50,861l. The work was to occupy fifteen months from May, 1892, but delays arose, and in November, 1894, the work was stopped. Messrs. Drew-Bear, Perks, & Co., of Queen Victoria-street, who supplied the ironwork, Mr. H. Tolputt, of Folkestone, who supplied timber, Mr. J. Brown, of Cannon-street, who supplied bricks, sued on behalf of creditors for the balance alleged to be due to Mr. Brooks. The net cost of the work executed was stated to be on the first claim 65,479l., plus 10 per cent. profit, 6,547l., making 72,026l., of which 47,800l. had been received under the architect's certificates, leaving a balance of 24,226l. In the alternative claim the net cost of the work executed was estimated at 65,479l. as before, but the 10 per cent. profit was reckoned on the contract price of 50,861l., which, with other amounts claimed, brought the alternative claim to 24,262l. The plaintiffs alleged that Brooks was hindered from continuing and completing the contract by the action of Mr. Geo. Poole, the clerk of the works, who interfered without sufficient cause, and condemned material supplied wholesale. It was also further alleged that the architect was hindered from the works, and that the interference of the clerk of the works caused needlessly a net loss to Brooks of 2,520l., in addition to 103l. (value of the materials left by Messrs. Kirk & Randall, and not permitted to be used). The defendants generally denied the charges against the clerk of the works, and alleged that Brooks had not carried out his undertaking to complete the work left unfinished by Messrs. Kirk & Randall. The Guardians further relied on the Public Authorities Protection Act, 1893, as being a defence, inasmuch as the matters referred to in the action occurred more than six months before the action was brought. Messrs. Harston, and the other defendants, pleaded that they were not liable, and said that they had received no complaints from Poole with respect to the manner in which the works were being carried out by Brooks. Sir Edward Ridley (now Mr. Justice Ridley), then the Official Receiver before whom the case was tried, decided that inasmuch as the plaintiffs had failed to make out that Messrs. Harston had been guilty of fraud, dishonesty, or collusion, those gentlemen were entitled to judgment as against the plaintiffs, with costs. He, however, decided that the contract entered into between the plaintiffs and the Guardians, owing to the special circumstances of the case, had been set aside, and that the plaintiffs were entitled to *quantum meruit*, or in the alternative to substantial damages, to be ascertained at some future time, and he therefore gave judgment for the plaintiffs as against the Guardians, with costs. The Guardians appealed from this decision to the Divisional Court on the ground that the judgment and findings upon which it was based were erroneous in fact and in law, and that there was no evidence or any sufficient evidence to justify Sir Edward Ridley in finding either that the plaintiffs' contract with the Guardians was set aside, or that the plaintiffs were entitled to substantial or any damages, or to any damages or allowances not duly provided for in the contract. The Divisional Court decided that the case of *Bush v. The Trustees of the Port and Town of Whitehaven*, which Sir Edward Ridley felt bound by, did not apply to the present case, and that, although the contractor might be entitled to

damages for delay in giving him possession of the site, there was no ground for claiming on *quantum meruit*. Upon these grounds the Court directed that the judgment against the Guardians must be set aside, and that there must be a new trial. The plaintiffs now appealed from this decision.

Sir R. T. Reid, Q.C., M.P., Mr. R. M. Bray, and Mr. A. A. Hudson appeared as counsel for the appellants (the plaintiffs); and Mr. Bosanquet, Q.C., Mr. English Harrison, and Mr. Wm. Moyes for the respondents (the Guardians).

Sir R. T. Reid, in opening the case for the appellants, said that the arbitration occupied the attention of Sir Edward Ridley for no fewer than twenty-two days, and it would obviously be a very serious matter if all the complicated issues raised should have to be gone over again. The learned counsel, after stating the facts of the case to their Lordships, said that very voluminous evidence was given, and in the result Sir Edward Ridley decided that while as arbitrator under the contract, were not capable of justification, he was acting to the best of his ability as arbitrator under the contract, and that as there was no evidence that he had been guilty of fraud, dishonesty, or collusion, the action was not maintainable against him. The action, therefore, as regarded the architects, was dismissed with costs, and this the learned counsel said he would freely admit was against him. As to the Guardians, Sir E. Ridley decided that the delay in giving possession of the site entitled the contractor to set aside the contract, and held that the plaintiffs were entitled to claim on a *quantum meruit*, or alternatively to damages, which would have to be determined at some future time. It should be borne in mind that the damages had not yet been assessed, but he believed it would be admitted that the damages accruing for not giving up the site at the specified time had been agreed at about 1,400l. No express finding appeared in the judgment as to the clerk of the works, although in the course of the case Sir Edward Ridley spoke strongly as to his conduct and evidence.

The Master of the Rolls said that the Guardians would be liable for the acts of the clerk of the works if he was dishonest.

Sir Robert Reid agreed that that would be so, but repeated that in his judgment Sir Edw. Ridley did not express any opinion on the point. The crucial point in the decision of Sir Edw. Ridley was that owing to the alterations in the contract the plaintiffs were justified in claiming on *quantum meruit*.

The Master of the Rolls: I should think *quantum meruit* represents measure and value.

Sir Robert Reid agreed, and said that under the circumstances *quantum meruit* would be the legal, and "measure and value" the ordinary building phrase. Continuing the learned counsel said that when the Guardians moved before the Divisional Court no attempt was made before that Court to go into the evidence, but their Lordships stated that on the legal argument they had made up their minds that the judgment must be set aside, and the case re-heard by another Official Referee.

Lord Justice Chitty said that of course the case could not go before Sir Edw. Ridley, as he was now Mr. Justice Ridley.

Sir Robert Reid said that when the judgment of the Divisional Court was pronounced Sir Edw. Ridley was still an Official Referee. In answer to the Master of the Rolls the learned counsel added that in any case the damages and amounts due would have to be ascertained by the process of *quantum meruit*. He contended that the judgment of the Divisional Court was wrong, and submitted that the judgment of Sir Edward Ridley should be ordered to stand.

Mr. Reginald Bray having followed on the same side.

Mr. Bosanquet argued that the original complaint of the plaintiffs did not so much refer to the delay in giving possession, but to the interference of the clerk of works and architects, and that the learned Referee, in confining his attention in his judgment to the former matter, had misdirected himself.

The Master of the Rolls, in giving judgment, said the action had to be considered just as if the builder had himself gone on with the contract in lieu of his creditors having finished it. The work had been done, and unless something had arisen to the contrary, the agreed price must be paid. But the plaintiff had said, first of all, that he was not bound by such agreed price, but that there had been breaches of contract by the Guardians, or by those for whom they were responsible, and that those breaches were to such an extent and of such importance that the original agreement was inapplicable, and that the case, therefore, was allowed to be taken as if no contract had existed. The new agreement, if that were true, was that the builder had done work for the creditors with their assent, and, of course, expecting to be paid. But what was to be paid? Under that new agreement there was no fixed price; and if that contention were true it would be work done upon the terms that labour was to be paid for, without anything having been said as to the terms. That would be a *quantum meruit*. But the plaintiff here went further. He said that he had an alternative cause of action, and that, supposing the contract was to stand good, he was entitled to be paid the agreed price, with damages beyond, for

such breaches of contract. The case also charged certain architects as independent defendants with fraudulent conduct in their office, and there was a clause which foolishly and without any justification charged the Guardians with fraudulent conduct also. This case was tried before the then Official Referee, Mr. Ridley, Q.C., as he then was, just as if it had gone before a judge without a jury. When the case came before him, the foolish allegation as to fraud by the Guardians was never opened, and was never relied on as part of the case against them. The plaintiffs did, however, labour to show that the architect had acted fraudulently. How? Partly when he was called on to arbitrate between the builder and the Guardians, and partly by giving orders as to the works as architect and not as arbitrator, and in that acting fraudulently; and they charged the clerk of works with having fraudulently colluded with the architect. If the parties had done nothing more it would have been the duty of Mr. Ridley not only to try the question of liability, but that if he held there was a liability to have gone on and tried the question of damages. But the parties agreed that the Referee should try the question of liability first, the damages to stand over. The question before the Court was not whether there was evidence of this or that thing, but whether it agreed with the decision to which Mr. Ridley came. Mr. Ridley held that there had been breaches of contract so extensive as to have made the condition of things under which the work was done so different that the original contract was done away with, and that it was done upon the terms that the plaintiff should be paid a *quantum meruit* sum. Assuming that the Official Referee was right, his holding that there were very considerable breaches of the contract by the defendants, there was an alteration of the work to be done. But the Court did not agree with the extreme view that Mr. Ridley took, that the work was so altered in nature that the original contract was not applicable to it. The breach did not go to that length. Therefore, he (the Master of the Rolls) could not agree with Mr. Ridley that the payment for the work done was to be on a *quantum meruit* basis in that sense. But there was the alternative case which was attempted to be proved before Mr. Ridley—that against the architect for fraud. That action failed. Mr. Ridley held that the architect was entitled to the costs of the action, brought against him individually. Neither side had appealed against that decision, and it must stand. Then Mr. Ridley found that there had been a breach of the contract by the Guardians in giving possession of No. 2 Section, and this breach entitled the plaintiffs to damages. This contract for No. 2 Section was a written one, and there was no great difficulty in construing it. It was clear to him (the Master of the Rolls) that the Guardians undertook to give up the whole site immediately, and he could see no ground for saying that they were only to give the builder the possession of such portions as he asked for. They did not give it him on May 31, 1892, and Mr. Ridley had found that the builder did complain. It was said that he did not complain to the Guardians themselves; but how was the builder to know what their names were or where they were to be found. He did complain to the clerk of the works, and as the Guardians did not then give possession they were responsible, as they had broken the contract. He (the builder) must show the date when the work accrued, and supposing that they existed, they would be such as if he had entered into contracts on the faith of this being given up to him immediately and had suffered by being obliged to pay for materials at once and not when wanted. Then if he engaged labour he had to pay the labourers and they would be on his hands. Further, materials would be seriously damaged by being kept and not used. It must be taken that there was some damage. But the plaintiffs said that they were further inconvenienced by not having open space in which to work and by interference by other contractors. This might well be one head of damage. They also said that the architect delayed them in their work in two ways; by giving wrong orders with regard to the work, and by compelling them to do work that was already been completed. But they forgot that the work was "all to be done to the satisfaction of the architect," and that however erroneously the architect might have exercised that duty, the builder could not sue the Guardians for that, as they had abandoned the charge of fraud. Then they said that the clerk of works improperly objected to work. They put it "dishonestly." He could not see any ground for a charge of dishonesty; but that the clerk of works acted obstinately and erroneously as far as it was possible for him to act, he (the Master of the Rolls) believed, and this coincided with Mr. Ridley's view. But if the clerk of works acted wrongly the builder ought to have referred that misconduct of his to the architect to act as arbitrator. If it was said, that by doing so the builder found himself in slavery he ought to have considered that when he entered into the contract. He could not recover by any default of the clerk of the works against the Guardians. Therefore, the only damages in respect of which the builder was entitled were such damages as he could prove to be the result of delay in giving possession, and for interference by other contractors. Therefore, he (the Master of the Rolls) did not agree

in the whole decision of Mr. Ridley; but as to the alternative case he thought he (Mr. Ridley) was right in finding liability on behalf of the defendants. Then, by consent of the parties, the amount of that liability had yet to be considered, but it ought to be proved by plaintiff in the way suggested. The mode they adopted in that appeal, namely, to say "The contract price was 50,000l.; the doing of the work cost 70,000l., therefore the damages must be the difference between 50,000l. and 70,000l." This was altogether wrong. As to the decision of the Divisional Court, he (the Master of the Rolls) did not desire to say anything more disrespectful of it than this: that he did not understand it. Even if he did, on what possible grounds, when a case had been decided by a judge without a jury, when he had heard all the evidence, when he came to a conclusion upon that evidence and certain findings, could he be said to have done that because they did not agree with him as they thought he was wrong, that therefore there should be a new trial, in which all the evidence would have to be gone over again? He could not think that that was the right way to deal with the case which had been decided by a judge who had duly considered, and had come to a conclusion, right or wrong, upon the evidence before him. The result was that the plaintiffs before Mr. Ridley did prove a cause of action. They proved a contract and a breach of that contract; therefore it was a simple case which had now to be tried, namely, what was the amount of damages on the question of liability. Then Mr. Ridley had decided that the defendants were to pay all costs. That Court did not interfere with the decision of such a judge as to costs unless they thought that he had determined the costs upon a wrong principle. Now, he could not help thinking that Mr. Ridley did make his order as to costs upon the broad footing that he thought that this contract was wholly done away with, and that, therefore, payment was to be on a *quantum meruit*. Inasmuch as he (the Master of the Rolls) had ventured not to agree with Mr. Ridley in that, he thought the costs must have been given on a wrong principle. The defendants must pay the general costs of the cause; they would have to pay all costs of evidence given on the question whether there was delay; they would have necessarily at the end to pay all these costs, whatever might be the amount of damage which the plaintiffs might recover, but they ought not to pay any costs in respect of the charge of fraud which the plaintiffs brought against the architects nor on any resulting claim for delay caused by such fraud. The architects claim for costs must be taxed at once, including the costs of that motion. With regard to the costs of this appeal, as between the plaintiffs and defendants, their lordships thought the decision of the court below was wrong. Sir Robert Reid had urged that the decision of Mr. Ridley was right. Therefore, as on the whole both sides half won and half lost, there ought to be no costs on either side of this appeal.

Lord Justice A. L. Smith, in concurring, said that the case of *Bush v. Whitehaven Commissioners*, on which Mr. Ridley had relied, did not apply.

Lord Justice Chitty also concurred. The Master of the Rolls added that the Court had paid no attention at all, except to wonder at it, to the objection that was made that Mr. Ridley would not properly try this case if it went before him again.

In reply to Mr. Bosanquet his Lordship added that the costs of the Divisional Court belonged to Sir Robert Reid. Mr. Bosanquet's client had pressed the judges to give a decision which was absolutely wrong. There was a horribly bad lord.

Mr. Bosanquet: I could not help that, my lord.

The Master of the Rolls: Oh yes, you could; you did it, I am sure you did.

Mr. Bosanquet: I was not there myself, but I will take the responsibility.

The Master of the Rolls said the respondents must pay the costs in the Court below.

The appeal was accordingly allowed, with the costs as stated.

MEETINGS.

FRIDAY, MAY 21.

The Architectural Association.—Mr. S. S. Hellyer on "Flaming and Sanitary Works," with Demonstrations, 7.30 p.m.

Royal Institution.—The Right Hon. Lord Kelvin on "Contract Electricity of Metals." 9 p.m.

SATURDAY, MAY 22.

Edinburgh Architectural Association.—Visits: (1) to The Bins; (2) to Midhope.

Northern Architectural Association.—Visit to Castle Eden.

MONDAY, MAY 24.

Society of Arts (Cantor Lectures).—Mr. Lewis F. Day on "Design in Lettering." IV. 8 p.m.

TUESDAY, MAY 25.

Institution of Civil Engineers.—Engineering Conference, to be opened by Mr. J. Wolfe Barry, President. 10.30 a.m.

WEDNESDAY, MAY 26.

Institution of Civil Engineers.—Engineering Conference (continued).

Carpenters' Company Lectures (Carpenters' Hall, London Wall).—Professor T. Roger Smith on "The

aming and Construction of Partitions and Floors, and ...

THURSDAY, MAY 27. Institution of Civil Engineers.—Engineering Conference ...

FRIDAY, MAY 28. Royal Institution.—Professor H. Moissan on "The ...

SATURDAY, MAY 29. Lewisham Antiquarian Society and St. Paul's Ecclesiastical ...

RECENT PATENTS. ABSTRACTS OF SPECIFICATIONS.

8,265.—APPARATUS FOR FLUSHING CLOSETS, &c. ...

9,427.—WINDOW FASTENER: R. Ellis.—By the adoption ...

15,944.—DOOR HINGES AND APPLIANCES: L. C. Corvise ...

15,945.—CLEANING PAINT AND VARNISH BRUSHES: R. ...

15,946.—SASH WINDOW FASTENERS: E. Evans.—Invention ...

15,947.—FIREPROOF ARTIFICIAL STONE: A. H. van ...

15,948.—GRAINING TOOL: W. Turner.—In order to obtain ...

15,949.—WINDOW GLASS: F. W. Horn.—Invention ...

15,950.—DOOR HINGES: F. W. Golby (a communication) ...

15,951.—PAVING BLOCKS, TILES, &c.: W. S. Whinfield ...

15,952.—SUPPORTING TRUSS SHEET METAL AS A SUBSTITUTE ...

15,953.—SUPPORTING TRUSS SHEET METAL AS A SUBSTITUTE ...

15,954.—SUPPORTING TRUSS SHEET METAL AS A SUBSTITUTE ...

15,955.—SUPPORTING TRUSS SHEET METAL AS A SUBSTITUTE ...

PROVISIONAL SPECIFICATIONS ACCEPTED.

7,692, W. Whitehead, Checking Workmen's Time.—8,002, J. ...

COMPLETE SPECIFICATIONS ACCEPTED.

11,119, J. Jones, Pavement for Bricks, Tiles, &c.—14,156, T. ...

SOME RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

April 30.—By BALD, NORRIS, & HADLEY. Holloway.—70, Regent-st., ut. 67½ yrs., g.r. 6d. 6s., r. 3d.

Holloway.—12, Hoopstreet, f. cr. 30½. 200 Finsbury Pk.—20 and 23, Yonge Pk., ut. 54 yrs., g.r. 15d. 6s.

By FULER, MOON, & FULLER. Micham.—Spencer-rd., 3 plot of market garden land, 1 a. f. 1,000

By G. F. FRANCIS. Chelsea.—47, Cavendish-st., ut. 39½ yrs., g.r. 4d., r. 3d.

By HAZEL & BRADLEY. Woolwich.—Mulgrave-pl., f.g.r. 8d., reversion in 1 yr.

By ROBERT REID. Oxford-st.—21, Berkeley-st. and 13, Wadsworth-mews, ut. 80½.

By THOMAS WRIGHT. Westminster.—47, Willow-st., ut. 46 yrs., g.r. 5d. 5s., r. 3d.

By G. DALTON & SONS (at Liverpool). Parkgate, Cheshire.—Esplanade, "the Union Hotel" and 2 a. r. 20 p. f. 1,510

By H. C. NEWSON. Wandsworth-rd.—Shirley Grove, f.g.r. 119½, 145. 6d., reversion in 68½ yrs. £3,290

By ROGERS, CHAPMAN, & THOMAS. Kensington.—18 and 20, Redcliffe-st., ut. 69 yrs., g.r. 2½, r. 12½.

By WALTER SIMMONDS. Lambeth.—50 and 52, Hercules-rd., ut. 14½ yrs., g.r. 14½, r. 5.

By BUNCH & DUKER. Camberwell.—Weshtalld, &c., f.g.r. 52½, reversion in 48 yrs. 1,470

By BELTON & SONS (at Mason's Hall Tavern). Edgware-rd.—"The King's Arms" p-h., ut. 67 yrs., r. 35d., with goodwill.

By BAXTER, FAYNE, & LEWIS. Bromley, Kent.—Homesdale-rd., "Fair Oaks," and half-acre, ut. 80d.

By EASTMAN BROS. Harnbury-19, Westbourne-rd., ut. 62 yrs., g.r. 10½, r. 65.

By EASTMAN BROS. St. Leonard's-on-Sea.—3, Anglesea-ter., ut. 76½ yrs., g.r. 10½, r. 90.

By C. HALSTON & CO. Paddington.—61, 63, and 65, Herries-st., ut. 79 yrs., g.r. 15d.

By F. JOLLY & CO. Clapton.—11, Goulton-rd., f. r. 55½. Stoke Newington.—14, Fountain-ter., ut. 79½ yrs., g.r. 10½, r. 65.

By MOSS & JAMESON. Clapham.—5, Larkhall Rise, ut. 65 yrs., g.r. 3d. 40.

By T. G. WHANTON. Regent-st.—Mill-st. ("The Grapes" p-h.), f.g.r. 125½, reversion in 70 yrs. 3,510

CONTRACTS AND PUBLIC APPOINTMENTS.

CONTRACTS.

CONTRACTS—Continued.

Table with 5 columns: Nature of Work or Materials, By whom Required, Forms of Tender, & Supply, Tenders to be delivered, Nature of Work or Materials, By whom Required, Forms of Tender, & Supply, Tenders to be delivered.

PUBLIC APPOINTMENTS.

Table with 4 columns: Nature of Appointment, By whom Advertised, Salary, Applications to be made.

Those marked with an asterisk (*) are advertised in this Number. Contracts, pp. iv. vi. viii. ix. & xxi. Public Appointments, pp. xviii. & xxi.

Tottenham.—Brook-st., a block of building land, 3 1/2 a. By E. W. MARGRETT'S. Wildesden.—17 to 25 (odd), Cornwall-gdns., ut. 94 1/2 yrs. g.r. 306, r. 138 1/2. By W. MARGRETT'S. Dulwich.—153 and 175, East Dulwich-grove, ut. 67 yrs. g.r. 216, r. 95 1/2. By NEWBORN, EDWARDS, & SHEPHERD. Holloway.—Holloway-rd., f.g.r. 484, reversion in 20 yrs. By NEWBORN, EDWARDS, & SHEPHERD. 9 Wray-cres., ut. 67 1/2 yrs. g.r. 104, r. 436 1/2. Berkeley-rd., f.g.r. 64, reversion in 60 yrs. St. John's Wood.—50, 52, and 54, Abbey-gardens, ut. 42 yrs. g.r. 306, r. 130 1/2. Tottenham Court-rd.—56 and 58, Grafon-st., f. r. 142. By STIMSON & SONS. Whitechapel.—39 to 37 (odd), Church-lane, f. r. 208 1/2. By A. SQUIBBE. Commercial-rd. East.—Sander-st., f.g.r. 474, ut. 28 1/2 yrs. g.r. 250. Southwark.—27 and 28, Dolphin-st., f. r. 65 1/2. 29 to 30, 32 to 40, Camelot-st., f. r. 100. Brixton.—32, 34, and 41, Lorn-rd., ut. 29 yrs. g.r. 246, r. 102 1/2. 45, 15, and 17, Bishop's-rd., ut. 64 yrs. g.r. 124. New Cross.—83 and 85, New Cross-rd., ut. 27 yrs. g.r. 112, r. 60 1/2. Herne Bay, Kent.—50 and 60, Avenue-rd., ut. 23 yrs. g.r. 164, r. 60 1/2. Ongar, Essex.—Highest, a freehold house and shop, area 2,700 ft. Bethnal Green.—Three Colts-lane, a corner building plot, f. By A. SQUIBBE. Camden Town.—51 and 53, Tortonia-av., ut. 47 yrs. g.r. 236, r. 86 1/2. 169 and 171, Gt. College-st., ut. 41 1/2 yrs. g.r. 124, r. 90 1/2. By H. J. BISS & SONS. Hackney.—6, Streton-villas, ut. 51 yrs. g.r. 66, r. 108, r. 404. Bethnal Green.—23, 25, and 27, Digby-st., and 10, 12, and 14, Digby-wall, f. r. 97 1/2. Dalston.—1 and 2, Ipswich-rd., ut. 46 yrs. g.r. 74. 75 and 77, Pownall-rd., ut. 46 yrs. g.r. 84, r. 83 1/2. 45 and 47, Marlborough-rd., ut. 46 yrs. g.r. 74, r. 108, r. 128. 75, 77, and 79, Marlborough-rd., ut. 48 yrs. g.r. 106, r. 108, r. 106 1/2. Victoria Park.—43, Approach-rd., ut. 57 yrs. g.r. 54, r. 402.

Hackney.—Well-st., "The Gun" h-h., ut. 20 yrs. g.r. 124, r. 108, r. 404. Stoke Newington.—94, Farleigh-rd., ut. 67 yrs. g.r. 74, r. 404. Leyton.—Westerham-rd., a plot of freehold land, f. By DOUGLAS YOUNG & Co. (of Sutton). Sutton, Surrey.—Lodge-rd., thirty-one plots of building land, f. Contracts used in these lists.—F.g.r. for freehold ground-rent; l. g.r. for leasehold; h.g.r. for improved ground-rent; g.r. for ground-rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; ut. for unexpired term; p.a. for per annum; y. for years; s. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

PRICES CURRENT OF MATERIALS. TIMBER. Teak, E. I., low 16/0 0/0 to 18/0 0/0. Siam, U.S. spec. 1/8 1/0 0/0. Ash, Canada lead 5/0 0/0. Birch, do. 4/5 0/0. Elm, do. 4/0 0/0. Fir, Danube, Ac. 4/5 0/0. Oak, do. 4/10 0/0. Canada 5/0 0/0. Pine, Canada red 0/0 0/0. Do, Yellow 1/10 0/0. Lab. Danube, fath 4/0 0/0. St. Petersburg 5/0 0/0. Walnut, Riga 4/0 0/0. Oak, log 2/0 0/0. Odessa, Crown 2/0 0/0. Do, Alb. 4/0 0/0. Do, Alb. 3rd 10/0 0/0. Do, Alb. 4th 10/0 0/0. Do, Alb. 5th 10/0 0/0. Do, Alb. 6th 10/0 0/0. Do, Alb. 7th 10/0 0/0. Do, Alb. 8th 10/0 0/0. Do, Alb. 9th 10/0 0/0. Do, Alb. 10th 10/0 0/0. Do, Alb. 11th 10/0 0/0. Do, Alb. 12th 10/0 0/0. Do, Alb. 13th 10/0 0/0. Do, Alb. 14th 10/0 0/0. Do, Alb. 15th 10/0 0/0. Do, Alb. 16th 10/0 0/0. Do, Alb. 17th 10/0 0/0. Do, Alb. 18th 10/0 0/0. Do, Alb. 19th 10/0 0/0. Do, Alb. 20th 10/0 0/0. Do, Alb. 21st 10/0 0/0. Do, Alb. 22nd 10/0 0/0. Do, Alb. 23rd 10/0 0/0. Do, Alb. 24th 10/0 0/0. Do, Alb. 25th 10/0 0/0. Do, Alb. 26th 10/0 0/0. Do, Alb. 27th 10/0 0/0. Do, Alb. 28th 10/0 0/0. Do, Alb. 29th 10/0 0/0. Do, Alb. 30th 10/0 0/0. Do, Alb. 31st 10/0 0/0. Do, Alb. 32nd 10/0 0/0. Do, Alb. 33rd 10/0 0/0. Do, Alb. 34th 10/0 0/0. Do, Alb. 35th 10/0 0/0. Do, Alb. 36th 10/0 0/0. Do, Alb. 37th 10/0 0/0. Do, Alb. 38th 10/0 0/0. Do, Alb. 39th 10/0 0/0. Do, Alb. 40th 10/0 0/0. Do, Alb. 41st 10/0 0/0. Do, Alb. 42nd 10/0 0/0. Do, Alb. 43rd 10/0 0/0. Do, Alb. 44th 10/0 0/0. Do, Alb. 45th 10/0 0/0. Do, Alb. 46th 10/0 0/0. Do, Alb. 47th 10/0 0/0. Do, Alb. 48th 10/0 0/0. Do, Alb. 49th 10/0 0/0. Do, Alb. 50th 10/0 0/0. Do, Alb. 51st 10/0 0/0. Do, Alb. 52nd 10/0 0/0. Do, Alb. 53rd 10/0 0/0. Do, Alb. 54th 10/0 0/0. Do, Alb. 55th 10/0 0/0. Do, Alb. 56th 10/0 0/0. Do, Alb. 57th 10/0 0/0. Do, Alb. 58th 10/0 0/0. Do, Alb. 59th 10/0 0/0. Do, Alb. 60th 10/0 0/0. Do, Alb. 61st 10/0 0/0. Do, Alb. 62nd 10/0 0/0. Do, Alb. 63rd 10/0 0/0. Do, Alb. 64th 10/0 0/0. Do, Alb. 65th 10/0 0/0. Do, Alb. 66th 10/0 0/0. Do, Alb. 67th 10/0 0/0. Do, Alb. 68th 10/0 0/0. Do, Alb. 69th 10/0 0/0. Do, Alb. 70th 10/0 0/0. Do, Alb. 71st 10/0 0/0. Do, Alb. 72nd 10/0 0/0. Do, Alb. 73rd 10/0 0/0. Do, Alb. 74th 10/0 0/0. Do, Alb. 75th 10/0 0/0. Do, Alb. 76th 10/0 0/0. Do, Alb. 77th 10/0 0/0. Do, Alb. 78th 10/0 0/0. Do, Alb. 79th 10/0 0/0. Do, Alb. 80th 10/0 0/0. Do, Alb. 81st 10/0 0/0. Do, Alb. 82nd 10/0 0/0. Do, Alb. 83rd 10/0 0/0. Do, Alb. 84th 10/0 0/0. Do, Alb. 85th 10/0 0/0. Do, Alb. 86th 10/0 0/0. Do, Alb. 87th 10/0 0/0. Do, Alb. 88th 10/0 0/0. Do, Alb. 89th 10/0 0/0. Do, Alb. 90th 10/0 0/0. Do, Alb. 91st 10/0 0/0. Do, Alb. 92nd 10/0 0/0. Do, Alb. 93rd 10/0 0/0. Do, Alb. 94th 10/0 0/0. Do, Alb. 95th 10/0 0/0. Do, Alb. 96th 10/0 0/0. Do, Alb. 97th 10/0 0/0. Do, Alb. 98th 10/0 0/0. Do, Alb. 99th 10/0 0/0. Do, Alb. 100th 10/0 0/0.

TENDERS. [Communications for insertion under this heading should be addressed to "The Editor," and must reach us not later than 10 a.m. on the day of the sale. We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £500, unless in some exceptional cases and for special reasons.] ABERDEEN.—For the construction of pipe-sewers, &c., Walker Road and several other roads for the Town Council. Mr. Wm. Dyack, Burgh Surveyor, Town House, Aberdeen. R. McKay, Abergeldie-rd. £34 15 9. R. McKay, Aberdeen 43 15 6. J. M'Adam & Sons, Charlotte-street 536 1 1. ADEENSHAW.—For severing, kerling, flagging and paving Whitehead-street, Church-street, and West-street, for the auctioneers Messrs. J. H. Burton, surveyor, 2, Guide-line Hooley-hill. 1 Cooper 10/12 5 0 [Warrington & Pow. H. Kinder 10/12 1 2] 111, Manchester-st. £28 9 9. R. Fish 10/12 1 10 [Accepted. [Surveyor's estimate, £59. 13s. 1d.] BANSTEAD.—For erecting new school room and alterations to girls school at the Junction Schools, Surrey, for the managers of the Kensington and Chelsea School District. Mr. Cecil A. Sharp, architect, 5, Finch-st., E.C. 4, London. 1. The Commercial Union Newcastle-Lyne, Quantities by Mr. S. B. Heath, 3, Princess-street, Westminster. General Butlers, Ltd. £2,300 0 F. Smith & Son £2,075 0 Stevens & Sons £2,350 0 S. Hart £2,400 0 Balchin & Simpson £1,997 0 J. J. Hemmings £2,443 0 W. Campbell & Son £2,300 0 Campbell & Sowerby £2,301 0 Fitzpatrick Bros. £2,400 0 [Accepted. BELFAST.—For the erection of the West Belfast Orange Hall and caretaker's residence, Shankill-road, for the Committee. Mr. Wm. Cavanagh, architect, 6, Church-street, Belfast. 1. J. Kidd £2,500 0 M. Stewart £2,450 0 J. K. Price £2,500 0 J. J. Hemmings £2,443 0 W. Campbell & Son £2,300 0 Campbell & Sowerby £2,301 0 Fitzpatrick Bros. £2,400 0 [Accepted. BELPER.—For the erection of an isolation hospital, Crick-lane, for the Corporation. Mr. M. Hunter, architect, Bridge-street, Belper. Quantities by Mr. John Watson, Cogen Chamber, Hull. 1. H. Robinson £2,750 0 H. Robinson £2,666 5 6 Atkinley £2,738 7 0 W. Moss & Sons £2,680 0 Baker & Co. £2,680 0 E. H. Jordan £2,680 0 Walker & Slater £2,680 0 W. Shaw £2,550 0 J. F. Price £2,680 0 [Withdrawn. [Accepted. [Excluding heating. [Excluding heating. BILSTON (Staffs).—Accepted for the erection of four houses, Willenhall-road, for Mr. W. Bishop. Mr. J. Mason, architect, 86, Baring-street, Wolverhampton. 1. Messrs. J. G. Guest, Wolverhampton £1,395 10

CAPLAND-STREET.—Painting exterior:—
 H. T. Foley £179 0 0 | T. Chumchen £179 0 0
 W. Horrett 107 0 0 | W. Banks 273 0 0
 T. Cruwys 192 0 0 | Marchant & Hirst 158 10 0
 H. C. Chilton 189 0 0 | W. Chappell 145 10 0

CHICKSAND-STREET (Whitechapel).—For additional heating apparatus:—
 G. Davis £235 0 0 | Duffield & Co. £176 0 0
 W. Summers 186 0 0 | J. Wootton-Smith, Gray & Co.* 170 0 0
 Venham & Waters 185 0 0
 Vaughan & Brown, Ltd. 178 0 0

COOK'S-GROUND (Chelsea).—For improving heating apparatus:—
 W. G. Cannon & Sons £188 0 0 | J. & F. May £165 0 0
 Conroy, Ching & Co. 178 15 0 | J. Wootton-Smith, Gray, & Co. 163 0 0
 Vaughan & Brown, Ltd. 176 0 0 | G. Davis* 135 0 0
 J. C. & J. S. Ellis, Ltd. 175 0 0

EDGEcombe ROAD (Hired site, Camberwellgrove).—For erection of two iron buildings:—
 Humphreys Limited, £238 0 0 | W. Harbrow £740 0 0
 Craggon & Co. Ltd. 527 10 0 | J. Miron 734 19 8
 T. Cruwys 779 0 0 | T. J. Hawkins* 590 0 0

ENLARGEMENT of Hackney Pupil Teachers' Centre—for heating apparatus:—
 G. Davis £139 0 0 | W. G. Cannon & Sons £70 0 0
 J. C. & J. S. Ellis 85 0 0 | F. Clarke & Sons 64 0 0
 J. & F. May 79 10 0 | Vaughan & Brown 50 10 0
 Price, Lea, & Co. 75 0 0 | J. Wootton-Smith, Gray, & Co. 49 0 0

HORSEFERRY ROAD.—Providing water-closets for girls' and infants' departments, and water-closet for the school-keeper; facing up flank walls of public-house and school-keeper's house, and building new buttresses; forming new entrance and iron staircase to the boys' department; providing partition between boys' and girls' covered playground under school, &c.; and enclosing, urinating, and tar paving the additional land, &c.:—
 T. Nicholson £452 0 0 | E. Triggs £138 0 0
 C. G. Wade 1,508 0 0 | Lathey Bros. 1,368 0 0
 W. & H. Castle 1,599 0 0 | F. G. Minter* 1,187 0 0

KNAPP ROAD (Bromley).—For providing three halls for all departments, and for other work at the school in Knapp-road, Bromley:—

C. Mickin & Sons	£9 88s 0 0	£116 0 0
J. Shillito & Son	9 80 0 0	110 0 0
J. Longley & Co.	9 55 0 0	110 0 0
G. E. Wallis & Sons	9 48 0 0	110 0 0
Lathey Bros.	9 32 0 0	110 0 0
E. Lawrence & Son	9 27 0 0	105 0 0
Kilby & Gayfield	9 25 0 0	110 0 0
G. S. S. Williams & Son	8 99 0 0	65 0 0
R. A. Verbury & Sons	8 54 0 0	107 0 0
B. E. Nightingale	8 54 0 0	106 0 0
W. Shumart	8 32 0 0	125 0 0
Stimpson & Co.	8 27 0 0	100 0 0
G. Munday & Sons	8 16 18 3	124 15 8
Treasure & Son	8 20 0 0	95 0 0
C. Cox*	8 49 0 0	94 0 0

LYNDHURST GROVE.—Exterior painting:—
 T. Hooper £242 0 0 | H. Wadset £142 0 0
 H. Lins 222 0 0 | Johnson & Co. 133 0 0
 J. F. Ford 144 0 0 | E. Somerfield 124 0 0
 W. V. Goad 142 0 0 | J. Garrett & Son 123 0 0
 E. Triggs 145 0 0 | Rice & Son 119 0 0

MARSH-LANE.—Painting exterior:—
 W. Horrett £153 10 0 | W. Banks £118 14 6
 C. Foreman 141 0 0 | W. Holding & Son 98 10 0
 G. Barker 130 0 0 | Jones & Groves 64 10 0

MONSON ROAD.—Exterior painting:—
 A. Black & Son £419 0 0 | J. & A. Oldman £166 0 0
 S. E. Musgrave 245 13 0 | W. Banks 164 10 0
 G. Barker 190 0 0 | Holliday & Greenwood 161 0 6
 H. J. Williams 152 10 0 | Jones & Groves 121 0 0

NETLEY-STREET SITE (Hampstead).—For making good cracks in work of adjoining property:—
 Lathey Bros. £174 | E. T. Foley £157 0 0

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NYNEHEAD-STREET.—Painting exterior:—
 J. & A. Oldman £130 0 0 | W. Holding & Son £72 10 0
 S. E. Musgrave 128 13 6 | Jones & Groves £27 6 0
 A. Acworth 98 0 0

OBAN-STREET.—Exterior painting:—
 T. H. Mackson £595 0 0 | S. H. Confield £269 0 0
 D. Gibb & Co 238 0 0 | A. W. Derby 205 0 0
 J. T. Robey 219 0 0 | C. W. Walest 215 0 0
 J. Kybett 271 0 0 | J. T. Holliday 225 10 0

SYDENHAM HILL ROAD.—For additional heating apparatus:—
 J. C. & J. S. Ellis, Ltd. £75 0 0 | Conroy, Ching, & Co. £57 12 0
 F. Clarke & Sons 68 0 0 | J. Fraser 62 0 0

ST. CLEMENTS ROAD.—Painting exterior:—
 S. H. Sealey £295 0 0 | W. Brown £94 0 0
 R. E. Williams & Sons 149 10 0 | E. Flood 69 0 0
 G. Neal 125 0 0 | F. T. Chumchen 80 0 0
 C. Gurling 119 0 0 | W. Chappell 77 10 0
 E. T. Foley 97 0 0 | W. R. & A. Hildet 71 15 0

TOTTENHAM ROAD PT. CENTRE (Balasameet).—Extending low-pressure hot-water apparatus to laboratory and drawing class-room (third floor), and providing and fixing stone in class-room (second floor):—
 C. Davis £112 13 6 | Clarke & Sons £64 0 0
 J. C. & J. S. Ellis 85 0 0 | Vaughan & Brown 53 10 0
 J. & F. May 79 10 0 | J. Wootton-Smith, Gray, & Co. 49 0 0
 Cannon & Sons 70 0 0

WIRTEMBERG-STREET.—Exterior painting:—
 R. E. Williams & Sons, £138 10 0 | E. Triggs £59 15 0
 Star & Son 89 19 6 | Rice & Son 38 0 0
 H. Brown 78 0 0 | J. Garrett & Son 37 0 0
 E. B. Tucker 71 19 0

* Recommended for acceptance.
 † Accepted.

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The Builder.

Vol. LXXII. No. 2834.

MAY 27, 1897.

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Shipton Hall.—Mr. H. E. Farmer, Architect	Double-Page Ink-Photo.
"Vectis Lodge," Edgbaston.—Messrs. Bateman & Bateman, Architects	Double-Page Ink-Photo.
Cottages, Heathwaite.—Messrs. Mawson & Gibson, Architects	Single-Page Ink-Photo.
House, Walton-on-Thames.—Mr. John Watson, Architect	Single-Page Ink-Photo.
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Fireproof Buildings.



THE importance of having reliable information upon the fire-resisting capacities of various forms of construction is becoming more and more apparent. The term "fire-proof" denotes

class of construction in which no structural member is combustible; but at the same time the fact is fully appreciated that fire may cause complete wreck without actual combustion of the structure. When we consider for a moment that during last year there were on the average three serious fires every week in London alone, causing the sacrifice of many lives, it is a subject for astonishment that so little has been done in this country to gain any useful knowledge as to the kind of construction best calculated to offer the greatest resistance to destruction from this cause.

Both in America and on the Continent much attention has been given to the subject, but the efforts of those interested have been mostly directed to carrying out experiments, generally on a rather small scale. Naturally a good deal of useful information has been gained in this way, but it would be much more serviceable to examine the effects of the actual conflagrations that occur so frequently than to first cause a fire—which necessarily must be of limited dimensions—and then note its effect upon small specimens of girders and columns brought intentionally into contact with it.

It is to be regretted that when an extensive fire occurs the lessons it is capable of teaching us are practically ignored, and that while every effort is made to extinguish it, no attempt is undertaken to discover how the various parts of the building behaved during the conflagration. We are much in need of reliable information, presented in a scientific manner, as to the relative advantages of using cast iron, wrought iron, or steel for girders and columns, obtained from actual experiences. In addition to this the behaviour of the various forms of concrete floors, when subjected to fire, should be examined and recorded, as well as the value of protective materials, and many other matters of minor interest. The

whole of this information is offered to us at nearly every large fire that occurs, and it is remarkable—considering the vast interests at stake—that no earnest attempt is made to profit by these occasions to gain some definite idea as to the best system of fire-proof construction to adopt.

Any investigation of this nature would, of course, have to be undertaken with the permission of, and in conjunction with, the Metropolitan Fire Brigade, who no doubt would allow some authorised person, thoroughly acquainted with his duties, to examine the various parts of the so-called "fire-proof" buildings, after a fire, or as far as possible during its occurrence.

In this way architects and engineers would be furnished with a report upon the fire-resisting properties of various forms of construction, and would be in possession of reliable information, obtained from actual experience.

An attempt is now being made in America, as we see from Mr. S. A. Reed's very interesting communication to the "Journal of the Franklin Institute" last November, to obtain data concerning the fire-resisting properties of buildings composed of steel or iron columns and girders. A co-operative committee of three was formed a year ago, representing officially the principal associations of fire insurance underwriters, the Architectural League, and the American Society of Mechanical Engineers. This Committee has done little more so far than to construct its plant, and to make a beginning of its tests, but it will ultimately, we think, furnish us with some very valuable information.

The Committee proposes to investigate and examine in order of importance how fire affects:—

- 1st. The skeleton of a building;
- 2nd. The floor and roof arches;
- 3rd. Walls and partitions regarded as fire stops.

It will also pay much attention to the effect of protective material or armour for steel or ironwork.

The varieties of fireproof construction have reference mainly to the various devices for floor arches spanning the space between the steel beams, and these are largely the subject of patent rights. A number of fire and water tests have already been made, and are still being made on floor-arches by those persons interested in them;

but the investigation of the protection of the skeleton of a building has not called forth the activity of patentees, and the heavy expense necessary has prevented others interested in the subject from going very thoroughly into the matter. The Committee above referred to have, however, decided to pay particular attention to the stability of the steel framework of a burning building, and have decided to make their tests on a full working scale and under the actual conditions, as far as possible, which would obtain in a fire. They propose to use gas as fuel, and to work at three typical temperatures, these to represent three typical classes of ordeal that buildings are likely to be called upon to sustain according to their location and occupancy, and to test each to destruction if possible.

From the data that will be obtained the Committee hope to be able to state the requirements for a standard building, for the particular set of conditions, internal and external, which the building has to meet; and to be a standard, it must, of course, contemplate all fire possibilities, even the most remote, pertaining to these conditions.





The testing plant was only completed in the early part of last year, but since that time several tests on unprotected columns have been made, the result of which we give in the table on the following page.

Even from the above few tests, it is evident that iron or steel must be covered by a sufficient thickness of some non-combustible material of slow heat-conducting quality, and having mechanical properties which are not seriously altered by high temperatures, if the buildings of which they form a part are to be preserved from destruction by fire.

This armour must be mechanically attached, so that neither heat, water, or falling objects can seriously impair it.

It is interesting to note that tests on cast-iron columns show that the popular idea that such columns shatter like glass when rapidly cooled by water is erroneous, and that apparently there is no particular choice between unprotected cast-iron and steel columns as to their fire value. Both yield by bending at a red heat about in the same manner, and eventually double up, although the cast-iron columns appear to continue to resist—that is, to retain their sustaining power throughout the period of bending; whereas the steel columns cease almost entirely to resist, and

STRENGTH OF COLUMNS SUBJECTED TO HIGH TEMPERATURES.

Section.		Height of Col.	Breaking Load, Tons.	Working Load, Tons.	
	Steel. 42 bars, 4 in. by $\frac{3}{8}$ in. by $\frac{1}{16}$ in. } = 1435 □ 1 plate 6½ in. by $\frac{3}{8}$ in.	14 ft.	342	80	With a test load of 48 tons and a temperature of 1,200 deg. F., the column bent after 85 minutes.
	Steel. 2 c bars, 10 in. by 15½ lbs. } = 150 □ 2 plates 12 in. by ½ in.	14 ft.	303	85	
	Cast Iron. 8 in. diameter 1 in thick = 22 □	13 ft.	—	90	With a test load of 85 tons and a temperature of 1,100 deg. F., the column bent after 70 min. (no water applied). With a test load of 85 tons and a temperature of 1,550 deg. F., the column bent after 35 min. (no water applied).
	Do.	Do.	Do.	Do.	

lose practically all their sustaining power as soon as buckling begins.

Within the last two or three years some valuable experiments have been made in Vienna, under the supervision of the City Surveyor, with the object of testing the efficiency of protection of ironwork against fire, and incidentally to determine the relative fire-resisting properties of various building materials.

A brick chamber, 12 ft. by 8 ft. and 11 ft. 6 in. high, was constructed, the walls being lined with various building stones and other materials. In the centre of this chamber was erected an iron column, consisting of two channel bars, 5½ in. by 2½ in., placed back to back, with a clear space between them of 2½ in., and cross-braced with small lattice bars. Test bars, composed of different alloys, melting at various points between 150° F. and 165° F., were placed in the space between the channels, and the column was subsequently inclosed in brickwork in mortar, unpainted, forming a pier 18½ in. square, the brick casing having a thickness of 6 in.

The building was covered with a fireproof roof, formed of tiles on wrought-iron joists, and concrete. The column was loaded to the extent of 14.4 tons, which was equivalent to 3½ tons per square inch.

The fuel was piled equally all over the floor to a depth of about 3 ft., and the firing was maintained at its full intensity for two hours and a half, and then kept on one side of the building, with the object of testing the effect of unequal heating. The fire brigade then commenced playing upon the roof and inside walls and column; but the heat to be subdued was so intense that the interior of the chamber could not be examined until the following day.

It was then found that the corners of the brick pier were crumbled to the extent of 1¼ in. to 1½ in., and several roof tiles were split. The brickwork was wet throughout. Generally speaking, the walls remained vertical, and the iron column was quite uninjured. The test-bar fusing at the lowest temperature of the series (150° F.) was the only one in which there was any appearance of partial melting, so that it was evident that the brick casing was amply sufficient for the protection of the column. The brickwork surface stood very well, but most of the stones were honeycombed or granulated, and the plaster-surface afforded no resistance sufficient to be taken into consideration.

An interesting example of a large fire, from

which considerable information respecting the stability of iron columns and girders subjected to intense heat was obtained, occurred a few years ago in Berlin. A large warehouse, recently erected and substantially constructed in stone and iron in the manner generally considered as "fire-proof," was destroyed in a very short time, in spite of every effort to save it. The opportunity was taken in this case to institute a complete and systematic official examination into the conditions under which the collapse and destruction of the building occurred, and the practical lesson to be learnt from the event.

The building, which was six stories in height, was a rectangular block 141 ft. long by 95 ft. wide, with a central courtyard. A substantial cross wall with iron doors separated the structure into two distinct parts. The floor girders, about 14 in. deep, were placed 8 ft. apart, and the ceilings were vaulted between them in the usual manner. The main girders were 18 in. deep, with a span of 17 ft., and rested on brackets on the cast-iron columns, being bolted end to end. The cast-iron columns bolted together through the several floors ranged in size from 9 in. diameter and 1½ in. in thickness on the ground floor, to 4½ in. diameter and ¾ in. thickness on the top floor.


The fire was caused by some workmen upsetting a lamp on the third floor, and by the time the firemen arrived the flames had full hold of the building. The chief cause of the destruction of the building was the failure of the columns, and the consequent collapse of the floors, and although the flooring material itself was but little injured, the columns were nearly all more or less distorted. Of ninety-nine columns, twenty-two escaped injury, thirty-nine were injured, but remained standing; and thirty-eight disappeared from their places and were traced among the debris.

The result of the official examination was that the Committee recommended especially that the loads on all columns should be central as far as possible, and that lugs and brackets should be dispensed with wherever they can be avoided; that the ends of all girders should have sufficient free play for elongation and contraction; and that the connexions of girders over the columns should be strong enough (in case of necessity) to hold the flooring together, even if one column collapsed.

The above example furnishes an instance of an official investigation taking place after

a large conflagration, and we think it must be admitted that until we adopt some such system ourselves, we shall make but little progress in the construction of really fire-proof buildings.

PATENTS: NOVELTY AND THE FIRST INVENTOR.

HE interest in the question of patents becomes keener year by year. It is seldom that we are without some work on this subject before us. On the present occasion it is the full and complete book which was published by Mr. Lewis Edmunds in 1890, and of which a second edition is now issued.* There are many persons who prefer smaller books than this, but for a complete work the present cannot be considered unduly voluminous. It would not—for a standard work—be possible to be more concise, and the authors of this edition deserve credit for not increasing the size of the volume over that which was published seven years ago. For it is obvious that the field of patents grows annually wider, and even in a work which deals with general principles it is necessary to illustrate rules by copious examples.

The publication of this very complete book affords an opportunity for stating some of the results of legal decisions to the present date, which in the aggregate have formulated the principles by which the novelty of an invention is to be tested, and by which it may be discovered who is the first inventor. These are, of course, only two portions of the subject of patents, but they are of the first importance, and the fact that a large and well-defined body of law has now been created in these and other points of principle leads us to hope that occasion will soon be found for codifying the law of patents. Such a code would be of immense practical value, for in truth every inventor ought to know the general principles of patent law in the country where he contemplates the taking out of a patent. Such a code would also lead to a greater similitude of the law in different countries: on no subject is it more desirable that there should be international agreement.

It is the novelty of an invention which entitles the person who introduces it to the public to protection by means of a patent for a certain number of years. If the so-called invention is not new, the reason for its protection has gone. The public gets nothing in return for the monopoly which it grants to an individual. Want of novelty in an invention, if a thing which is known before may be called an invention, may arise from two distinct sets of facts. A so-called invention may be to all intents and purposes the same as one already known, or it may be that the state of general knowledge is such that persons conversant with the subject to which the so-called invention relates, would be able to make what is alleged to be an invention. It is impossible to state in detail the various ways in which a so-called invention may be similar to one which has gone before; the variety and number of modern machines is alone sufficient to show how each case must be considered on its own merits. But two divisions in principle may be formulated.

* The Law and Practice of Letters Patent for Inventions. By Lewis Edmunds, D.Sc., Q.C. Second edition by T. M. Stevens, Barrister. London: Stevens & Sons, 1897.

the invention may have been anticipated in fact; that is to say, the thing may have actually been manufactured. Or, again, it may be on paper; in other words, the idea may have been described, but it may not have been made into a working thing. But here we must be in mind an important qualification. For a prior description will not avoid a subsequent patent unless it be sufficiently clear to enable those conversant with the subject to produce the thing invented without any experiment or further assistance than can be got from the paper itself." Again, to elucidate the qualification itself "the description must be so clear that an intelligent workman reading it will deduce the invention and the way to make it." The late Mr. Justice Grove, in addition to being an eminent lawyer, was a distinguished man of science, has left what may be called a definition of the "intelligent workman." It may be usefully produced: In a case once tried before him, the late Judge used these words, "Persons versed in the trade, skilful, and well acquainted with the trade (I might even say it, perhaps, to those in the trade who are most skilled); the higher class of skilled workmen." It will be seen from these two statements of principle upon what a comparatively clear basis the actual law on this point rests, and how easily it might be simplified. The real difficulty arises when the principles have to be applied to troublesome facts.

We must now turn to the second main division which involves the question of the state of general knowledge. This is, perhaps, a more difficult part of the subject. It is well exemplified in a statement by the late Sir George Jessel, a lawyer of great breadth and acuteness of mind, "When you say a thing is known to the public and part of common knowledge, of course you do not mean that every individual member of the public knows it. What is meant is, that if it is a manufacture connected with a particular trade, the people of the trade shall know something about it; if it is a thing connected with a chemical invention, people connected with chemistry all know something about it." The truth is that this is a pure question of fact. Any person who has to decide the question must look at the circumstances of the time, the formation of experts, the character of standard works, and other sources of knowledge, and he must ask himself whether, having regard to all these facts, the state of knowledge is such that the element of novelty is absent from the alleged invention.

Assuming that the invention is a novelty, the claimant for the patent the true and the first inventor? In other words, is he the actual discoverer, for no other person is allowed to obtain this monopoly. This, of course, is a question of fact: One point may be emphasised, that in one sense the first inventor, in the eye of the law, to use an Irishism, need not be the first inventor in fact. That is to say, if something has been discovered by another, but the discovery has never been divulged, he who independently discovers the same thing and is the first to disclose it to apply for a patent which is eventually granted, is the true and first inventor. The practical lesson from this rule is obvious: A person reasonably believes that he has invented something new, he ought not to keep it to himself, but should apply as soon

as possible for a patent. In these days, many active and ingenious minds are at work, more especially in mechanical affairs, and no one can tell how quickly some discovery by one man may not be followed by a similar one which has occurred to another person.

NOTES.

The Workmen's Compensation Bill. AN important announcement was made by Mr. Chamberlain during the first night's discussion of the Workmen's Compensation Bill in Committee. He stated that it was intended that the building trade should be included in the Bill. As we pointed out when discussing the measure at length, some workmen engaged in building work appeared to be included, since the Bill applied, as originally drafted, to works where machinery was used. Sir Charles Dilke has an amendment on the paper to the effect that buildings which are over 30 ft. in height shall come within the Bill. This Mr. Chamberlain says will be accepted by the Government. But the amendment cannot stop there. At any rate, if it be limited in this respect at present, it is certain to be amplified at some future and not distant time. One thing, therefore, is clear from the recent discussions in Committee, and that is that the workmen and employers engaged in building work will come within the range of this measure.

South Kensington Museum. It is to be hoped that the Report of the Select Committee on the Museums of the Science and Art Department may have some influence in leading to the completion of the South Kensington Museum. Neither Parliament nor the public care anything about the matter on architectural grounds, but the fact that the collection is in danger from fire, owing to the existence of so many temporary buildings of combustible material in connexion with it, may possibly lead to a conclusion that the completion of the building in a solid and monumental manner had better not be delayed. The following is the emphatic language of the Report of the Committee on this point:—

"That the principal structural alterations necessary for the protection of the collections from fire have not been made appears to be due to the fact that the completion of the permanent buildings of the South Kensington Museum has always been in the contemplation of successive Governments as the true remedy for the danger of destructions from fire which hangs over the collection so long as they have to be partly housed in the present temporary structures."

This necessity of providing buildings suitable for the exhibition of the objects of art and science collected at South Kensington has been long under the consideration of successive Governments. Your committee regard it as their immediate duty to lay before the House of Commons by means of an interim report their very strong opinion that permanent buildings for the adequate accommodation of the collections at the South Kensington Museum should be proceeded with without delay. They are of opinion that it will be a source of grave discredit to the country if the settlement of this matter, which has been the subject of consideration by Government for many years, and of endless correspondence between the departments concerned, is any longer delayed."

Mr. Preece on Electrical Transmission. MR. PREECE read an interesting paper on Tuesday at the Engineering Conference on "The Transmission of Power by Electricity."

He commenced by lamenting the energy running to waste in grinding stones, changing river beds, and carving the surface of the earth into hills and valleys. The utilisation of this energy at centres of civilisation would mean, he said, keeping permanent the face of nature; a way of looking at the matter which, in view of the recent agitation about the destruction of waterfalls for power purposes, caused considerable amusement. In regard to the utilisation of the Nile Cataracts, he said that it was perfectly possible to utilise this waste energy in Cairo and its neighbourhood, but we ought first to consider how the cost of doing this would compare with that of bringing fuel from England. The question of burning coal at the pit's mouth and then transporting the energy extracted as electric currents to London was in his opinion not worth considering at present. For workshop and home use electricity ought to be far more widely used in England, for although the horse was far more efficient than an electric machine in converting fuel into energy, yet the cost of its upkeep and its depreciation made it the least efficient of machines. We disagree with Mr. Preece when he says that dynamos and motors are now commercially made at moderate prices, with efficiencies of from ninety-four to ninety-six per cent. We never heard of a motor at a moderate price with an efficiency greater than eighty-five per cent.

Lord Leighton's House. It is to be hoped that the offer of Lord Leighton's house and its contents to the public which has been generously made by his sisters will be accepted, and that the people of Kensington will take measures to obtain sufficient funds to keep it up. It is very desirable that this should be a local matter. We hear a good deal at the present time of forming separate municipalities for various parts of the Metropolis. The real vitality of any such separate bodies must arise from local public spirit. The present is an opportunity for Kensington to show what it can do to maintain a home of art without going to the rest of London for financial assistance.

Annual of the "British School." THE Committee of the British School at Athens have this year wisely decided to allow their "Annual" to be purchased by the outside public at the moderate price of half-a-guinea. The number contains, besides the report of the Managing Committee and a selection of papers read at the School, some very valuable communications which it is well to make as widely accessible as possible. We have, e.g., a paper by Mr. Arthur Evans on Goules in Crete, the "City of Zeus," of which there are remains above ground more extensive than those of any other prehistoric city on Hellenic soil. The paper is illustrated by a plan by Mr. Myres, and by eleven figures in the text. We can only here call attention to its paramount importance in relation to the whole "Mycenæan" question. Other important papers of special interest to architects are those on the Byzantine Churches of Melos, by Mr. Fletcher and Mr. Kitson, students of the School, and on the antiquities of Cyrene, by Mr. Weld Blundell. Some account is also given of the excavations at Melos, still in process, of which fuller particulars are to appear in the forthcoming

number of the *Hellenic Journal*. These preliminary reports appearing, as they can, with greater promptitude, fully in themselves justify the existence of the "Annual."

SEVERAL papers on the "Transmission of Power" were read last Tuesday before those members of the Institution of Civil Engineers who were able to attend the "Engineering Conference" which was held in the beginning of the week in Westminster. The transmission of power by water was dealt with by Mr. E. B. Ellington, M.Inst.C.E., and in the course of his remarks he pointed out that 75 per cent. of the power supplied at the central station ought to be realised over an area of four square miles, although, as the designs of the machines vary with the purposes to which the power is applied, the 75 per cent. may often drop very considerably. Dr. John Hopkinson, in treating of the transmission of power by electricity, drew attention to the fact that when transmission is to be made to long distances, as from where there exists a great water power to the points at which that power can be used, then electricity was the agent to be employed. It is inevitable that, with electrical transmission of power, high speeds of rotation must be used, and for many purposes this is inconvenient; for example for lifts and cranes working at a slow speed. But, notwithstanding the fact that there seems undoubtedly to be many places where hydraulic transmission will permanently be better suited to the purpose than electrical transmission, there can be no doubt that there are many cases in which, at the present day, hydraulic transmission is used which will ultimately be effected by electrical transmission of power—as, for instance, in our ships of war. The consequences of the destruction of a steam or water-pipe by a projectile would be extremely serious, whereas the breaking of the continuity of an electrical conductor would be easily and quickly made good.

Lord Kelvin
on Contact
Electricity.

LAST week's Friday's lecture at the Royal Institution by Lord Kelvin was a most important one. He began by showing an experiment which conclusively proved Volta's theory that when a zinc plate and a copper plate were put in contact, one became charged with positive electricity and the other with negative. Although he had shown this experiment fifty years ago at Glasgow University, yet an immense amount of ingenuity had been wasted recently in trying to explain away this phenomenon. He considered that Volta was absolutely right, and made an appeal to physicists to study Volta's work seriously. A very interesting and novel experiment was shown. A plate of uranium was connected to one terminal of an electrometer, and was then touched by a plate of aluminium. It was seen by the deflection of the spot of light that the uranium plate became at first positively electrified; it then gradually lost its charge and became negatively electrified. Lord Kelvin could suggest no explanation of this very mysterious experiment. Another interesting topic touched upon was Becquerel's discovery of the radiation given off by uranium. This radiation is very feeble, but photographs of coins, &c., taken by its means were thrown on a screen. He stated that it had been con-

clusively proved that this radiation was not due to phosphorescence, or the slow radiation of light previously absorbed, and he could give no explanation of it. Lord Kelvin was slightly discursive, but he was listened to most eagerly, and his points were rapidly taken up by an appreciative audience.

Actions for
Obstruction
of Light.

It is surprising that by this time all points in regard to the law as to the obstruction of light have not been cleared up. On the contrary, from time to time, new ones spring up. Thus, for example, in the recent decision of *Jenks v. Lord Clifden* we find an important question settled. The so-called Civil Procedure Act of 1833 states that an action may be maintained against the executors of any person deceased for any wrong committed by him in his lifetime to another in respect to his property, real or personal, so as such injury shall have been committed within six months before such person's death, and the action is brought within six months after the executors have entered on their duties. Whether or not an action for obstruction of light could be brought under this section does not seem to have been decided until the recent decision of Mr. Justice Kekewich. This judge decided that, under the above statute, a person whose light is obstructed may bring his action against the representative of a deceased person just as if the latter were alive, but under certain limitations, which are that the damages for the obstruction must be confined to such as were incurred during six months preceding the death of what we may call the wrongdoer, and that the proceedings are brought within six months of the appointment of the executor the action is maintainable. From a practical point of view we may be inclined to doubt if it is worth going to law to recover damages in respect of an obstruction for six months, which can hardly be what lawyers would term substantial damages.

Water-
supply
Disputes.

MR. JAMES MANSERGH, Chairman of the "Waterworks, Sewerage, and Gasworks" Section of the Engineering Conference, read a paper before the Section on Tuesday last, entitled "The Law and Allocation of Underground Water." The communication dealt, principally, with a very interesting contest which has been going on before a Commons Committee within the last few weeks as to the rights possessed by the public in underground water. The Corporation of Newark have recently sunk a well into the pebble beds of the New Red Sandstone at Farnsfield and obtained a satisfactory supply therefrom; the Nottingham Corporation, desirous of increasing their water supply, sought to sink wells in a position regarded by the Newark authorities as being certain to cut off a portion of the water which, under ordinary conditions, would reach their pumping station. Other and minor public bodies were also interested in the matter; but it became practically a contest between the Newark and Nottingham Corporations. In the end, the Bill of the latter body was curtailed, and power was given to Nottingham to construct only a well many miles away from Farnsfield, the closer ones proposed being struck out; whilst the Newark Corporation, which sought by their Bill to secure a protective zone of four miles radius around their well, within which no

other Authority should sink a well to obtain water to be taken away outside that area, succeeded in getting the boundary fixed merely by the present limits of supply. The decision may not be confirmed by the House of Lords, but it is interesting as showing the present muddled state of the law in reference to underground supplies of water, and the uncertainties attending "expert evidence." One of the principal points in the case was as to whether a certain stream had been to some extent dried up as a consequence of the pumping from the water-bearing strata for years in its neighbourhood, or whether it was due simply to natural causes. The evidence on this was most conflicting, and it is safe to assume that so little is at present known concerning the distribution and movement of underground water in that part of England that the evidence on either side was not worth much. We entirely agree with Mr. Mansergh that the question of the amount of percolation into ground of varying geological character requires a great deal more attention than it has hitherto received.

This Institute, latterly occupied as a club and reading-rooms, was closed a few days ago; the property, library, and other effects will shortly be sold. On the laying out of the Bedford and Foundling Hospital estates in the Long Fields, north of Bedford House and Montague House, James Burton, who was largely employed by Francis, and his brother John, Dukes of Bedford, projected the erection of a suite of assembly rooms. He obtained a ninety-eight years' lease from Michaelmas, 1799, at a ground-rent of 10*l.* per annum, of a site described as "part of the ground lately taken in exchange of the Foundling Hospital, and also part of the said Duke's private road" (Woburn-place). The interior was burnt in 1802; in February, 1804, the premises were opened under licence for music and dancing, the large room—75 ft. by 26 ft., and 30 ft. high—being appropriated to balls and concerts. As the speculation did not succeed, Burton proposed to establish a literary and scientific society after the mode of the Royal and London Institutions. Sir James Scarlett (Lord Abinger) and Sir Samuel Romilly were leading members of the committee, who gave Burton 2,700*l.* and 200 shares for his interest. Large sums have been expended from time to time upon the buildings; in 1812-3 the committee spent 2,500*l.* upon alterations and repairs, by Thomas Cubitt, under the direction of John Shaw, the architect. In 1825, E. W. Brayley, F.S.A., was appointed secretary and librarian. There is a large picture by Haydon of Xenophon and the Ten Thousand first seeing the sea from Mount Theches, exhibited in the Egyptian Hall, 1832. The then Duke of Bedford won the painting, valued at 800 guineas, in a raffle at the "Thatched House" Club, 1836, and presented it to the Institution. The west wing, originally the bath-rooms, and the vaults, have long been let to a firm of wine merchants.

Pennant's
"London."

A FINE copy of this work was sold, for 35*l.*, at the recent dispersal, at Christie's, of the Bessborough Library. It forms one of the twelve copies that were printed on large paper; it is bound in six interleaved volumes, extensively illustrated with 2,070 engravings,

&c., collected by Lord Bessborough. The similar copy, also in six volumes, in the Soane Museum, was bought for 600 guineas at the sale of the effects of Fauntleroy, partner in the banking firm of Marsh, Sibbald, & Co., of Berners-street, executed for fraudulent transfers of stock on November 30, 1824. Another copy, after the same kind, but bound in several volumes, containing many valuable water-colour drawings, and known as the Crowle Pennant, is in the Prints Department, British Museum.

Architecture and the Press. THE daily papers of Thursday offered a characteristic example of the attitude of the daily Press (of London especially) in regard to architectural questions. Some of them gave a long report of the evidence of Mr. Shaw Lefevre on Wednesday before the Government Office Sites Committee. At the same sitting two architect witnesses, one of whom had given special attention to the subject, gave evidence at considerable length; but the evidence of architects on such a subject is not of course worth reporting.

ARCHITECTURE AT THE ROYAL ACADEMY.—III.

DOMESTIC architecture is not largely represented among the Academy drawings of the year, and not by the design of any house of the first order of importance; in fact, the majority of the designs exhibited are for small houses, bungalows, or lodges. Generally speaking, the collection, as far as it goes, tends to show that the prevalence of English taste in house architecture is increasingly in favour of simplicity and quiet picturesqueness of treatment. This is a good deal better than the gawgaw domestic architecture so prevalent in France and Germany; though it may be questioned whether we are not going too far in the direction of mere picturesqueness; and there are some little contrivances for obtaining it—a window formed in an outer angle of the wall, a window on a curved plan appearing to support an overhanging floor or eaves over it, &c.—which are becoming commonplace, and have almost lost their power to attract attention. Scarcely any of the designs for houses show plans, and those which do show no compass indication. The question of aspect of rooms is so all-important in a dwelling-house that it is extraordinary how architects can go on, year after year, exhibiting drawings of houses without providing any means by which any one can judge whether they are well-planned or well-arranged houses, or whether the picturesqueness of the design and grouping is or is not in accordance with practical requirements.

The best drawing among the domestic architecture exhibits is Messrs. Niven & Wigglesworth's view of a portion of the house named "Kincardine," Deeside (1,030), which was illustrated more fully in the *Builder* some little time since, and as this is obviously only intended as a view of a picturesque angle of the house for the sake of a picture, it may be admitted that in this case a plan was hardly necessary. The present drawing is among our illustrations in this issue. The picturesqueness is obtained, though the portion of the house shown here is, it must be admitted, a little too much of a mere imitation of Scotch castellated Gothic. Another of the larger drawings exhibited is that of Shiplon Hall (1,834), by Mr. H. E. Farmer, which is also published among our illustrations of this week; but it appears from the interesting communication from the architect under the head of "Illustrations," on another page, that this is an old building to which the architects have merely been making some repairs and a few slight additions. The drawing conveys the impression of an old building, no doubt, but the habit of getting up drawings of modern houses so as to make them look like ancient buildings is so common nowadays that one can never take a drawing as a criterion on this point without further information. It is a pleasing representation of a very picturesque old house.

Mr. Ravenscroft's "House and Stabling at Maidenhatch" (1,821) is one of the larger drawings, and shows a L-shaped brick house with

chimneys and dressings of darker or redder brick, and a large block of stabling with a tower near to it; the drawing is a landscape with a house in it rather than an architectural drawing, and the house has not much character, though the plan might afford more matter for interest if we had one. Mr. Aston Webb exhibits a large pen-and-ink drawing of the "Additions to Paddockhurst, Sussex" (1,836), with a small sketch plan. The additions consist of a dining room and a winter garden, the latter with its length placed across the plan, and marked by angle turrets, between which a little decorative effect is got by a balcony with open tracery on either side and a solid panel with a sundial in the centre, the dial flanked by two bas-relief figures. Beyond this building extends a long conservatory which has the unusual merit of being treated at the sides with solid buttresses and arches so as to appear a part of the architecture of the house, instead of being, as a conservatory in general is, a mere wood and glass excrescence. This is altogether a good piece of work.

Mr. J. J. Stevenson's "Houses in South-street, Mayfair" (1,825; no plan) have a dignified appearance and a certain special character owing to the introduction of semi-octagon bays built of stone, at each angle, the intermediate portion of the walls being of brick. These bays are connected above the ground floor by a balustraded balcony, the cornices carrying which, in the left-hand house at all events, look too small and weak for good architectural effect. The houses have very high green-slatted roofs, which give character, but are not the best kind of provision to make for attics. Of somewhat the same class of work, though with less character, are Mr. Neale's "Houses erected at Hampstead" (1,786; no plan).

Messrs. Bateman & Bateman's "Vectis Lodge," published in the present issue, is one of those drawings which hardly require a plan, as it is really only a billiard-room—the interior and the two sides. As explained under the head of "Illustrations," the large bay window had its origin in the practical necessity of giving more space for playing. The interior of the room, with its panelled wainscoting and the decorative frieze above and the open beams and joists, has a good solid effect.

Some other minor examples of domestic architecture may be noticed in the order of hanging. Mr. Doran Webb's "County Hotel, Salisbury" (1,749) is a picturesque country town hotel, though the projecting chimney breast on the upper portion of the front looks rather awkward. Mr. Paxton Watson's "First Lodge, Lea Park" (1,754) is a very pleasing specimen of a Park Lodge, the circular turret with its small cupola roof looks however as if it ought to have been carried a little higher to clear the general roof line. Mr. Garner's "New House at Hampstead" (1,755) is a queer bit of house architecture with mullioned windows inserted in large spaces of the wall, and the entrance flanked by columns which carry nothing, a use of this feature which looks rather as if the architect wanted to put something there and did not quite know what else to put. None of the three last-named drawings show plans. "An Artisan's Room" (1,763), by Mr. Barry Parker, is praiseworthy as an attempt to put a little interest into a cottage room with a stair ascending at one side of it. In Mr. R. A. Brigg's "House at Quarry Woods, Marlow" (1,776), we come at last to a plan, but we regret that it is not a very satisfactory one; the hall and passage upstairs must be deficient in light, and the plan shows the barbarous arrangement of the water-closet in the bath-room, which ought not to be tolerated in the most unambitious residence. The house is picturesque, but shown in a very roughly-executed pencil drawing; though, as we have always said, architectural exhibits ought not to be chosen mainly for drawing, architects might take a little more trouble as to drawing than is shown in this and some other house drawings of the year, some of which are little more than rough sketches.

Mr. Larnar Sugden's "Hillmorton House, Rugby" (1,791; no plan), we illustrated recently; a good deal of picturesque character is obtained by the free and varied lines assumed by the wall terminations. Messrs. Silcock & Reay's "Country House, Bath" (1,789), has a sketch plan but no names to the rooms; apparently the three principal sitting rooms are placed *en suite* and facing the same way (there is no compass), which is rather a naive manner of planning. The house is one of the larger ones illustrated, and has some good points archi-

tecturally; it is a solidly designed stone house with mullioned windows, and with the back entrance door at an outer angle, oddly emphasised by three short thick columns supporting the walls over it and leaving small porch between them. Mr. Voysey's "House near Guildford" (1,797) is a really interesting and picturesque little building, treated in a peculiar manner, the walls all white (rough-cast?), roofs of green slates, and the window dressings and mullions of apparently a warm-tinted yellowish stone, but the drawing, which has fully drawn-out plans, is hung too high to be properly examined or for the plans to be understood. Why an evidently carefully executed piece of work like this should be skied, while drawings of the roughest description are put on the line, is one of the inexplicable mysteries of hanging in the architectural room. Mr. Redfern's "Gatehouse and Master's Lodgings, Abingdon School" (1,805) also has plans and is also too high to be seen. In "The Living Room, Woodcote, Church Stretton" (1,814), Messrs. Parker & Unwin show an interior with a good deal of character, with a large boldly treated ingle nook, though there is a little of that affectation of plainness and solidity and unadorned brick-work which is a fashion set by some of the American house architects, and is capable of being overdone. Mr. Sydney Perks's "House near Banstead" (1,817; no plan) is a pretty country house, the two round arches (door and window) make an effective basement for the half-timber gable above them. Mr. Watson's "House at Walton-on-Thames" (1,862) we give an illustration of; it is a picturesque little nest, and for a small house the plan is well arranged. Mr. F. W. Bedford's "Shireoak Dene, Headingly" (1,864; no plan), is a good little water colour showing a house in the old plain brick style with white painted wood-work, very well carried out in its way. Mr. Seth-Smith's "New House at Eastcote, Pinner" (1,869; no plan) shows a characteristic contrast of red brick and white surface in the walling, with an accompaniment of clipped hedges, &c.; a little too much affectation of old fashion about it, the long square chimney growing out of a set-off reminding one of the sketches in "Harding's first drawing book." Among other things we can only just mention Messrs. Heskest & Stokes' "Billiard Room, Piggott's Manor" (1,880), a room with a segmental plaster ceiling with a large Elizabethan strap pattern over it, and columns screening off the dais; Mr. Allen's "The Mount, Cookham" (1,886; no plan), a pretty water-colour of a brick and timber building; Messrs. Niven & Wigglesworth's "Nethercliffe, Walton-on-Thames" (1,901; no plan) a very plainly treated shingled house with a long roof-ridge, and the end treated with half timber work; Mr. Briggs's "House at Crowborough" (1,908), a much better plan than the other, with a good deal of originality in architectural treatment and disposition of the rooms; and Mr. Vigers's "Rowgardens Wood" (1,912; no plan) a plain house with a certain amount of character, and diversified with a well laid out formal garden in front of it.

Among the houses illustrated in the Academy there is a good deal of picturesqueness and pleasing character exhibited; but it is much to be regretted that we have not drawings of more important works in domestic architecture, of which there must be many going on. And we must emphatically repeat that an illustration of a dwelling-house without a plan is no illustration at all.

IN PARLIAMENT.—On the 18th inst. was read for the first time a Bill to authorise the acquisition of Churchyard Bottom Wood, Highgate, for purposes of an open space and recreation ground. The Ecclesiastical Commissioners offer to sell the fifty-two acres of woodland for 25,000l., provided it be preserved as an open space. Towards that sum the residents around have subscribed about 3,000l., the Middlesex County Council have voted a sum not exceeding 5,000l., provided that Parliamentary powers be obtained to enable them to do so, the Local Board has voted 10,000l., and the Islington Vestry 2,000l.—A Select Committee have passed the Bill for a railway, seven miles long, at an estimated cost of 2,9,792l. to join the London and North-Western at Watford with the Great Northern at Edgware, and having a branch line to the Midland at Mill Hill. Mr. Woodall's Committee have passed as "proved," the preamble of a Bill to empower the Metropolitan District Company to make an underground railway, mostly beneath their existing line, from Earl's-court station to the Mansion House, at a cost of 1,700,000l., to be worked by electricity, or cable, or steam-power, 500,000l. being appropriated to electrical works.

THE ARCHITECTURAL ASSOCIATION:
PLUMBING AND SANITARY WORK.

AN ordinary fortnightly meeting of this Association, and the last for the present session, was held on Friday evening, the 21st inst., in the Meeting-room of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street, Mr. Beresford Pite, President, in the chair.

The minutes of the previous meeting having been read and confirmed, the following gentlemen were elected members of the Association, viz., Messrs. S. Bridges, J. S. Collings, and G. L. Elkington. It was also announced that Messrs. Arthur Cates and S. C. Baker had been reinstated as members. A letter from Mr. Arthur Cates on the subject of his reinstatement was read by the Chairman, in which Mr. Cates remarked that having taken an active part in the work of the Association during the first ten years of its existence, he was pleased, forty years after retiring therefrom, to resume his membership.

Mr. E. Howley Sim, Junior Hon. Sec., proposed a vote of thanks to Mr. E. T. Hall for allowing members to visit the Park Hospital on the 1st inst., and for entertaining them to tea. The motion having been agreed to unanimously.

Mr. Banister F. Fletcher, Senior Hon. Sec., proposed a vote of thanks to the Entertainments Committee and to others who assisted, for the excellent entertainment which they provided at St. George's Hall on the occasion of the recent Soirée. Those who worked on the occasion were to be thanked for the amount of time they had bestowed on an entertainment which was as good as any other that had been given by the committee lately.

The vote of thanks having been cordially agreed to,

The Chairman said he had much pleasure in announcing that the Royal Institute of British Architects had, for the sixth year, made a grant of roof, towards the educational work of the Association. He desired to move that the best thanks of the Association be forwarded to the Council of the Royal Institute of British Architects for their grant, and also for permitting the Association to use their meeting-room. The motion was agreed to unanimously.

The Chairman then announced that Mr. Keith D. Young, who was recently reinstated as a member, had made a donation of two guineas toward the library fund. On his motion a vote of thanks was passed to Mr. Young.

The Chairman then read the Scrutineers' report on the election of officers for 1897-8, which stated that 305 sealed envelopes containing voting papers had been received, of which number four were informal and invalid. The following is the result of the election:—

President, Mr. Hampden W. Pratt, 292 votes.
Vice-Presidents, Messrs. Banister F. Fletcher, 288, and A. H. Hart, 295.

Committee: Messrs. A. Beresford Pite, 237; G. H. F. Prynne, 222; R. S. Balfour, 219; F. G. F. Hooper, 214; F. T. W. Goldsmith, 182; W. H. Seth-Smith, 176; H. B. Creswell, 103; C. de Gruchy, 139; T. W. Aldwinkle, jun., 144; W. D. Caröe, 142.

Hon. Treasurer, Mr. Hampden W. Pratt, 297.
Hon. Librarian, Mr. C. H. Freeman, 297.

Hon. Secretaries, Messrs. E. Howley Sim, 204; and G. B. Carvill, 295.

The above form the Committee.

The other officers elected were: Hon. Solicitor, Mr. W. H. Jamieson; Hon. Assistant Librarian, Mr. E. W. M. Wouacott; Hon. Auditors, Messrs. M. Garbutt and H. P. G. Maule; and Assistant Secretary and Registrar, Mr. D. G. Driver.

On the motion of Mr. E. Howley Sim a vote of thanks was accorded to the scrutineers, Messrs. C. H. Brodie, M. Garbutt, G. W. Jones, and H. D. Wilkinson.

The Chairman announced that the A.A. Travelling Studentship for 1897 had been awarded to Mr. E. H. Evans. The Prizes Sub-Committee in their report stated that the finished drawings by Mr. Waring exhibited great care, but the Committee were unanimous in awarding the prize to Mr. Evans.

The Chairman then called upon Mr. S. S. Helver to read a paper on "Plumbing and Sanitary Arrangements," part of which, and some of the illustrations which accompanied it we give this week. The remainder of the paper, and additional diagrams, will appear next week.

The subject of this paper is too large and the time too short to admit of any adornment, even if I had the power, but as to this I am not

troubled, knowing well enough how learned you all are in the art of embellishment, and that any deficiency of mine in this respect will readily enough be made good by you.

Holding the strings of his client's purse, money naturally becomes an important factor with the architect. He ever wants to accomplish so much for so little, and somehow money does not increase in value as the years go by—the wages world makes a shrinkage in it. I should like, therefore, to comfort your minds at the outset by saying—speaking obviously apart from the increase in plumbers' wages, which applies to all the other building trades—that the sanitary plumbers' work of to-day costs but little more relatively than did the insanitary work of two or three decades ago.

The additional cost for better treatment and arrangement, for better ventilation of the soil-pipes and waste-pipes, is largely met by the adoption of more simple methods, by the use of cheaper traps, smaller waste-pipes and soil-pipes; also by the use of fewer cisterns and cisterns of smaller size and of a less expensive character; and, further, by the difference in the market price of materials, lead especially being much cheaper now than it was a quarter of a century ago. I will give you an instance by throwing upon the screen illustrations showing the insanitary method of treating a valve-closet thirty to forty years ago, and the sanitary method as generally practised to-day by those proficient in the craft of plumbers' work. The excess of work is so marked in the old method that I need not go into figures to show its greater cost.

No doubt the many improvements which have been made in the best kinds of valve-closets have increased their cost, but this is met by the simplification of certain parts, and by the use of plainer basins, a simple white satisfying for most places now; for we no longer require to study colours in our water-closets—we have our art schools for that—nor do we now seek for closet-basins with looking-glass bottoms.

I think I ought to say that there are older methods of treating the valve-closet than the one just shown, that being considered (half a century ago) an improvement upon the treatment it first received in the latter part of the last century and the earlier part of this. For instance, in the illustration just shown the waste-pipe from the safe is trapped independently of the closet trap, a weeping-pipe from the closet service is turned into it for charging the trap with water every time the closet is used; whereas in the earlier method the waste-pipe from the safe was connected with the closet trap, as in fact was also the waste-pipe from the cistern. In the earliest method of all, these two latter dangers were non-existent: the closets having no safes under them no waste-pipes were required; and as the water was generally pumped up into the closet cisterns where situated above the basements, there was no such need for cistern wastes, especially as the water, instead of overflowing the cistern, could run away through the wire-pipe of the service box into the closet basin, and through the overflow pipe of the latter into the closet trap and out into the soil-pipe. In an illustration later on we shall see how this was done. But I am departing from my subject.

In the old method the Bramah closet was supplied by means of a spring-valve, a spoon or sioce-valve, or a round drop-valve soldered to a lead service-box, the latter kind being the one just shown, but such details do not in any way upset our conclusions as to the greater amount of labour involved in the old method than in the new.

That carries us a long way, for it mattered not whether a valve-closet or a pan-closet were adopted; the plumber's work was just the same in both, the service-box only being a little larger in the former case than in the latter. For good houses the best plumbers used to consider the Bramah closet the proper kind for the principal water-closets, and the pan-closet for more common use and for servants' use indoors, and sometimes also for the upper servants' use in the yard or area, though the water-closet in the latter places was generally fitted with the well-known long hopper-closet. I will say nothing about the cost of the latter, excepting to remind you that it was cheap and advertising; but I do not hesitate to say that the insanitary pan-closet, with its D-trap and other belongings, cost more than the sanitary pedestal wash-down closets of to-day.

In this reference to the relative cost of the modern method of plumbers' work with that of the old, I am not, of course, taking into con-

sideration the additional comforts and luxuries if I may so call them—elaborate baths and luxurious lavatories. If people want sitz, spray, and shower baths, they must expect to pay for them, as they do for their motor cars and bicycles. However, I should be sorry to convey the impression that because the prices of certain materials have been reduced, and the work to certain water-closets simplified, that plumbers' work now costs next to nothing; for there is a very important factor yet to be considered—viz., the labour—the *crux* which generally baffles the best of estimators. Plumbers' wages in London are at the rate of about one-fifth more than they were a quarter of a century ago, and I should think four-fifths more than when the Queen began to reign. The men do not receive this amount of increase in their weekly wage, for they do not work so many hours now. I am saying nothing against this advance in wages. Intelligent, industrious labour should be properly paid for.

The first great requisite in a house is its water supply, for, in my opinion, as I said twenty years ago, no house can be considered safe to live in which is supplied with unwholesome water. If it were possible to get at the actual facts it would often be found that many a case of illness, and death, arose from bad water rather than from bad drains, from water supplied in an impure state, or which had been allowed to become contaminated in its storage. Therefore, when water has to be stored great care should be taken to see that it cannot be rendered impure by its surroundings, cannot be contaminated by the effluvia from water-closets, the emanations from ventilating-pipes, soil-pipes, and drains, or from the vitiated air of bedrooms and living-rooms. One hardly expected to have required any further restrictions, but our accountant actually saw two hobbledoys bathing in a cistern the other day. The illustration before you faithfully represents what I fancied, from his face when he told me) amused him as much as astonished him. A proper cistern-room should be provided with lights and openings to and from the external air, and the cisterns should be so arranged that they may be readily and periodically cleansed. For this latter purpose—in addition to any overflow-pipe required by the water company—a cleansing waste-pipe should be so fixed that the cistern, or cisterns, may not only be emptied, but rinsed out with clean water from the ball-valve. To prevent the possibility of such pipes becoming conductors of bad air to the cisterns, great care should be taken to see that their discharging ends are kept well away from open traps, sinks, gullies, and places where foul air could enter them. It ought to be superfluous to say this after so much that has been written on the matter, but only very recently I came upon an error of the kind we are now considering in a nobleman's mansion, the work having been done but a year or two ago. I will show it upon the screen. The cistern-waste is taken into the head of a long length of 3-in. cast-iron pipe, which, at the time I saw it, was in a very foul state, receiving, as it did, the discharges from a general sink (fig. 1). That the waste-pipe from the sink would become fouled was pretty well understood by the authorities, for it was trapped rightly enough, though it was not ventilated; but neither the cistern-waste nor the overflow-pipe from the bath had any trap in them, although they delivered into the same head as the sink-waste. Of course trapping these pipes would be of no value, for there would be no water passing through them to keep the traps charged. I could add to such examples and give others of a more serious kind. We shall see some instances of how the cistern water can be contaminated, later on in connexion with other matters; but I must pass on to consider the important method of supplying cisterns with water.

Apart from the great saving in cost by having a constant supply instead of an intermittent, enabling as it does the use of smaller rising-mains, and cisterns of a smaller size, and fewer in number, there is the great advantage of keeping the communication-pipes from the companies' mains always charged with water, and thus preventing them from becoming communication-pipes in another sense—from becoming, in fact, air tubes or passages for communicating disease germs.

In the case of an intermittent supply, under favourable circumstances, directly the water is turned off from the main in the street the lower cisterns on the system would be supplied as they were drawn from by the water left in the mains; and it requires no great effort of one's

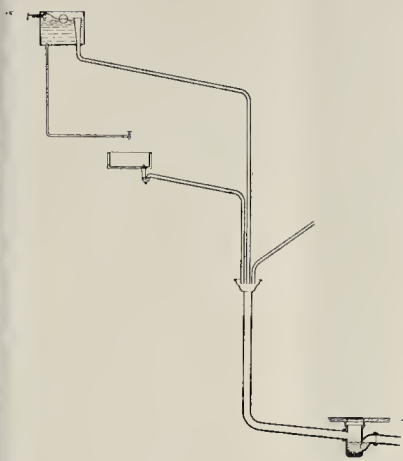


Fig. 1.



Fig. 3.

PATENT "CORBEL" LAVATORY



PATENT "CORBEL" WASH-DOWN CLOSET

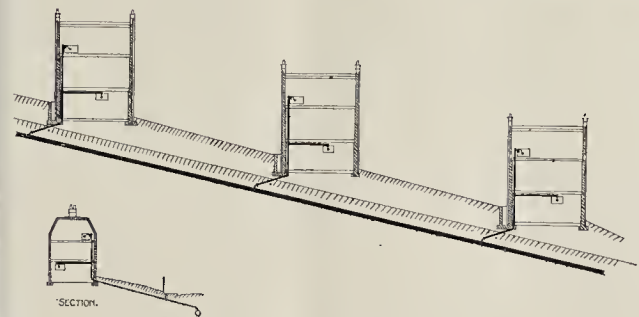
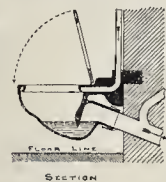


Fig. 2.

imagination to conceive of streets sufficiently sloping for such pipes to be quickly emptied, and to remain so daily for perhaps twenty hours out of the twenty-four. In such cases—the rising-mains in large houses being often of 1½-in. bore, and even larger—the air, infected or otherwise, would pass at times even through such restricted passages from one part of a house to that of another; and also from one house to another under favourable circumstances (fig. 2).

As the water subsided in the communication-pipes, air would enter them through the open ball-valves, nature abhorring a vacuum. And the air which would be thus sucked into the pipes would come, of course, from the air which surrounded the cisterns, and where such cisterns were in open contact with the air from bedrooms and water-closets, as shown on the screen, which represents a suburban house, of which there are perhaps hundreds like it, it could hardly be pure, and might be dangerous. The upper cistern is practically quite open to the bedroom, for a badly fitted door would be no barrier, and the lower cistern is not only exposed to the air of the scullery, but also to the water-closet which opens into the scullery. No doubt any air currents set up through the empty main in the street and the communication pipes to the houses would be induced by the difference in the temperature of the different houses, one house being often much warmer than another.

Fortunately there is a redeeming point in most things, and notwithstanding that specifications direct that rising-mains shall be laid in a manner to empty themselves, they are not often so treated, circumstances intervene, and "the best laid schemes of mice and men gang

afit a-gley"; the street main, for instance, stands higher than the point of ascension of the rising-main. But in cases where houses stand on much higher levels than the street main no doubt such communication pipes would empty back into the main in the street or road, and in streets or roads with a steep fall, as shown, the main with the water turned off would soon become empty.

With a constant supply the main and the communication-pipes would practically remain always charged with water, and no such risk as we have been considering would be likely to take place.

Cisterns with a constant supply can be of much smaller size than when the supply is intermittent; and generally one cistern in such cases suffices for a house with a fair-sized family. The size, of course, must depend upon circumstances. It should be equal to the keeping of all the services from it going at one time, or the service-pipe to it must be of a bore sufficiently large to supply the water at about the same speed that it can be drawn from the cistern.

Where there is only one cistern in a house and it is also made to supply the hot water circulation, the cold water services from it, for all other purposes, should be so connected that a body of water is always retained in the cistern to keep the hot water system going, in case the water should be turned off from the main for a little while; especially should this be the case when the hot water circulation is on the tank-system.

Also, with a constant supply there is the further advantage of being able so draw directly from the company's main, and the water supplied to the table in this way will be

found to be much cooler and nicer in every way, provided that the water in the company's main is pure and wholesome. For this purpose ½-in. lead pipe will be found to be quite large enough. When the water is soft, and would be likely to act on lead, block-tin, or tin-lined lead pipe should be used, or tin-lined wrought-iron pipe if the water company will allow it.

Where the water would act on lead it would also act on galvanised iron, therefore the storage cisterns in such cases should be of cast iron or wrought iron limewhitened inside, and the cisterns for storing water for dietetic purposes would be nicer in earthenware, white enamelled inside.

Great care is required in selecting the course for the service-pipe—the communication-pipe from the company's main. The pipe should never be laid under or near a soil drain, or in any trench in which had or surface water could collect; for even though there may never be any restriction in the pipe to allow water surrounding it to be sucked into it, in case of any hole or defect in the pipe such water may find its way into it when the water is turned off from the main, and be forced up into the cisterns when the water is turned on again.

Where such pipes cannot be kept at least 2 ft. under ground, then, in positions where they would be liable to very severe frost, they should be laid in a trough or box made of creosoted wood filled up to the top edges of the sides with hot pitch, with which might be mixed a little Stockholm tar and some sharp sand. No lead or iron pipe should be allowed to come in contact with lime, and when such pipes pass through clay soil they should be well tarred over or be embedded in ashes or cocoanut fibre, which will also be helpful in protecting them from frost.

If plumbers' work inside our houses ended here we should not have much to fear from noxious gases in our homes, but civilisation calls for certain conveniences to be placed indoors, and I must confess that it is most comfortable to one's mind, if feeling a little "out of sorts" on going to bed, to know that if taken ill, one will not have to light a lantern as in the olden times and go out into the night air.

Now I know of no reason, beyond that of incapacity, why a water-closet should not be fixed inside a house with absolute safety, safer and sweeter, in fact, than a night stool in one's bedroom, the use of which, when all the servants are in bed, would leave its presence painfully present for the rest of the night. But it is not so much a question of a night-stool *versus* a water-closet, or a privy or water-closet situated out of doors *versus* a water-closet indoors; for the outside convenience, by bad arrangement, may render it and the air surrounding the house more unhealthy than even an insanitary water-closet indoors. The important question is: Can a water-closet be so

fitted up that it may be used with absolute safety in any position or place it may reasonably be required, either outside or inside a house? Well, gentlemen, if I could not answer that question in the affirmative, I should not be here to-night.

Living on an island, we naturally believe in isolation. We isolate all clean water pipes such as safe-wastes, cistern wastes, and overflow pipes, by making them discharge into the open air. We also isolate all dirty water waste pipes, such as bath wastes, sink wastes, and lavatory wastes, by exposing their discharging ends to the air outside the house, and in this matter we stand ahead of all other nations, not excepting even America. In some cases, we also isolate soil-pipes, by "disconnecting" them from old and filthy soil drains, safeguarding them from the air in the drain, and giving to each soil pipe a separate inlet and outlet for continuous ventilation.

We go further than this, for we not only isolate the drain of one house from that of another, by disconnecting both from the common sewer, but in some cases we disconnect one section or wing of a building from that of another, excluding any infected air which may be in one section from another, and providing independent ventilation to each section, taking care, however, that no length of drain shaft remain unventilated.

And we not only isolate the main carriers, the sanitary wings are now isolated from the general building. And the water-closet apartments are not only isolated, but the water-closets. The "Corbel" and the "Bracket" closets have been specially introduced to isolate them from the floor as well as from the walls, an illustration of which is now before you (fig. 3).

But isolation is not everything; our ships of war still count for something. A water-closet may be as isolated as a sentry-box, and yet be dangerous, for in this sanitary age no water-closet can be pronounced sanitary in the highest degree which cannot be used and left in itself and in all its parts as clean and wholesome as it was before usage.

To compare various points and features of the great variety of water-closets and flushing-cisterns which now exist would require several evenings, and to attempt this to-night would only tend to the confusion of our minds on a subject simple enough in itself, but which, owing to the multifarious patterns of the many manufacturers, has become a little complicated.

In passing over many water-closets which have been introduced during the last ten or twenty years we shall not miss much, for the majority of them are as noisy and as unsightly as some of the new motor-cars, and to the olfactory nerves are just as objectionable as the pan-closet they were meant to supersede. I propose, therefore, to confine my remarks to a few kinds, viz., the valve-closet, the "Syphonic," the "Wash-down," and the "Wash-out," but before doing so let me mention the several points which I consider essential to a good water-closet.

1. It should hold a body of water large enough and deep enough to quite submerge the faeces.

2. It should have no parts or places in it where faecal matters could cling to or accumulate upon.

3. It should have a water-seal of at least $\frac{1}{2}$ in. for trapping off the soil-pipe.

4. It should be so constructed that the whole of its contents may be changed by a flush of two gallons of water, and its interior parts well washed.

5. And in the case of earthenware closets having their basin and trap in one piece, its connection with the soil-pipe or drains should be readily seen.

Now if we examine the general kind of "wash-out" closets, we shall see that they all more or less fail in some one or more of these important points. In the majority of such closets, if not in all of them, it will be found that the water held in the bottom of the basin is too shallow to cover the faeces, the consequence being that the portion which is not submerged throws off a vapour—its temperature being generally greatly higher than the air of the apartment—which soon fills the place with an odour, objectionable to the then occupier, and most repulsive to the next comer immediately following. So pronounced is this, that on making an examination it is rarely necessary for a sanitarian to do more than put his head into an apartment where this kind of closet is fixed, to know that it is a "wash-out."

Then in this kind of closet the flush of water

is made to break up the faeces in the best possible way for throwing their odours into the apartment, and instead of spending its full force upon the sides of the basin and upon the trap, it is chiefly spent in clearing the bottom of the basin. There is also the evil of a large exposed surface between the weir of the basin and the water-seal of the trap, a part which will generally be found to be in a filthy state.

Having dismissed the "wash-out" kind of closet, let us now see what can be said for its next of kin, the pedestal "wash-down" kind. There is a very great variety of them with several points common to them all, and yet they differ so much in certain essential features that, like Jeremiah's figs, "the good are very good indeed, the rest are not fit for pigs." In one particular they all stand at a disadvantage with the "wash-out," viz., that their exposed surface of water is smaller. But the best of their kind may be said to pretty well embody the points required in a good general sanitary water-closet. They are to be had of many a manufacturer, each one claiming some feature or advantage not possessed by others.

In the example before you my assistant will soil over the whole of its interior exposed surface and will test it with a dozen pieces of paper, using only two gallons of water, and you will see that the closet and trap will be left free of the matters put into them. And as it is more difficult sometimes with such closets to wash out a few pieces of paper of the size of postage stamps, he will try it again and show you that the closet stands both tests equally well.

Several varieties of "Syphonic" closets are now in the market, the main object with them all being to provide a larger exposed surface of water than can be given to the "wash-down" kind; but though such closets excel the "wash-down" closets in this particular, they are not so satisfactory in some other points. The majority are not so simple, nor so reliable in their action with only a two-gallon flush of water, and some of them are complicated in their supply and discharge arrangements.

In testing such closets with a pailful of water emptied quickly into them, I have seen them left with a much reduced water-seal even when they have not been attached to a soil-pipe; and how they would withstand the action of syphonage when fixed in about the middle part of a stack of soil-pipe 80 or 100 ft. high, I should hardly like to say, but I should be apprehensive of the result.

I know of an instance where a syphonic closet was put into use during the time its soil-pipe was under a smoke test, and the smoke escaped through it into the water-closet apartment. But, perhaps, this is hardly to be wondered at, for under certain conditions, the contents of the closet are syphoned out very vigorously, so much so that the water-seal of the trap would often be broken in the action.

The emptying of a pailful of slops into such closets not only syphons out their previous contents, but the added slops as well, leaving the basins practically empty, in which state they would at times be used when the faeces would fall upon dry basins; for, no doubt, the servants would not always remember to pull the flushing handle after emptying the slops, especially as there would be no necessity to do so to get rid of the slops.

Then, unlike a valve-closet, the water held in the basin is in continuous contact with the air in the soil-pipe, but this is the same in "wash-down" closets.

Then I think when the water is limited to two-gallons it is important that the whole of such a flush should be utilised for washing down the walls of the basin and cleansing the trap; but in the majority of the syphonic closets it will be found that part of the flush is used for starting the syphon in a compartment outside the basin.

Then a close examination of the majority of such closets when in action will show that their sides are not properly rinsed, and that in consequence particles of matter are left adhering to the surfaces, and that even some of the rinsed water is returned back into the closet when the syphonic action has been broken. But, of course, a second flush would make this all right. It is better that such closets should have a flush of not less than about three gallons.

Before I pass away from the classes of water-closets which may, and which often are, connected to soil-pipes and drains by imperfect joints, I should like to say, as strongly as I can,

that no closet or trap having a breakable outlet, such as earthenware, should be connected to a soil-pipe or drain in a manner that will not admit of a ready inspection.

I now come naturally enough to valve-closets, the prince of water-closets for private use, and for places where such a convenience is not used for several days together and when the supply of water is not limited to two gallons. The "Bramah" valve-closet was invented by Joseph Bramah, of London, in 1778, but it has been much improved upon since then, especially during the last ten or twenty years. In turning out some drawers recently, I came across a printed circular of a valve-closet, by the founder of my business, which was established upwards of a century and a-half ago, and I have thought it of sufficient interest to reproduce upon the screen to-night for you to see. It was printed by T. Bensley in about 1790, I think. His printing press was next to Dr. Johnson's house in Bolt-court. If you look at the type you will see that the long S is used, and the Caslon Foundry abandoned that form of letter in 1785.

The illustration shows a D-trap under the closet, but according to the text this trap was at that time called an "Air" trap; and although they seem to have preferred that its position should be immediately under the floor of the closet, they do not seem to have been very particular about this, for in the directions for fixing, it is specified to be "fixed under the floor of the closet, if the joists are of sufficient depth to allow it, if not it may be fixed at the bottom of the funnel-pipe." It is interesting to notice that at this time soil-pipe was called "Funnel-pipe"—the name by which it is still called by some old plumbers—and, what is still more interesting, as shown by the circular, the conservatism of that day was very strong, for they stored the sewage in cesspools built at the bottom of funnel-pipes inside their houses. But they saw a danger in this, unless matters were well suppressed, for the specification states that "great care must be taken to make properly good round the bottom of the funnel-pipe where it enters the drain or cesspool so as to entirely prevent the foul air from being emitted." There is nothing said about the ventilation of the soil-pipe or of the cesspool, the authorities were content to "bottle up" such matters, and there was wisdom in this with so much storage of sewage in closet trap and cesspool.

But I must return to my subject. I have called the best kind of valve-closets the prince of water-closets, and I have done so because I know of no other which embraces so many good points. It has a larger and a deeper body of water than any other closet, for receiving a motion, submerging it, and carrying it away in what I have called elsewhere a "water envelope," whilst the valve which keeps the water in the basin enables its sides to be so extended that they are practically protected from the dejecta, no matter what state the body may be in. And to protect the flushing rim of water-closets I have recently introduced a receding rim.

Then, with the attached supply valve, at the same moment of time the closet is discharged, a very vigorous flush of water is made to cleanse the whole of the interior of the closet together with its trap; and not only so, the sides of the basin are rinsed down at the same time, so that not a vestige of foreign matter may remain behind.

Then the valve-closet is superior to all other closets, whether of the "wash-out," "wash-down" or "syphonic" kind, in that its basin water—the water which is open to the apartment and the house—is separated from the water which stands in the closet-trap, in fact is "disconnected" from the water which is exposed to the air in the soil-pipe, as shown in section upon the screen, which is an illustration of a valve-closet which I have had specially made for fixing upon fire-proof floors, and places where it is desirable that the floor under the closet should remain intact.

There is also another great advantage attending a good valve-closet, viz.: with an efficient lead trap under it having a wiped soldered joint to the lead soil-pipe there will ever be a reliable connexion with the soil-pipe, and a reliable water-seal; so reliable that the trap and its jointing may be depended upon for many generations.

In the case of earthenware closets with earthenware traps in one piece—the pedestal kind—or in two pieces, it is not so; for there is not only the risk of a breakdown of the connexion with the soil-pipe, but there is also

the risk of the breakage of the closet itself, its trap or its basin part, which would mean a defective water-seal or no protection at all from the soil-pipe air, pending the changing of the closet for a new one.

I know that some authorities have been content to fix valve-closets without a trap between the closet and the soil-pipe, but it is astonishing what may be done in the name of sanitation. Now, though something may be said in favour of fixing a valve-closet without a trap on a very short length of soil-pipe, which has its discharging end open to the air, what can be said in favour of such a closet fixed upon a long length of soil-pipe into which other valve-closets discharge with no trap to any of them? And yet scores have not so fixed. Only within the last few months I know of such cases where the closets have had to be re-antennated.

I will not insult you by arguing in favour of fixing traps under water-closets—that is a sound principle conceded by us all; but I shall be glad of your attention whilst I demonstrate the fact that a round pipe-trap—the syphon-trap, the kind often fixed in ignorance of its behaviour—under certain circumstances loses its water-seal, and for a time ceases its work of safeguarding the house from the soil-pipe, and perhaps the drain as well. It seems a waste of words to say that if a trap be necessary at all it should be of that kind which could be relied upon under any condition to which it would be liable.

With a round-pipe or syphon trap the discharges pass through it in so unbroken a form and with so much momentum—gained in the fall from the closet basin—that the combined action of syphonage and momentum is not arrested in time to leave sufficient water in the trap to re-seal it.

With an "Anti D-trap," as I shall show you by one or two tests, the water is just sufficiently broken up at the outlet of the trap to retard both the action of momentum and syphonage, for ensuring the retention of an efficient water-seal, no matter how small or how large a body of water may be sent through it, whilst to ensure an entire change of the previous contents of the trap its body part is purposely made smaller than its inlet, and so it holds about 40 per cent. less than a 4-in. syphon-trap I need hardly say which is the more wholesome of the two, although both kinds may be considered as self-cleansing. By the favour of the Worshipful Company of Plumbers have here an apparatus which the company fitted up at King's College in connexion with their museum and workshops there, for the extension of the technical training of student plumbers. I have had a photograph taken of the apparatus, and before demonstrating will show it upon the screen.

Next to the importance of an efficient trap to a water-closet is an efficient water supply, for the best closet in the world may not only be spoiled, but may be ruined by the want of water. I expect two gallons of water to carry a motion through the closet trap, branch oil-pipe, the vertical stack, and a long length of branch drain to reach the main carrier, and not leave a vestige of filth behind, is expecting too much. The fact is, if the water flush is to be efficient it must be made to depend somewhat upon circumstances, upon the necessities of the case, and that only where water is scarce, or where it is imperative to economise its use in order to maintain a general supply to the house, should it be limited to two gallons.

Two gallons of water with an efficient flushing cistern may fairly suffice for the best kind of wash-down pedestal closets with small water areas, when they are situated near to the main carriers with a general flow of water in them, or into which copious flushes are automatically and frequently delivered. But two gallons of water are insufficient for water-closets which hold a good body of water, especially when they stand or are fixed at any great distance from the main drain, that is, if the soil-pipes, drains, and ventilating-pipes are all to be kept clean and wholesome. In my own house—I pay by meter—I have valve-closets for the best closets with the water supply so arranged that each user may give a flush of two, three, or four gallons very rapidly and at pleasure, and during the thirteen years that I have occupied the house I have never had to pay extra on that account. I say this to encourage Water Companies in giving a larger licence to consumers.

As only, however, two gallons of water are allowed by most Companies, it is most impor-

tant that this quantity should be utilised in the best possible way, and as there are flushing-cisterns and flushing-cisterns, only the most efficient should be used. You all know well enough what difference there is in their discharging power; I have here one taking not quite five seconds to discharge, the size of the flushing pipe being 1½ in. and the cistern being nearly noiseless. With a noisy advertiser in a house, it is vain for any person to pretend he only left the room to get a pocket-handkerchief. Such fittings are most unpleasant to relating dispositions, and they ought not to be fixed in private houses. I was dining a month or two ago at a friend's house, and wishing to give a second flush to the closet, I waited four minutes by my watch for the flushing cistern to fill; when I left it was still filling, and I dare say by this time it is ready for the second flush.

A properly-fitted valve-closet with an attached supply-valve and bellows regulator, is the least noisy of all water-closets, and when it is so fitted up that the lid of the enclosure can be pulled down before the handle is pulled, it is practically noiseless in its action. The next slide will show a view of such a closet. It is so arranged in my house, where, for the sake of convenience and for good general flushing when necessary, the service to it is taken from the general service-pipe to other fittings. When this is properly done I do not see how any contamination can take place, but as it is most difficult to always rely upon things being properly done, it is better to separate the water-closet supply from all other services. When the cistern for this purpose would have to be fixed in the water-closet apartment it should be kept as small as practicable, holding only about half a dozen gallons of water, so that its entire contents may be frequently changed, for, notwithstanding any lid it may have, the effluvia of the apartment would gain access to the water and taint it. Where a good flush is desired, and the head of water would be under 5 ft. or 6 ft., the service-pipe to the closet should be of 2-in. bore.

If we were not influenced by fashion, or carried away by the current of things, I should wonder much why pedestal closets with narrow ring seats ever came into vogue for the best closets in private houses, especially for ladies' use, for I suppose the least observant must know that it is cleaner and nicer for a lady's dress, especially with a long skirt, to rest upon the dusted seat of an enclosure rather than upon the floor, remembering what closet floors are like at times. With a table-top closet basin protecting the enclosed space, and with an air-tight joint to the top of a nicely-fitted enclosure, as shown upon the screen, not only is the vapour excluded from the space inside the enclosure, but dust, and the sweepings of the apartment, as well. And with such an arrangement no cold draughts can blow upon the person using the closet. And even for the use of men, when they are feeble or advanced in years, a table-top pedestal closet affords a better means for raising themselves from the closet than the ring-seat, allowing them, as it does, a firm place to rest their hands upon, as shown by the closet illustrated upon the screen.

Before leaving the subject of water-closets, I ought to say something on the apartments in which they are fixed, though there is no time for more than a word or two. The apartment in itself, apart from the closet, may become an accumulator or disseminator of disease. Dark and dangerous water-closet apartments may be found with the aid of a candle in the interior parts of old mansions with no natural light or ventilation. The vapour generated in them, or escaping from the closet apparatus, may be as difficult to remove as air out of a bottle.

One side of a water-closet apartment should at least stand next the external air, having a window in it reaching up to the ceiling, as was shown in the last slide but one, and as is shown in this case also. Where it would be much used it should be provided with independent ventilation, should have, in fact, an air inlet and an air outlet.

It is important that the walls and ceiling should be made practically air-tight, and that there should be no places or parts about them where dust could collect and accumulate. And in public water-closets, and in water-closets which would be liable to be used as urinals, the floors should be impervious.

For the best water-closets with enclosures, as just shown, and for table-top valve-closets in private houses and important positions, a floor of solid marble from wall to wall, or to a point 6 in. or so beyond the sides and front of

pedestal closets, is very desirable, as shown. The marble is sunk a little to catch any little leakage of the supply-valve, should such ever occur, and carry it away by an overflow pipe fixed to the floor, and discharging into the open air. Where marble cannot be afforded, the boarded floor inside the enclosure should be protected by a lead safe to which the lead trap under the valve-closet should be soldered. I should just say here that the overflow pipe from the safe being a clean water-pipe can be utilised for introducing a constant stream of fresh air into the apartment; but when this is done in exposed positions, the grated opening in the marble floor should be kept outside the enclosure, so that the incoming air, when frosty, may not come directly in contact with the service pipe, service valve, or closet basin.*

In inviting discussion, the Chairman said they were exceedingly indebted to Mr. Hellyer, not only for bestowing so much time on his lecture, but for one of the most instructive papers which had ever been read before them.

Mr. F. G. K. Hooper, in proposing a vote of thanks, said that a paper of so valuable a character, should be of great use in extending the knowledge of plumbing work and of sanitary science. At the present time sanitarians might take some credit for the fact that the Queen was able to commemorate so long a reign. It was interesting to recall the fact that, through the wisdom of the late Prince Consort, early in the reign the Royal palaces were examined by experts and put, so far as was possible at that time, in a sanitary condition. Had such work been more general, it was not too much to suggest that the life of the Prince himself might have been prolonged, and the Prince of Wales might have been spared his very serious illness. At the same time we were saddened in considering the shortness of life of men and women at the other end of the social scale. The early mortality among the artisan classes was to a large extent preventable. The fact that the death rate was so high amongst this class was an injury to the whole community. Sanitarians might rejoice in what they had done, and were doing, to preserve the lives of the people, but it was melancholy to have to maintain diseased men and women in work-houses, hospitals, &c., who, instead of suffering, would be strong and healthy and giving their lives to the community had their homes been more wholesome and their habits more wise. If all like the Queen, were lovers of fresh air, the effect would be alike favourable to all. Many of the points which Mr. Hellyer had alluded to they would all take to heart. People at the present time did not consider sufficiently the ventilation in the ordinary dwelling house. The staircase, for instance, which was a means of communication, was rarely properly ventilated. If it were, much less would be heard of draughts and bad odours.

Mr. G. H. Fellowes Pryme, in seconding the vote of thanks, said that he agreed with what Mr. Hooper had said as to badly ventilated workmen's dwelling-houses; but the small suburban dwelling-house was in an equally bad state. In suburbs like Ealing, and, of course, elsewhere, the sanitation of supposed sanitary houses was abominable. He had recently been called in to examine a house which had been pronounced satisfactory by a "sanitary surveyor," and as the result of the ordinary smoke test, the house was found to be in a most defective condition. Another point he would like to refer to was as to the number of theories amongst architects as to what constituted the best sanitary arrangements, which caused the opinion of the sanitary expert to be sought after. As a result, there was springing up a class of men known as "sanitary surveyors." He recently knew of a case where the charges for the "sanitary surveyor" were 15 per cent. on an expenditure of over 1,000l., the sanitary surveyor replying, in answer to remonstrances, that it was generally agreed that the charges of the sanitary expert should be higher than those of the architect for mere architecture. He could not help thinking that more attention should be given to matters of sanitation on ships. Any one who had travelled by sea, especially in the smaller ships, would know how insanitary were the closets in ships, regular pestiferous breeding boxes. In the

* Owing to pressure of other matter, we are obliged to hold over the remainder of this paper, and some additional diagrams, until next week.

Atlantic once, in a rough sea, the water did not go down, but came up one of the closets in use, with results better imagined than described.

Mr. W. E. Bland (Newcastle) said that he was expressing the opinions of sanitarians in the north when he stated how much he appreciated Mr. Hellyer's work. One important matter which the lecturer had referred to was as to the valve closets having the water in the basin separate from that in the trap. That was a point which he had not noticed previously, although he had been a lecturer on plumbing for eight or nine years.

Mr. J. Osborne Smith said that that meeting came very opportunely after their recent Jubilee dinner, when it was said, as it was often said, that drains were not architecture. That was possibly true, for there were many things which were not architecture in that sense, although they were parts of a building; but he thought the suggestion was a wrong one, and the meaning conveyed in that phrase was the wrong advice to give to students. Architecture was the formation, the designing and production, of beautiful buildings; but a building could not be regarded as either beautiful or perfect unless it was also healthy; unless they paid attention to that portion of the practical work connected with architecture and produced reasonably healthy buildings, they had not considered sufficiently the interest of the client, nor done what they had been paid 5 per cent. for doing. He agreed with Mr. Prynne that architects should not let this practical work get into the hands of sanitary surveyors, since it was work which architects ought to look after themselves. He regretted that clients had frequently gone to him complaining of the inconvenience suffered in regard to defective drainage due to the want of attention on the part of architects. One reason of this was that insufficient attention was given to simple matters, and adequate expenditure was not incurred at the right moment. Expenditure was often lavish on parts of the building that were to be seen and the hidden parts were often sacrificed in consequence. When students were designing buildings they could put the closets and lavatories in the right places if they thoroughly understood the principles on which they were working.

The Chairman, in putting the vote of thanks, said that it had been well said that genius was the capacity for taking pains, of which they had had a lesson that night. He could not help thinking that if they wanted to learn a lesson thoroughly they should go to the very best authority they could find. One thing that made them happy in the present day was that sanitary science was approaching to a state of finality. The science now, from being complex was becoming simple, and he hoped that it would not be long before the denser bodies of the country, Local Boards, &c., would find that it was necessary to give some other form of finality in these matters than to say that their by-law must be complied with at all costs. We might, perhaps, some day get even a simpler form of valve-closet than that which was recommended at present, but the diagram which Mr. Hellyer had shown them that evening would make them feel that they were one step nearer to perfection. As an Association they ought to join with other bodies in emphasising the need of a codification of by-laws on sanitary matters. Let them, as architects, all remember that a house is a machine, and a very important machine—not a box with ornamental fronts, but a machine in which people had to spend their lives—in which they had to live and die. Architects had to accommodate people in health and sickness, and at the last moment of their existence, and no part of the habitations of the people was unworthy of an architect's skill and care. He, as an artist, must thank Mr. Hellyer for getting rid of the ornamental basin, and for the good taste displayed in the models brought there that evening. Nothing was in worse taste than the fluted or the foliated closet. If they, as architects, were to send deprecatory post-cards to the makers who sent them such specimens, perhaps there would be less of such work manufactured.

The vote of thanks having been put and agreed to unanimously, Mr. Hellyer, in reply, said he was glad that architects took so much interest in sanitation. He believed it was a question for architects, and that was why he was present that evening. In his opinion a house was not complete unless it was made healthy. Architects could do a great deal to aid the plumber, and for the

health of the country, by studying sanitation up to a point; they did not need to go into all the details—in fact they would not be able to do that, for so extensive was the subject, and so extensive were the phases of an architect's work that it would be impossible to do so.

The Chairman having announced that the meeting was adjourned "until the annual excursion," the proceedings terminated.

THE INSTITUTION OF CIVIL ENGINEERS: CONFERENCE OF MEMBERS.

A THREE days' conference of the members of this Institution was opened on Tuesday at the Westminster Town Hall, and in the Guildhall, Westminster.

The opening meeting was held in the Town Hall, Westminster, when the President, Mr. J. Wolfe Barry, addressed a large audience. After a few opening remarks, he glanced at the history of the Institution since its formation in 1818. He said that its ramifications extended not only to every city and town of the United Kingdom, but its members and representatives were to be found in every country to which British enterprise had extended. From the small beginning of 1818—which had not attained to a growth of 200 members of all classes in 1828, they had increased by leaps and bounds, so that they now numbered 6,200 members, associate members, and associates, and 900 students, making a total roll of 7,100. Of the 5,000 members, associate members, associates, and students in the United Kingdom, 1,050 of all classes were living or practising in the Metropolis. In many of the great towns of the Kingdom they had important local associations directly connected with the Institution. The number of members and associate members in the various local associations was as follows:—Birmingham and the neighbourhood, about 200; Glasgow, 150; Manchester, 200; Newcastle-on-Tyne, 120; Leeds, 150. It was with the view of further strengthening the bonds of union that the Congress of this year had been instituted; and he hoped, not only that it would have the results which they all had so much at heart, but that it might be the precursor of many more annual gatherings of a similar nature. Apart from visits, their desire had been to encourage, by means of short papers read at the meetings of the Sections, an interchange of ideas and the imparting of the most recent information on all the multifarious subjects which together were included in the expression civil engineering. Thus they had found that seven Sections naturally presented themselves as indicating that amount of specialising which in practice their profession found desirable. The Sections into which the Congress was divided were as follows:—1. Railways.—Chairman, Sir B. Baker. 2. Harbours, Docks, and Canals.—Chairman, Mr. Harrison Hayter. 3. Machinery and the Transmission of Power.—Chairman, Sir Frederick Bramwell. 4. Mining and Metallurgy.—Chairman, Mr. Forster Brown. 5. Shipbuilding.—Chairman, Sir William White. 6. Waterworks, Sewerage, and Gasworks.—Chairman, Mr. James Mansergh. 7. Applications of Electricity.—Chairman, Mr. W. H. Preece. The papers to be read at these various Sections were all short, and each was to be looked on more as introducing a subject for discussion than an exhaustive dealing with the matter in hand. The idea which they had had in view was to encourage by all means the conversational interchange of ideas and knowledge rather than any set debates. He thought that engineers as a body were always ready to give their brethren the benefit of any experience or knowledge which they might have happened to gain. He did not think that theirs was an acrimonious profession. They might have their contests before tribunals of various kinds, but he thought they were free of mean jealousies and of what he might almost call the crime of importing personal animosities into their professional struggles. Again, they thought that a Congress would be very beneficial as bringing about an acquaintance with the personality, as well as with the work, of so many who up to now had not had the advantage of meeting each other. He should like it to be distinctly understood that any repetitions of that Congress, so far as his views and the views of the present Council were concerned, would be like this—namely, a Metropolitan Congress. It was not intended to be a peripatetic Congress, meeting this year in London, and another year else-

where. The object which they had before them was to bring those who live out of London into London, not to take Londoners and others elsewhere. London was so large that it was naturally the centre to which all local associations could occasionally turn with advantage to themselves and with manifest benefit to Londoners. Further, it contained the home of the Institution, associated not only with so much of present interest, but still more with the important memories of the past—with Telford, Walker, Rennie, the two Stephensons, Brunel, Locke, Vignoles, and others who had gone before, and with so many of the fathers of the profession who, happily, still adorned their Society. The home, further, contained their unrivalled library and a fund of engineering information. Lastly, by arranging the Congress at the usual time for their annual conversation, they were able to meet socially and to show some hospitality to their brethren. All these considerations pointed, in his opinion, unmistakably to London as their rallying point, and he saw no reason for any other arrangement. In conclusion the President said:—"Let me once more speak to everybody of a hearty welcome, and permit me now to dismiss you to the work of the various Sections, with the earnest hope that this Congress may be a conspicuous landmark of the progress of our noble profession and in the usefulness of our Institution, which has had, and I am persuaded will have, so fine a career of usefulness."

At the close of the President's Address, Sir F. Bramwell took the chair, and the following papers were read and discussed:—Mr. W. H. Preece on "The Transmission of Power by Electricity"; Mr. E. B. Ellington, C.E., on "The Transmission of Power by Water"; Dr. E. Hopkinson (for Mr. John Hopkinson jun.), on "The Transmission of Power."

The Section for Railways met in the Council Chamber at Westminster Town Hall, under the chairmanship of Sir B. Baker. Papers were read by Mr. H. Coperthwaite on "Rail and Permanent Way," and by Mr. F. W. Webb on "Permanent Way."

The Waterworks, Sewerage, and Gas Works Section sat in the Council Chamber at the Guildhall, Westminster, under the presidency of Mr. James Mansergh, who read a paper on the "Law and Allocation of Underground Water," which we refer to in another column.

The Section for Mining and Metallurgy met in the Committee Room of the Guildhall, Westminster, and papers were read on "Water in Pits during Sinking" by Mr. J. B. Simpson; "Deep Levels in Mining Practice" by Mr. Bennett Brough, and "Deep Mining in Cornwall" by Mr. W. Thomas.

In the Shipbuilding Section, presided over by Sir W. H. White, and the Section for Harbours, Docks, and Canals, papers on various departments were also read, discussion ensuing.

In the afternoon visits were paid to various engineering works in the vicinity of London.

In the evening there was a reception by the President and the Council, at which over a thousand members and guests were present. The interior of the new building was filled with pictures on loan and models of engineering works.

The Conference was resumed on Wednesday and Thursday.

COMPETITIONS.

NURSES' HOME, WANDSWORTH.—The first premium (50 gs.) in this competition has been awarded to the design bearing the motto "Nightingale," by Messrs. Lansdell & Harrison, of 12, Compton-terrace, Highbury, N. second (20 gs.) to the design bearing the motto "Florence Nightingale," by Mr. F. W. Goldsmith, of 1, Verulam Buildings, Gray's Inn, W.C.; and the third (10 gs.) to the design bearing the motto "Victoria," by Messrs. Gould-Wills & Bulman, of "Inglenook," 4 Sisters-avenue, Clapham Common, S.W. The number of designs sent in was sixteen.

TOWN HALL, ENNISKILLEN.—In the competition for a new town hall at Enniskillen, Ireland the first premiated design is by Messrs. Anthony Scott & Son, Drogheda; the second by Mr. W. Kaye Parry, 35, Dame-street, Dublin; and the third by Mr. Thomas Roe, 1, Lombard-street, Belfast. The assessor was Mr. Thomas Drew R.H.A., who, in his report, stated that "The anonymity of the competitors has been most successfully preserved. I rejoice to say that in my examination I have had not the slightest hint or impression as to the identity of an

competitor. It is rarely that architects meet with such absolutely fair circumstances; and the conduct of this competition by the Commissioners of Enniskillen will, I trust, at its conclusion be quoted as realising what a fair competition ought to be." Nineteen designs in all were submitted.

POLICE STATION, HALIFAX.—In regard to his competition we learn that out of the seven sets of plans sent in the choice lies between the plans signed "Victorina" and those signed "V. R."

NURSES' HOME, WANDSWORTH.—We understand that the design of Messrs. Lansell & Harrison, of Highbury, has been selected in open competition by the Guardians of Wandsworth and Clapham Union for the proposed Nurses' Home at their infirmary, and has been forwarded to the Local Government Board for their approval. The estimated cost is between 2,000*l.* and 10,000*l.*

ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

A LANCASHIRE district meeting of the members of the Association of Municipal and County Engineers was held at Rochdale, on Saturday, the 22nd inst. Mr. F. J. C. May, C.E., of Brighton, President, occupied the chair, and amongst those present were Messrs. J. Cartwright, Bury; Walker, Croxson; J. P. Barber, Slington; Cooper, Wimbledon; J. T. Eayrs, Birmingham; J. Lobley, Hanley; J. C. Pickering, Nuneaton; Willbourne, Middleton; Cooke, Lancaster; Royle, Strelford; Cox, Bradford; Taylor, Newburn-on-Tyne; E. R. S. Escott, Halifax; Bulton, Burnley, and others.

The Mayor (Mr. Turner) offered the Association a very hearty welcome to Rochdale.

The President read a letter from Mr. Bulton, of Burnley, resigning his position as Secretary for the Lancashire District, which was accepted with regret.

On the proposition of Mr. Cartwright, Bury, seconded by Mr. Platt, Rochdale, Mr. Cooke, of Lancaster, was appointed to fill the vacancy.

Mr. S. S. Platt, C.E., Borough Engineer, read a paper on "Some of the Municipal Works of Rochdale." Describing the Town Hall, he said the building is in the rich domestic Gothic style, resembling some of the mediæval town halls of the Continent, and was erected from the designs of Mr. W. H. Crossland. The original cost of the building was about 150,000*l.* The foundation stone was laid in March, 1886, by the late Mr. John Bright. The extreme length of the building is 92 yards, its greatest width 41 yards, and it covers an area of 3,000 yards. The easterly end is occupied with the municipal apartments and offices. The central portion is occupied by a magnificent hall with hammer-beam roof somewhat like Westminster Hall. It will seat 1,200 persons, and is much used for public meetings, balls and concerts. The council room extends the whole width of the building and is 60 ft. by 24 ft. The upper floor at the easterly end is occupied as a School of Art. The westerly end contains the Police Department and includes a Borough Court. On April 10, 1883, a serious fire occurred which destroyed the ornamental spire and seriously damaged the stone tower supporting it, and he had the unpleasant duty of razing the tower to within about 30 ft. of the ground. Mr. A. Waterhouse, R.A., was called in, and the present tower and the restoration of the building adjoining it was designed and carried out by him, the site of the tower being moved about 15 yards in an easterly direction, leaving a porte cochère between that and the main building. The general plan of the technical school is in the form of the letter L. In the angle are placed the weaving sheds, north lighted, and so arranged that any future extension can be grouped round the same. The structure averages three stories in height, and covers an area of 1,010 square yards. The basement floor comprises a weaving shed, 53 ft. by 32 ft., for hand and power looms, a weaving class-room for sixty students, a cotton spinning class-room for forty-five students, an engineering class-room for fifty students, practical plumbing, wood turning, &c. On the ground floor, besides the necessary rooms for secretary, committee-room, teachers' common room, and students' common room, there are three large class-rooms, averaging accommodation for fifty students each. The whole of the first floor is devoted to the study of chemistry and dyeing, comprising a laboratory for eighty students, balance room, sulphuretted hydrogen

room, store and reagent room, together with a chemical lecture theatre for ninety students; also a preparation room adjacent to same. A dye-house, with experimental tables to accommodate twelve students, is at the far end of the corridor farthest from the staircase. The chemical laboratory is fitted with working benches for both elementary and advanced students, demonstrators' raised platform and table, and is well and correctly lighted by large mullioned windows. Internally the building is finished in a simple yet substantial manner, with fireproof floors to corridors and elsewhere as found desirable. Externally the building is faced with red Raabon stock bricks having terracotta dressings and other enriched work. The building is wholly required for science, commercial, and technical classes, and was completed and opened in 1893 at a total cost of £11,500, the architects being Messrs. Woodhouse & Willoughby, of Manchester. The schools is the outcome of subscriptions raised in the Jubilee year, and was one of the first handed under the 1891 Act, and is managed by a committee of twenty-four, fourteen of whom are appointed by and are members of the Town Council, and ten are appointed by the original subscribers, of which latter representatives he had been one since the inception of the school. After the serious fire at the Town Hall in 1883 it was decided to remove the Free Library therefrom and to erect a building specially for the purpose. He was entrusted with the designing and carrying out of the work. The building is all one story, with a basement on the northerly side, and covers an area of 650 square yards. The design is domestic Gothic, the materials used being Yorkshire parpouts with Yorkshire stone dressings. Passing through the vestibule the visitor can enter through doorways on either side, and from the entrance hall access on the right hand side leads to a large reading-room, and on the left hand side to a reading-room devoted jointly to ladies and boys. The arrangements are planned so as to afford complete supervision of the several departments by the officials of the library. The total cost of the building and fittings was 5,000*l.* In the early part of last year the committee decided to introduce the electric light, and he had recently completed this installation with the assistance of Mr. G. R. Peers, of Manchester, as consulting electrical engineer. The several rooms had been fitted up with 144 16-candle-power lamps and six 25-candle-power lamps, and opportunity had been taken to introduce an exhaust fan in the large reading-room, driven by an electric motor fixed in the ceiling for the purpose of ventilation on foggy or heavy days, when the air of the room could be changed in a few minutes. It was not possible in such a short period of working to give a reliable statement as to the comparative cost of electric light *versus* gas, but, so far, the results are very satisfactory, both as to efficiency and cost of working. The new fire-station is in Alfred-street, and beside engine-house, there are superintendent's house and nine firemen's dwellings. The actual cost of the station was 5,000*l.*, and was carried out from his designs and under his direction. About 1880 the Corporation purchased the Roch Mills and Half Acre estates, containing an area of about eighty acres, for the purpose of a sewage farm, at a cost of 26,421*l.*; but of this area about thirty-one acres includes the river, roads, buildings, and hill-side land, which is not available for sewage treatment, leaving a net area of forty-nine acres of filtration plots upon which the sewage could be disposed of. The present dry-weather flow is 2,000 gallons from an estimated population of 50,000. When the whole of the sewers tributary to these outfalls are completed it was estimated the dry-weather flow would be 2,300,000 gallons daily from a population of about 75,000. The sewage from the sudden outfall had, since October, 1890, been dealt with in three precipitation tanks, having a total capacity of 300,000 gallons; and in order to deal with an increased quantity in future an additional tank of 100,000 gallons capacity was shortly to be erected. Since June, 1888, the sewage from the Roch outfall had been dealt with on the area laid out for intermittent filtration without previous treatment in tanks, but the volume had so increased, and the quality of the sewage so materially altered by the addition of manufacturing refuse, as to render the land incapable of dealing satisfactorily with it; hence the necessity for an increase of filtration area and for previous treatment in tanks for the pre-

cipitation of the solid matter in the sewage. For the former purpose an additional area of suitable land, eleven and a quarter acres in extent, had been acquired, the whole of which was available for filtration areas, making in all sixty acres of filtration areas. The distribution of the sewage on the farm was from chambers connected by large earthenware pipes with iron pipes at river crossings, and thence along grips provided by a grip plough, these grips being moved from year to year to suit the working of the land. The crops grown included Italian rye grass, turnips, cabbage, and mangolds. The new works opened in September last were the precipitation tanks and plant for dealing with abstracted solid matter. The tanks consist of two roughing tanks, each of 705,000 gallons capacity, and six precipitation-tanks, each of 200,000 gallons, or rather more than the present dry weather flow. By an arrangement of weir penstocks the top water level of the tanks can be raised 1 ft., thereby increasing weir total capacity by about 275,000 gallons. The tanks had been planned to allow future extension whenever required, but the provision made is believed to be ample for many years to come. The tanks are worked on the system of continuous flow, and during storm flow they can be worked in two or more sets as may be found advisable to ensure the best result. The clarified sewage on leaving the tanks passes through a regulating chamber, whence it is distributed on to the filtration areas, the effluent being discharged at several points into the river. The sludge, which contains 90 per cent. of moisture, is forced under a pressure of 100 lbs. to the square inch in presses. The resultant cake contains about 60 per cent. of moisture. At present the amount of pressed sludge averages 150 tons a week, which he considered somewhat abnormal for a tributary population of 50,000, with only about 700 water-closets in use, and the excreta of the population collected on the pail system. The total cost of the tanks, building, and pressing plant was 23,000*l.*, and with the cost of land and laying out, and about 3,000*l.* worth of work to complete the scheme, would bring up the total cost for disposal works to about 72,000*l.*, or 1*l.* per head of the present population.

The President said the subjects treated in the paper were of great interest to municipal engineers. He must say they were of special interest to himself, as he was enlarging and practically rebuilding the Town Hall, building technical schools, had prepared plans for new Free Library, Art Gallery, and Museum, and at the last meeting of the Watch Committee received instructions to build a new fire station at Brighton.

Mr. Walker, Croxson, said that in the Free Library at Croxson they had adopted what was known as the open-access system. It was at first very much opposed, as it was feared they would lose a large number of books, but the system had now been working for twelve months, and they had not lost a single book. There was no doubt the adoption of the open-access system had increased the usefulness of the Library.

Mr. Platt said the "open-access" system of library management was new to him, but he did not think it would be suitable for Rochdale.

A visit was then paid to the new Technical School, the special point of interest being the Key system of ventilation. In answer to questions, Mr. Platt said it was an expensive system to put in, but its working was perfect. The air could be changed in the rooms every ten minutes and was so diffused that those in the rooms never felt any draught.

The Mayor of Rochdale entertained the members to luncheon in the Assembly-room at the Town Hall, and the afternoon was occupied with visits to the Brigade station (where the response to a test fire call was made in the remarkable time of twelve seconds), the Free Library, and the Sewage Farm. Mr. Platt explained the various details of the working arrangements.

GOLDER'S HILL, HAMPSTEAD.—The trustees under the will of the late Sir Spencer Wells, Bart., offer for sale this property, situated on the west side of the Heath, near North End, and renowned for the beauty of its grounds, which extend over thirty-six acres. Golder's Hill was the home for three years of Mark Akenside, author of "The Pleasures of Imagination" and other poems, it being the residence of his friend and patron, Jeremiah Dyson. In January, 1748, Akenside, through Dyson's liberality, took a house and practised in Bloomsbury-square.

Illustrations.

KINCARDINE, N.B.

A COMPLETE view of this mansion was published in the *Builder* of July 6, 1895. The present drawing, now hung on the walls of the Royal Academy, is a sketch from one of the windows of the tower, and looks towards the south-west gable and turrets.

The balcony commands an exceptionally beautiful view of Deeside. The walls are rough cast with rock-faced Corrennie granite dressings, the roofs being slated with Tilberthwaite green slates.

Messrs. Niven & Wigglesworth are the architects.

SHIPTON HALL, SALOP.

This is a charming Elizabethan house, standing firmly erect in vigorous old age, overlooking the beautiful Corve Dale, about midway between Bridgnorth and Ludlow, the ancient home of the Mittons, a Shropshire family of renown.

The hall is built in a grey coloured freestone, laid in regular courses of varying heights, with a very fine joint, and the work is weathered with delightful patches of a greenish grey tint, and a warmer effect on the stone mullioned windows. The older portion of the hall is covered with stone slates, and the tall chimney shafts, with their V shaped projections and projecting courses, are built in thin bricks. This form of chimney shaft occurs very frequently on work of this period in Shropshire.

One of the great charms of Shipton Hall is that in most of the windows of the Elizabethan portion of the building the original small diamond panes are intact, and that where they no longer remain, modern glass with its blank and most disastrous effect on the general appearance of such a building has not superseded them, but the original panes, removed more than a century ago, have been replaced by small rectangular panes in old lead work, which is not out of harmony with the architecture. Long may Shipton be spared the degradation of plate glass.

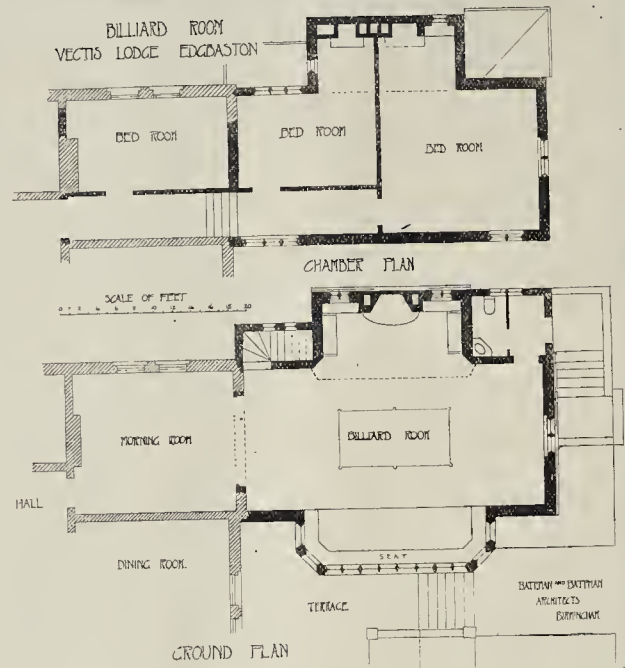
A further object of great interest and historical value, giving to this ancient manor-house a great amount of dignity and importance, is the old stone dove-cot or pigeon-house, which stands on the high ground embedded in the trees on the right-hand side of the picture. It is a very rare example, being a circular stone tower with a conical roof surmounted by an exceedingly graceful oak turret and having a great revolving ladder within swinging from the centre and affording access to the thousand homes of the birds of other days. When it is remembered that only a lord of the manor or a rector was allowed to possess one of these buildings, it will be seen that the presence of one of so early a date indicates a house of ancient importance.

The spirit of so-called "restoration" which often effectually destroys the ancient character of old architecture has not invaded Shipton, and "the new owner has not cut down the trees and the ivy is not replaced with stucco," but has wisely contented himself with making a few necessary repairs, and the opening out of existing windows which were bricked up at the back (probably in the days of the window tax); a very ugly rain-water pipe which cut the tower in about equal heights has been removed. The present roof of stone slates which covers the oldest portion of the building, and is a vital element of the ancient character of the building, has been carefully repaired with similar materials. In repairing the stonework the disturbing effect of the usual bricklayers' "cut" and projecting joint has been avoided.

The new entrance gates have been made upon the lines of the old portions of those which existed formerly. It is proposed to complete the north wing, which was begun in Georgian times, by providing a billiard-room, gun room, &c., in keeping with the Georgian work, with new sash windows set in the brickwork. The hall is panelled throughout with arched openings to the rooms and staircase hall leading therefrom.

The drawing-room and morning-room are panelled with secret recesses therein in the chimney breasts and between the rooms and the hall. The upper rooms are also panelled.

The repairs have been carried out by the



owner under the advice of Messrs. J. H. Hickton and H. E. Farmer, architects, of Walsall.

VECTIS LODGE, EDGBASTON.

The addition to this house, shown by the illustrations, consists of a billiard-room and two bedrooms over. Owing to the width of the morning-room, and its roof being only 15 ft. 10 in., playing space for a billiard table is provided by throwing out a large bay window on the one side and a fireplace recess on the other (15 ft. wide and 7 ft. 6 in. deep), which, with the gallery over, gives some interest to the room. The floor, framing, &c., are in oak, and the frieze adopted is a wall paper of Messrs. Watts, Limited, designed by Mr. Bodley, A.R.A. The bedrooms over are panelled up to the springing of barrel ceilings arranged in the roof.

Mr. John Bowen, of Balsall Heath, has carried out the works from the designs of the architects, Messrs. Bateman & Bateman, of Birmingham and London.

The drawing is exhibited at the Royal Academy.

COTTAGES, HEATHWAITE.

THESE are good specimens of cottage architecture, in which a certain special character is obtained by the introduction of the plain sloping buttresses at the angle and on each side of the door; and in other respects there is a good deal of character about the small building, of which Messrs. Mawson & Gibson are the architects.

HOUSE, WALTON-ON-THAMES.

THIS slight sketch of a slight little house, by Mr. John Watson, is hung at the Royal Academy, and is referred to in our article of to-day on another page.

THE BLACKWALL TUNNEL.—The new Tunnel under the Thames, which will afford a ready means of communication between the districts of Poplar and the East and West India Docks on the north, and the neighbourhood of Greenwich and Woolwich on the south, was opened last Saturday by the Prince of Wales. In our last issue an article descriptive of the new work will be found, but we omitted to mention that the bulk of the glazed bricks used was supplied by Messrs. John Hall & Co., of Stourbridge, while the electric light work was carried out by Messrs. Laing, Wharton, & Down, Limited, of London. In the design of the entrance houses, the Council's architect, Mr. T. Blashill, was associated with Mr. Alex. R. Binnie, the chief engineer.

ARCHITECTURAL SOCIETIES.

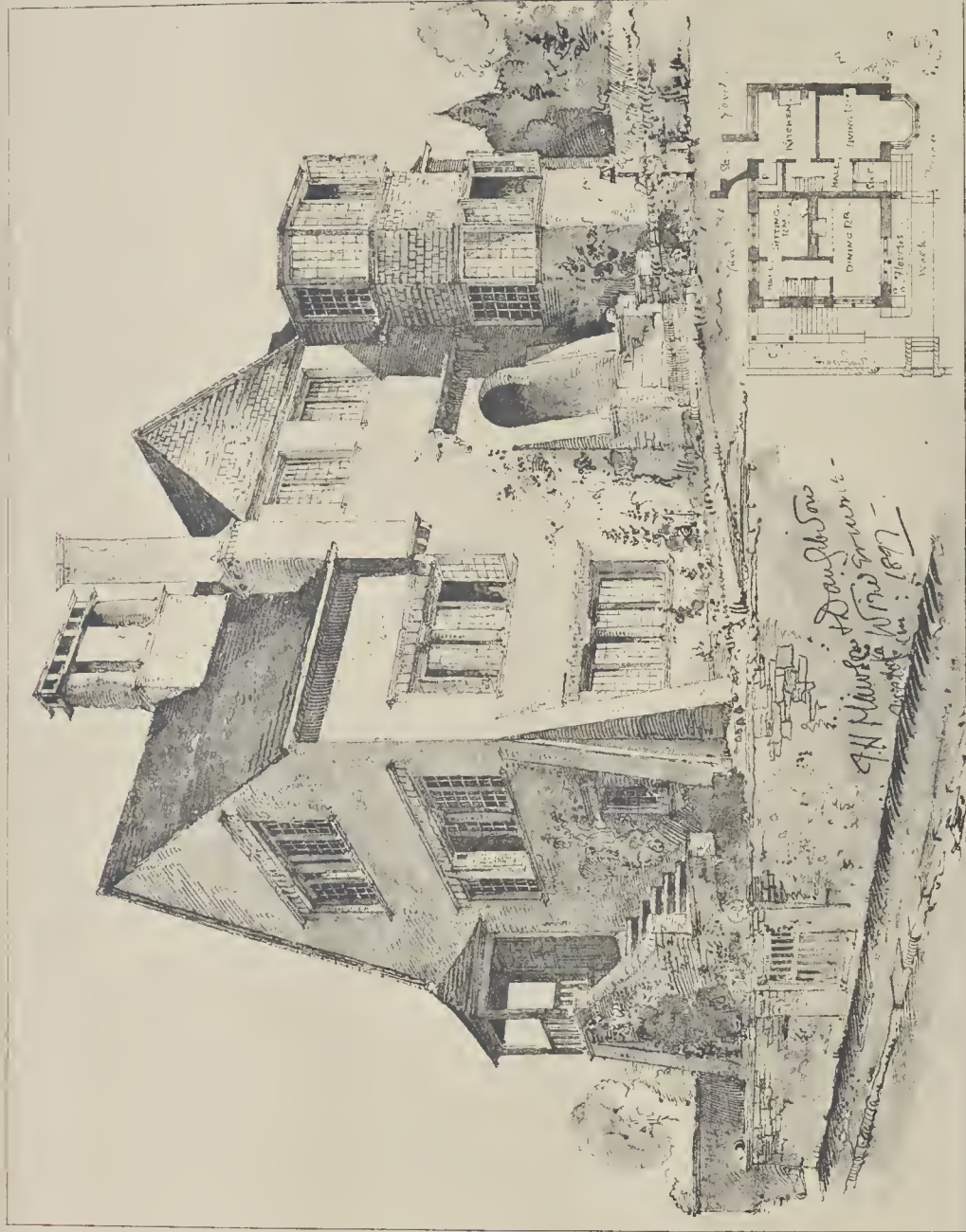
EDINBURGH ARCHITECTURAL ASSOCIATION.

—The Edinburgh Architectural Association visited on Saturday last The Binns and Midhope, Linlithgowshire, by permission of Mr. J. Cornwall Dalryell and the Earl of Hopetoun. Mr. Thomas Ross, F.S.A., Scot., in describing The Binns, said that it occupied a charming situation on the summit of a low ridge of hills to the south of Blackness Castle. On plan it formed three sides of a square, the east wing being the oldest part, and probably dating from the sixteenth century, and the north and west wings from the seventeenth century. One, at any rate, of the fine plaster ceilings seemed to be by the same hand that executed those at Moray House, Edinburgh. The Dalryells of The Binns were descended from the Dalryells of Dalryell, and they acquired The Binns towards the end of the sixteenth century. General Dalryell took a most prominent part in the events of the seventeenth century, dying a very old man in 1685, in spite of a large reward being offered for him, dead or alive. Mr. Ross, in his description of Midhope, said it was a lofty mansion-house situated in a picturesque dell, and quite hidden from view till one was almost within call of it. Oblong on plan, it was erected at three distinct periods. The whole basement was vaulted, and a small newel stair in the older part and a fine oak stair in the later gave access to the upper floors. Alexander Drummond, second son of Alexander Drummond of Earnock, was the first laird of Midhope, and in the beginning of the seventeenth century the property passed into the hands of the Livingstone family, who probably built the eastern parts.—On the motion of Dr. Rowand Anderson, a vote of thanks was passed to Mr. Dalryell, the Earl of Hopetoun, and the leader of the visits, Mr. Thomas Ross.

THE ARCHITECTURAL ASSOCIATION OF IRELAND.—The closing meeting of the winter session of this Association was held in the Grosvenor Hotel, Westland-row, the President, Mr. R. Caulfield Orpen, in the chair. The meeting was held for the purpose of receiving a report from the Committee and arranging business details. The report dealt with the work of the past session and included statements dealing with the classes established. The progress was considered to be highly satisfactory, the Association having a membership of over 100, seven new members having joined recently. A vote of thanks was passed to the Council of the Royal Hibernian Academy



THE BUILDER. MAY 29. 1897



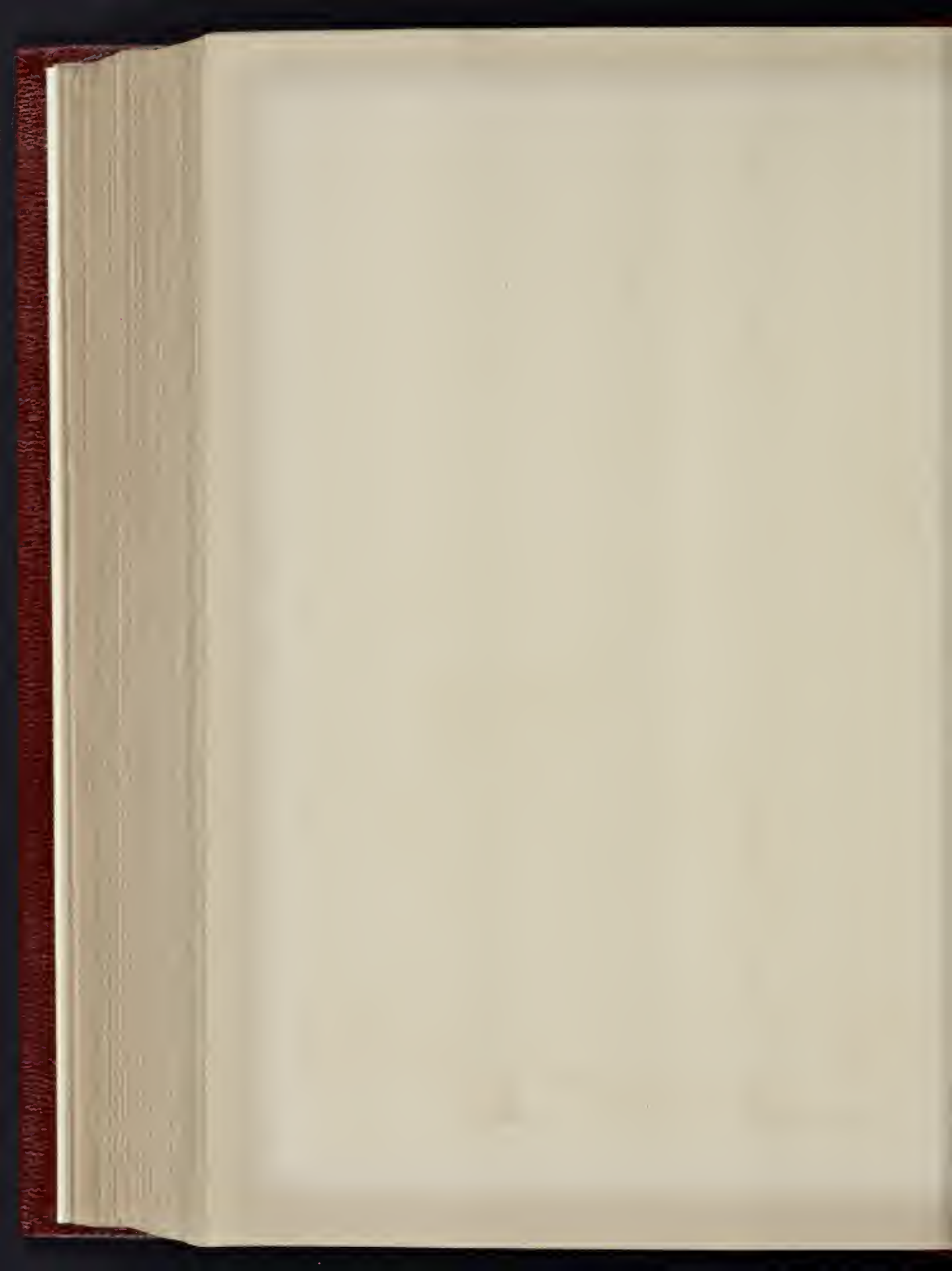


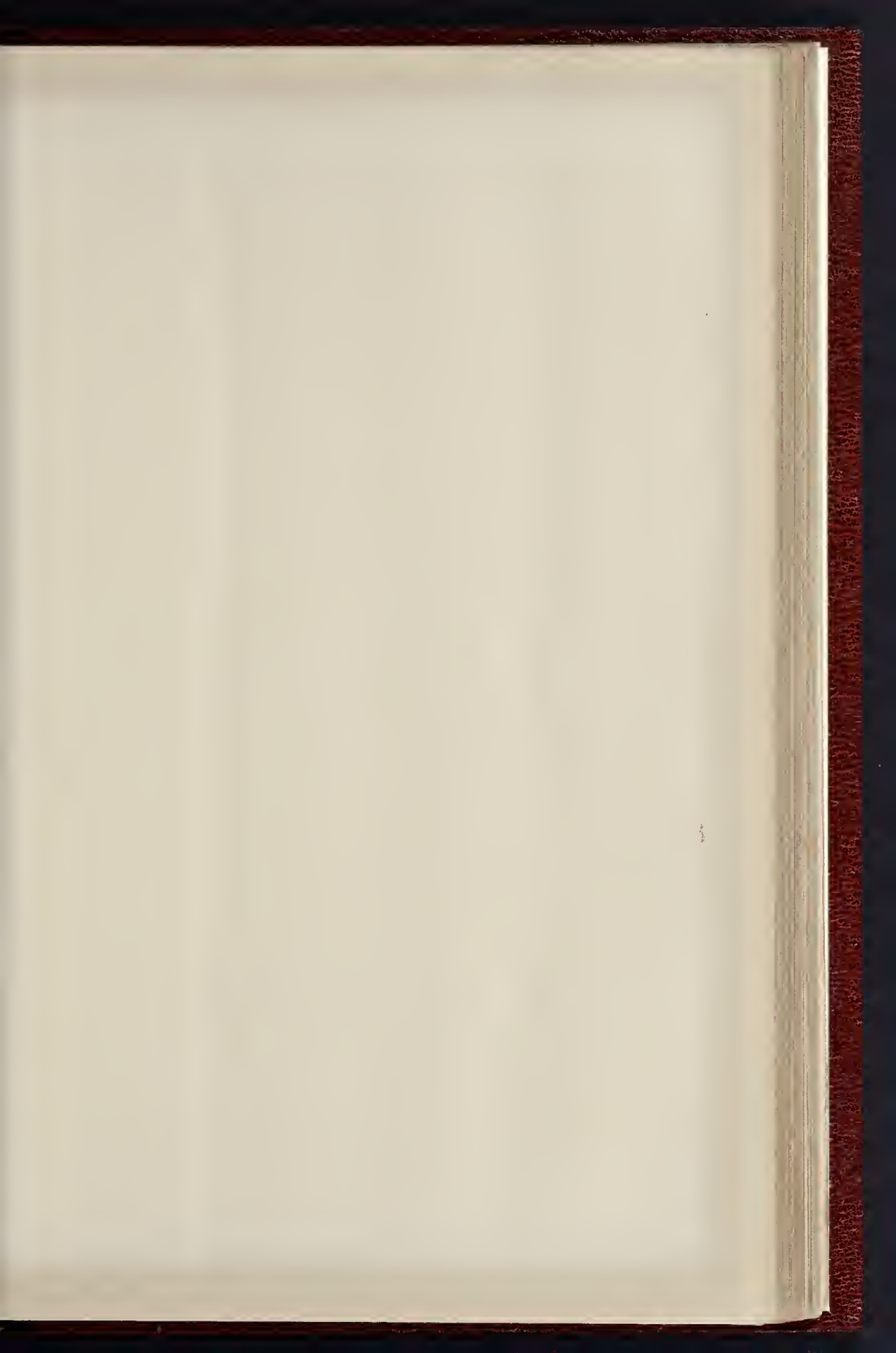


SHIPTON HALL.



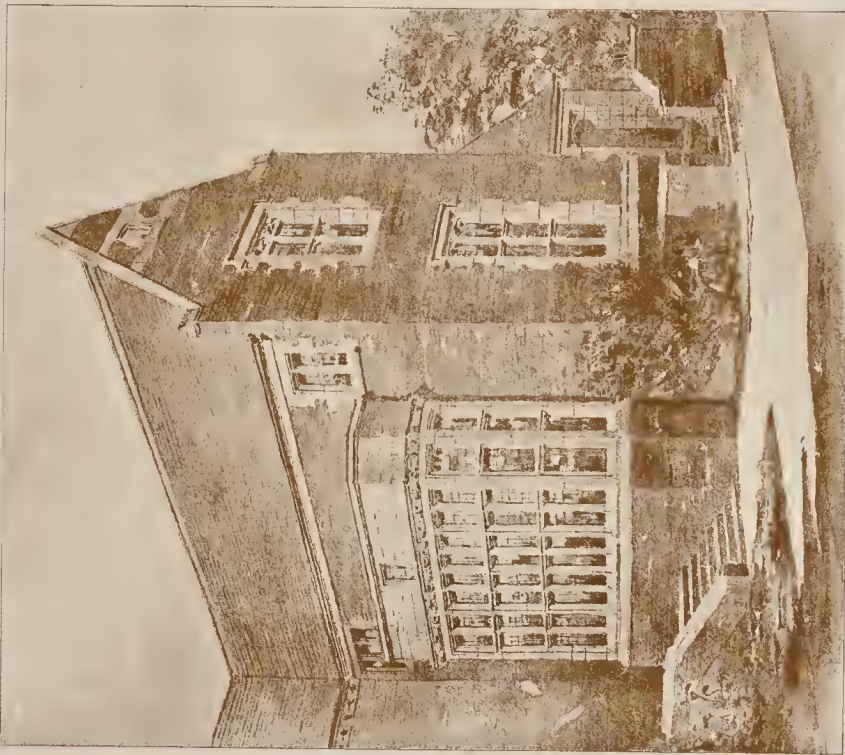
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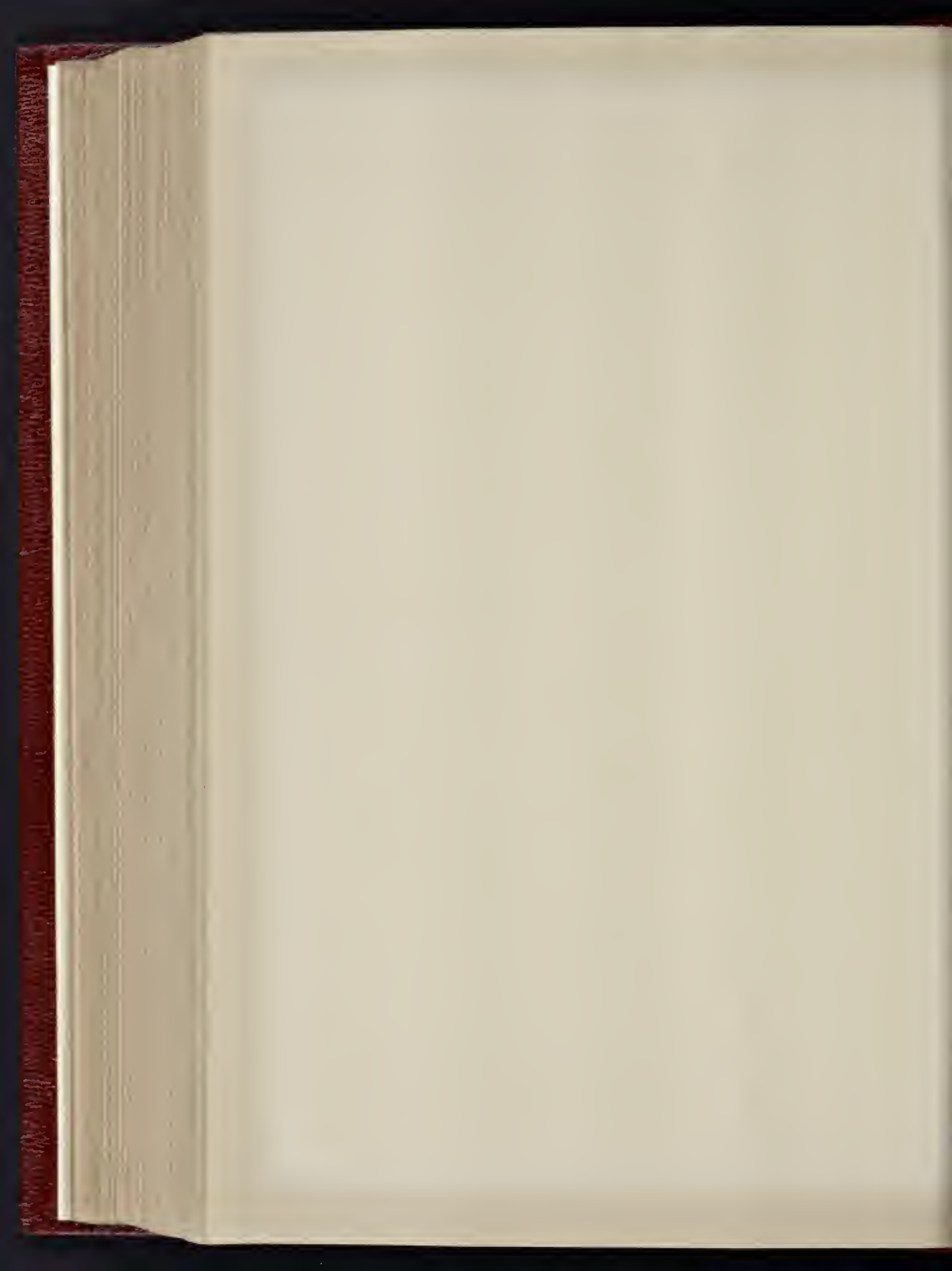
THE BUILDER MAY 29, 1897





VECTIS LODGE, EDGBASTON — MESSRS. BATEMAN & BATEMAN, ARCHITECTS

1871





THE BUILDER, MAY 29, 1897.



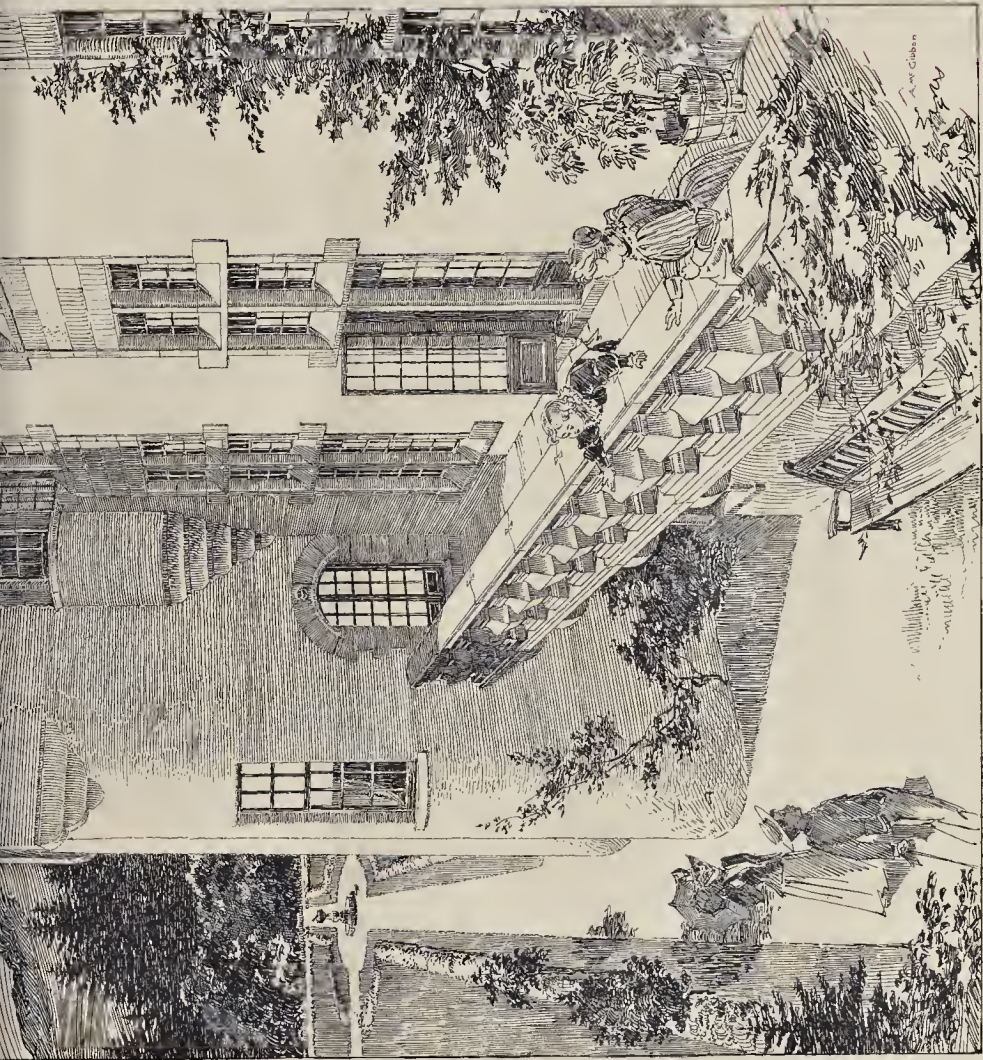
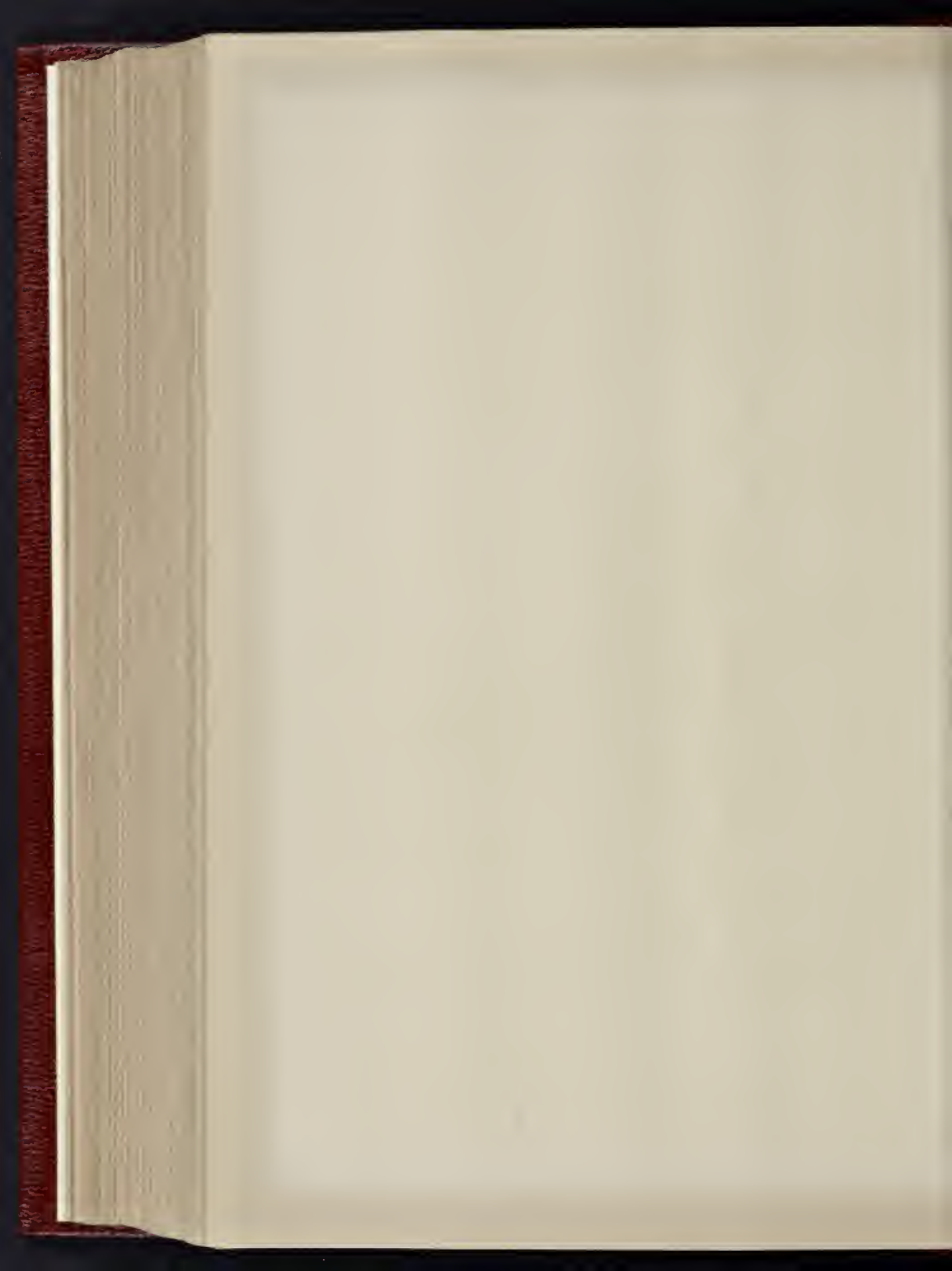
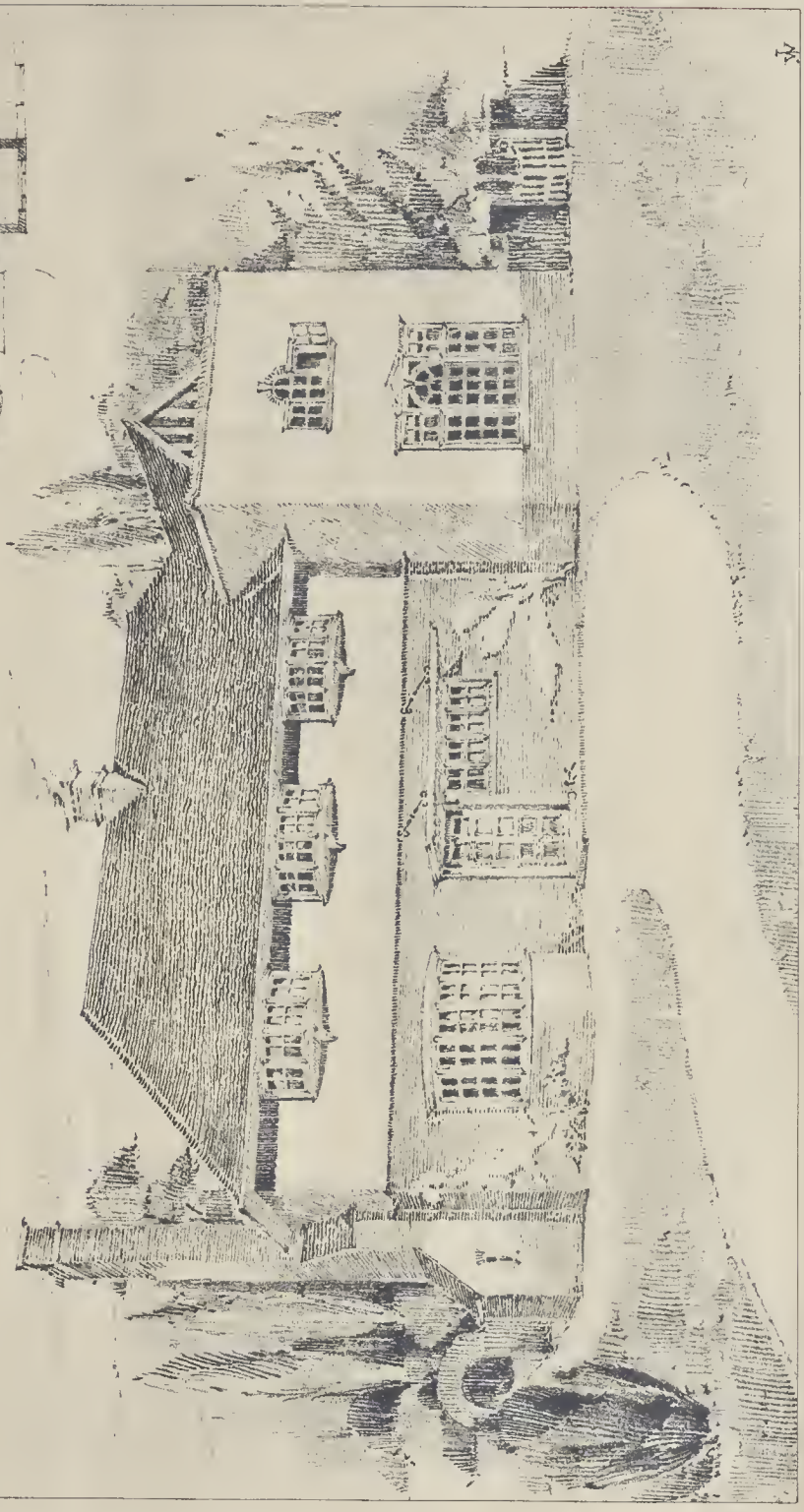
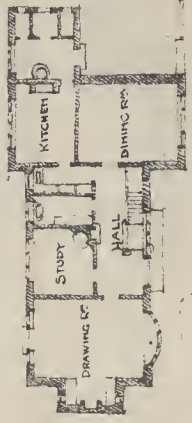


PHOTO LITHO SPRAGUE & CO. 43, 45, EAST HADSON ST. N.Y.

VIEW FROM TOWER, "KINCARDINE," DEESIDE.—MESSRS. NIVEN & WIGGLESWORTH, ARCHITECTS.

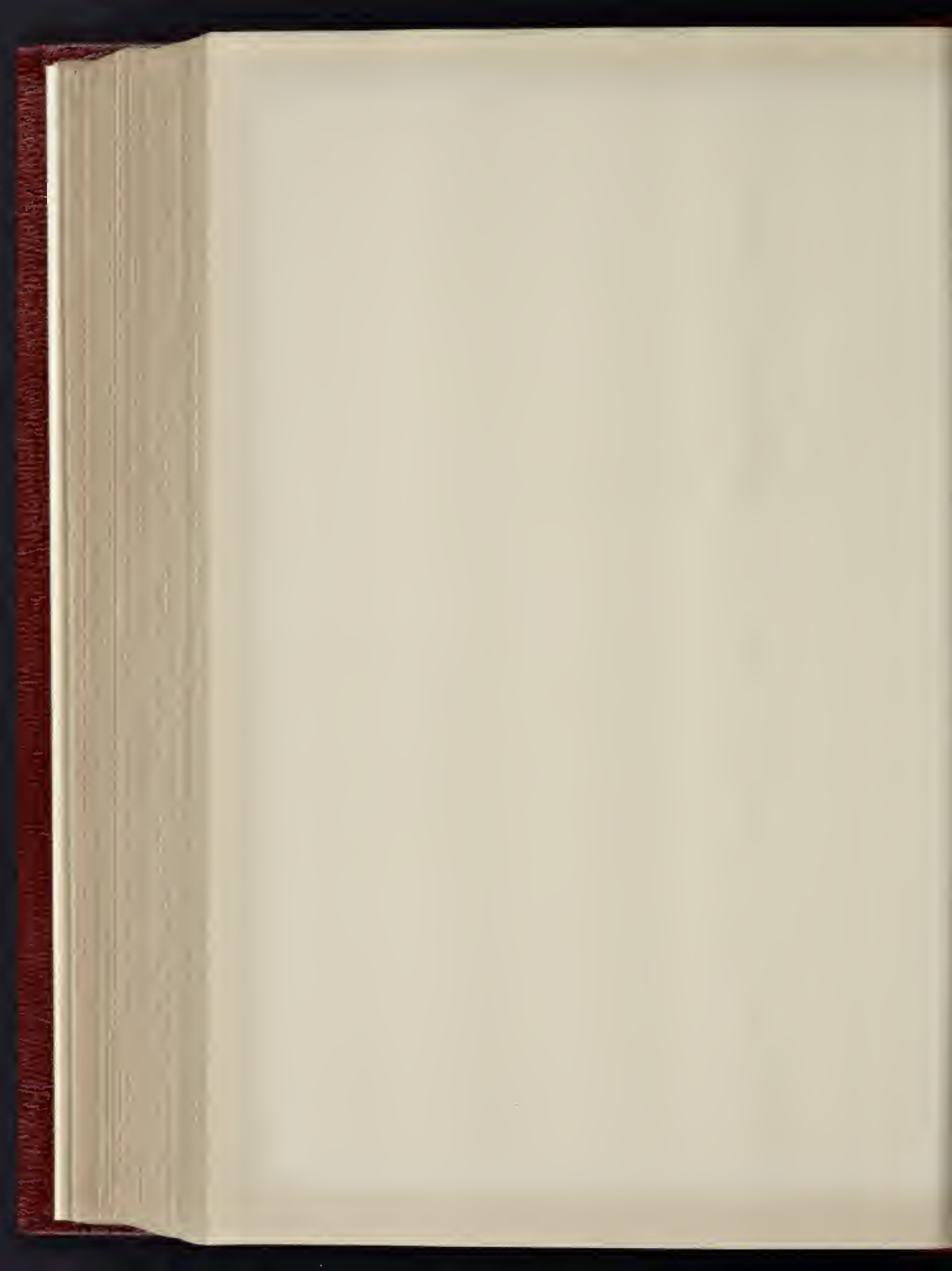




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1/4 PHOTO SKETCH OF 22 S. EASTMAN ST. STREET, NEW YORK, N.Y.

HOUSE, WALTON-ON-THAMES — MR. JOHN WATSON, ARCHITECT.





Central Building, Stockholm Exhibition.

for their kindness in granting the use of the Academy house for the purpose of holding the annual conversation. It is intended that the work of the Association shall not entirely lapse during the summer, as visits will be paid on Saturday afternoons to buildings and places of interest in and around Dublin.

CENTRAL BUILDING, STOCKHOLM EXHIBITION.

This is a sketch showing the central feature of the principal building for the Scandinavian Exhibition at Stockholm, which was opened this week. We are indebted for to an architect at Stockholm, Mr. C. Adlersparre.

AN EXHIBITION OF POSTERS.

An exhibition of designs for posters should be sufficiently attractive and interesting to the public, for it is the one modern art, excepting architecture, which they have thrust upon them wherever a new building is being erected. In fact, if ever a Committee of Public Taste were to be appointed, their deliberations would consist largely in regard to posters. A poster, from its very nature, must be looked at; it is an advertising medium designed to catch the public eye, and the only thing we can expect is that it may do so without offending our artistic susceptibilities—that it may effect its legitimate purpose without hurting us.

The exhibition of posters now on view at St. Bride's Institute is an excellent one. It is a one-man exhibition, and consists of original designs for posters by Mr. Louis Rhoad, of New York, but formerly of the Wedgwood Pottery. There is also an absence of bad drawing and impossible proportions of the human figure, which are to be seen on some boardings in London. As a whole, the exhibition has strong points for our praise; the drawing of the figures, their decorative accessories, and their gorgeous colouring are certainly to be commended. The artist has certainly borne in mind that the first purpose of a poster is that it may be seen from a distance, and we must not be led away by the somewhat glaring effect produced by being seen together in a small room. Mr. Rhoad has

a liking for the draped figure, which seems very suitable for the purpose, while for colouring, schemes of greens, blues, and violets predominate.

We may enumerate among the more noticeable of the designs the one for a champagne brand, a single figure subject draped in blue and green only. Design and handicraft represented by two seated draped figures, with coloured draperies and elaborate surface pattern. Another of the same type is that of a Gentlewoman's Magazine, with four standing figures representing instruction, pleasure, fashion, and the fine arts. The drapery folds are excellent and the colouring rich and harmonious, classic Ionic columns being introduced between each. The design for flower and vegetable seeds is in a far lighter key, the dresses of the figures being left nearly white, and the whole scheme worked from that. "Pure milk" is represented by a milk-maid in a light satisfactory key, and seems almost to emphasise the fact it is best to have few figures and to keep them of a certain size; there is apt to be confusion otherwise when seen from a distance.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday in the County Hall, Spring-gardens, Dr. Collins, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee it was agreed to lend the Hampstead Vestry 6,315*l.* for street improvements; the Fulham Vestry 3,385*l.* for street improvements; the Limehouse District Board 800*l.* for providing an infectious diseases shelter; the St. Pancras Guardians 1,000*l.* for works at St. Anne's Home.

The Works Department.—The whole of the sitting was taken up with a debate on the Works Department, the discussion being directed chiefly to the recommendations of the Special Committee appointed to inquire into the working of the Department and to an amendment moved by Lord Onslow. In our issue for April to we made some comments on the report of the Special Committee, whose recommendations were as follows:—

(a) That in the opinion of the Council some definite organisation for the direct employment of labour and the direct execution of public works by

the Council under the superintendence of its own officers is desirable and beneficial.

(b) That a Works Board be substituted for the Works Committee, such Board to be elected forthwith, one member to be nominated by and from each of the following committees: Finance, Asylums, Bridges, Fire Brigade, Highways, Improvements, Main Drainage, Parks, and Housing of the Working Classes; and that in future years the election of members of the Board do take place at the meeting of these committees next to March 31.

(c) That any Committee desiring to propose to the Council the carrying out of any works without the intervention of a contractor, shall, in the first instance, obtain an estimate from the proper officer and then refer such estimate to the Works Board for their consideration before reporting to the Council.

(d) That the Works Manager shall, unless in any case otherwise ordered, carry into execution all works which the Council resolves to execute without the intervention of a contractor.

(e) That when the Council wishes to execute any works without the intervention of a contractor, the plans, specification, and estimate shall, unless otherwise ordered by the Council, be thereupon referred to the Works Manager.

(f) That the Works Manager shall be responsible to the Works Board, and the Board shall report from time to time to the Council.

(g) That this report be referred to the General Purposes Committee, and that it be an instruction to that Committee to amend the standing orders in accordance with the foregoing recommendations.

(h) That it be referred to the General Purposes Committee to make further amendment of the standing orders by the insertion of words coupling the unions of employers where such exist with the trades unions, in reference to the rates of wages and hours of labour.

(i) That it be referred to the General Purposes Committee to make further amendment of the standing orders by omitting provisions giving powers to the Clerk of the Council to direct examination of the books of any one contracting with the Council for the execution of works, other than the time-sheets or books or wages-sheets or books.

(j) That the statement of Mr. Edwin Waterhouse be referred to the comptroller for report upon each and all of his suggestions with reference to the accounts, and that the comptroller's report be referred to the General Purposes Committee with a view to the adoption of Mr. Waterhouse's recommendations.

Since the report was first brought up, the Works Committee has submitted some fresh returns of completed works, which show that certain losses have been incurred on a few of the undertakings, while a report dated May 17 shows that work estimated to cost 61,701*l.* has cost 70,782*l.* In regard to the work for the foundations of the Heath Asylum, Bexley, the revised estimate was for 31,833*l.*, and the approximate actual cost 37,574*l.* It is further stated that the Architect has not certified this account, on the ground that the damage caused by frost has not yet been repaired. Another work, the Wandie branch sewer, has cost 11,873*l.*, the revised estimate being 9,670*l.* The Manager, Mr. W. Adams, in his report on these returns, says the excess, in his opinion, has been due in great measure to the low prices accepted by the Works Department. In the case of the Heath Asylum foundations, the detailed prices were prepared by the Architect, and referred and accepted by the Works Department. The preliminaries were not priced, but a lump sum of 300*l.* was put down for the clerk of works' office and men's conveniences, whereas the actual value, as he estimated it, is some 1,000*l.* more.

Sir Arthur Arnold, Chairman of the Special Committee, moved the reception of the report. He said he subscribed to every line of the report which he now presented. The Committee were unanimous in finding that the labour policy of the Council had an important connexion with the inception of the Works Department. That portion of the report contained a severe indictment of the policy of the Council in the beginning of 1892 in regard to their dealings with labour, and especially in regard to their dealings with contractors. The Committee stated that the position of the contractors of London in regard to the Council was not at present the most advantageous to the service of the public, and one of the main foundations of the report was a desire that there should be a rectification in that respect. He was not in favour of a large undertaking of architectural works by the Department; but he specially warned the Council not to deprive itself at this juncture, and whilst its relations with contractors remained as at present, of the means of carrying out any work at all.

The reception of the report was agreed to, and the returns of the Works Department were also received.

The Earl of Onslow then moved the following Amendment to Recommendation (a):—"That the Council, being satisfied from the evidence submitted and the further Report of the Works Committee that work executed for it by the Works Department is not superior in quality to that executed by contractors, and that considerable loss has been sustained in consequence of the operations of the Works Department, resolves that no further work shall be entrusted to that Department; and that it be referred to the General Purposes Committee to consider and report as to the arrangements necessary for the due completion of the works in hand and for dealing with the central works in Belvedere-road." He said that all the members of the Committee without exception came to the conclusion that the Works Department of the Works Committee as at present constituted was not in a satisfactory condition. The Council could continue matters as they were, substituting some other authority for the Works Committee, or consider what it would substitute for it. It was agreed on all hands that a body consisting for the most part of amateurs and gentlemen who had many other avocations to pursue could not give the time necessary for the conduct of a vast contractor's work. Under the circumstances, they might be astonished, not that the proceedings of the Works Committee had been so disastrous, but that they had not been very much more so. That was largely due to the industry of the late Chairman, Mr. Ward. From the latest returns they knew that there had been a loss of 6,708*l.*, to which he was afraid he must add probable loss on uncompleted works—estimated at 11,000*l.* Therefore there was a grand total loss of 17,700*l.* What was the use of a department which could not take work without incurring a loss. Had the working classes been benefited? No one could say they had, because all respectable contractors were now willing to pay the same rates that the Council paid. In 1892 no doubt a stand had been made by contractors against those rates, but that condition of things had passed away. He would not advise that the present system might be done away with entirely. It was not necessary for them to pass a self-denying ordinance, and say that they would never at any time directly employ labour to carry out the work of the Council. They had another alternative, which was that, while maintaining freedom of action to employ direct labour, they should abolish both the Works Committee and the Works Department. He had not long ago thought that course unnecessary, but he had entirely altered his opinion since reading the last two returns recently issued by the Works Committee. He held that the reason of the failure of the Department was its anxiety and greed to grab every sort of work so that it should not fall into the hands of contractors. They had spent upwards of 100,000*l.* on their works at Belvedere-road in order to be carpenters and joiners, when experts told them that they had never seen such infamous joinery as that done by the Council. With regard to wages, he pointed out that the wages paid by the Department were the same as those paid by any respectable contractor, and where was the advantage of saddling the ratepayers with a large loss so long as they retained, as they must do, the wages clauses in all their contracts? What the Council had been seeking to do was to carry on a gigantic contractor's business. It had failed to do what never had been attempted by any public authority or municipality. The Department had been exceptionally favoured; it had been allowed to pick its jobs; it had made no bad debts; it had large discounts for cash; it required no capital to pay its workmen; it had unlimited power to borrow; and the result had been nothing but indifferent work, falsification of accounts, and a ruinous cost to the ratepayers. If there had been any saving made by the Department, it would have justified its existence; but, on the contrary, it had been a lamentable failure, and he asked the Council to apply to the Department the phrase so often in the mouths of Progressive opponents of the House of Lords, that it was useless, dangerous, and ought to be abolished.

Sir Godfrey Lushington seconded the amendment, and pointed out that, in striking the loss that had resulted from the existence of the Works Department, they must take into account not merely the difference between cost and

estimates, but also the probable amount of profit that the contractor would have made. As to the jobbing works, which came out favourably to the Department, he thought the schedule of prices, which, for purposes of comparison, served as the estimate, was too high. He believed the loss incurred by the Department arose from the fact that under a model employer the men had not worked as well as they were made to do by the contractors. Therefore he felt that the Department, instead of doing the working man good, had inflicted a moral injury upon him.

Mr. McKinnon Wood said he was well aware that the report of the Special Committee had been a disappointment to the Moderates. There was no atom of evidence in support of the statement that there had been instigation of the clerical irregularities. Lord Onslow had professed to mention the actual loss that had been incurred. He (the speaker) did not believe Lord Onslow knew what was the actual loss. If he did, no one else did. In regard to some of the items, Lord Onslow had been dealing with works of which the accounts had not been completed, and in reference to which the final estimates had not been drawn up. He (Mr. Wood) had always demurred to a comparison between estimate and cost being the test of the Department's efficiency. The true test was associated with the question of quality. To prove the excellence of the Department's work there was plenty of expert and Moderate evidence, and as to the work of contractors, did councillors forget the experiences of certain large municipalities, and of the London School Board? The comparison between cost and estimate was specially illusory because of the difference in the treatment meted out to the Department and the contractors. Last year work was done by a contractor for which the estimate amounted to 36,000*l.* The contractor, no doubt properly, claimed 52,000*l.*, and after the ordinary formalities of arbitration, he received 44,000*l.* If the ideal was that the Department should do the work 10 per cent. below the lowest cutting contractor, by all means let the Department go.

The Deputy Chairman (Mr. Torrance) held that the Works Department had amply justified its creation, and the blunders and losses were, he felt, largely due to the composition of the Committee. In possessing such a Department, the Council was only doing what other municipal bodies of less importance had long done. Mr. Cohen, M.P., in supporting the amendment, said the Department had had a fair trial for some years with the assistance of a chairman who had been absolutely devoted to its interests, and, in spite of that, it had been a lamentable failure.

Sir Arthur Arnold strongly condemned the position taken up by Lord Onslow and Sir Godfrey Lushington. He asked them where they would have been had they, in face of the labour policy of the Council, of which he did not entirely approve, been without a Works Department, and with nothing between them and the enraged contractors of London? He pointed out that the Council had been animated too much by partisanship, mentioning that in the case of an excess charge by a contractor at the Isle of Dogs, the Council passed the vote without a word, but in the case of the Works Department in similar circumstances, they debated such a thing not as a matter of construction, but as matters of principle. The jobbing works had been the best test of the Works Department. Every witness who came before the Special Committee had condemned the Works Committee because of the quarrels among its members. It was absurd for Lord Onslow to talk of 210,000*l.* as a gigantic turnover; it was a trifle to the turnover of much smaller municipalities.

Sir J. Blundell Maple, M.P., in supporting the amendment, said he considered the late manager a most honest and capable man. He was now in his (the speaker's) employment at a salary of from half to a third as much again as he had received from the Council, and he considered him a cheap man.

Having arranged to meet at 3 o'clock on Friday to dispose of the recommendations of the Committee, the Council adjourned soon after 7 o'clock.

SCOTT MEMORIAL, WESTMINSTER ABBEY.—A bust of Sir Walter Scott has been placed in Poets' Corner of Westminster Abbey immediately adjoining the monument of the Duke of Argyll. The bust is a copy of the Chantry bust at Abbotsford, and is the work of the Scottish sculptor, Mr. Hutchinson.

Correspondence.

To the Editor of THE BUILDER.

R.I.B.A. ELECTIONS.

SIR,—As your correspondent "Y" has mentioned me in your issue of this day, kindly permit me to state that I did not give up practice two years ago, but in 1888, and that I am not employed by the London County Council in the way stated, or in any other manner inconsistent with the profession of architecture; were it otherwise, I might have become liable to suspension or expulsion, under the provisions of By-law 22 of the Royal Institute of British Architects.

The Register of Fellows and Associates contains the names of about sixty architects who are officials in her Majesty's service, or engaged upon the staffs of County Councils and other public authorities (exclusive of Metropolitan District Surveyors and members in public employment but giving private addresses), and it is not unreasonable to suppose that some of these would prefer to be represented on the Council of the Royal Institute of British Architects by one of themselves rather than by practising architects only.

The Dundee and York Allied Societies of the Royal Institute of British Architects number, altogether, only two Associates and four Fellows, yet these six gentlemen may be represented on the Council of the Institute by two of their number (one for each Society), therefore, proportionately, architects in public offices are insufficiently represented.

GEORGE H. BIBBY.

SIR,—There is probably not one of the twenty-four candidates for the eighteen seats on the Council who would not fill the position in a satisfactory manner, but it is useless to nominate and elect those of them who will not or cannot find time to attend to the duties. It is for this reason alone that the claims of the new candidates are supported by so many members of the Institute.

Your correspondent, "Y" asks, "What have Mr. George H. Bibby and Mr. Delissa Joseph done that they should be nominated as candidates for the Council?"

In reply; they and the other new candidates have signed undertakings to serve on the Council should they be elected, and all have therefore bound themselves to give reasonable attendances at the meetings, and, incidentally, to set forth an example for the non-attending members to emulate, for many of them neither represent themselves at the meetings or the Fellows and Associates who took the trouble to vote for them.

Your correspondent "Y" admits that Mr. Joseph would be an acquisition as a member of the Board of Examiners, and, if so, he is surely most suitable as a candidate for the Council. With regard to Mr. Geo. H. Bibby (who has been a member of the Royal Institute of British Architects for more than twenty years), it may be said that he is the author of many books and articles upon architectural subjects, and that these have been very extensively published in England and America, and in *The Surveyor* of this day appears an illustrated article from his pen, under the title of "Old English Land Surveying," which contains some curious notes upon ancient measures of lengths and areas, which will be read with interest.

A LONDON ASSOCIATE.

SIR,—I beg to call attention to an erroneous statement that appeared in your last issue, p. 463, in an editorial note under a letter signed "Y," to the effect that the names of Mr. Delissa Joseph and Mr. Bibby were proposed by the Council of the Royal Institute of British Architects as candidates for election to that body.

These two gentlemen were each nominated, independently of the Council, by seven subscribing members, according to By-law 30.

W. J. LOCKE,

May 24, 1897.

* * * As the names appeared in the voting list issued by the Council, we supposed that the Council had selected them in the ordinary course.—ED.

THE ELECTION OF FELLOWS AT THE INSTITUTE.

SIR,—Allow me, through your columns, to call the attention of members of the Institute to the importance of the issues raised by the report of the Special Committee on Election of Fellows, which comes before the meeting on Monday evening next; and to earnestly request all those who have the interests of the Institute at heart to attend this meeting.

H. V. LANCHESTER,
Hon. Sec., R.I.B.A. Associates' Committee.

THE QUESTION OF EXAMINATION IN ARCHITECTURE.

SIR,—Referring to the report in your issue of the 15th inst. of the Jubilee Conference of the Architectural Association, and to the President's somewhat

revolutionary suggestion with respect to the Institute Examinations. Mr. Pite is always interesting, and he was careful to state that his proposals were merely his personal views; but I feel so convinced that he had not, in this instance, thought out the effects of his scheme, that I think it desirable to point out one or two results which appear to me on the very surface to be absolutely fatal to his proposal.

When he defends the principle of compulsory examinations on the ground of closing the ranks against incompetent men—the public being entitled to some guarantee of proper training on the part of those to whose care their health and wealth is confided—all unprejudiced minds must agree with him; but how he can advocate a building-science course, merely as a qualification for Associateship for the Royal Institute of British Architects I fail altogether to see. The certain effect would be to flood the Institute with mere builders.

The average employer doubtless seeks our advice mainly for utilitarian reasons; but, fortunately, in a large, and I hope an increasing, number of instances, he employs us because, in addition to a builder's knowledge, we are supposed to have taste in design.

This is the sentiment we all wish to encourage. It is the only hope for national architecture of a high type, and the way we can achieve our object is to prove that all who profess to be architects are men of taste and culture in design. We must, of course, possess those practical and business qualifications which the public very naturally place even before beauty. The public claim a guarantee of both the science and the art sides of our work, which are indissolubly wedded and cannot be divorced in considering any test of qualifying study.

The Institute has wisely recognised this principle in the examination of its candidates, and alternative actions may be made in the system, the two sides must stand or fall together so long as the Institute professes to be a body of architects, of which the membership carries with it a guarantee of adequate training. So strongly have I always felt that some test of study in drawing and design must be included in the Examination, that if I believed one or other of the two sides (building science and art) must go to the wall, I would say retain the art and let the science go. Test every candidate for admission to our ranks as to this first and most important qualification, without which he can never be an architect at all. Let us make sure whether the candidate's mind is one adapted to an artistic calling. To exclude at an early date men who do not give elementary promise of such suitability is to render the greatest service possible to our art, to the man, and to the public.

I maintain emphatically that a fair test of adequate study in drawing and design is as possible as are test examinations in the science of building construction, and that careful tests creditably passed should, and do, ordinarily qualify for practice, and therefore for membership of the Royal Institute of British Architects, and of any other society endeavouring to promote and ennoble our art.

It may reasonably be held that the Progressive Examinations are not yet satisfactory. They are, however, a work which, in view of the demand made by the Architectural Association in its petition of 1855, reprinted in our Jubilee number of the Architectural Association "Notes."

It is now the duty of the Architectural Association, as the teaching body, to support the Royal Institute of British Architects in making an ideal examination. With this end in view, two steps appear to me of primary importance. First, to get a much stronger representation of the Architectural Association teachers on the Board of Examiners; and, secondly, to reconstitute the Court of Adjudication in design and drawing. Such a delicate and all-important task should not be entrusted to any one examiner, but to a carefully selected sub-committee of the standing Art Committee, possibly with the Art Committee as a court of appeal.

All this does not preclude the adoption of an honours course in design, such as Mr. Beresford Pite suggests as a qualification for Fellowship.

W. HOWARD SETH-SMITH.

The Student's Column.

SPECIFICATIONS.—XXII. CONDITIONS OF CONTRACT.

THE conditions of contracts are very frequently modelled upon the headings prepared by the Royal Institute of British Architects and the London Builders' Society in 1870; or on the schedule prepared by the Institute in 1895, which latter, however, does not meet with the complete approval of the builders; and the student may, if he thinks fit, adopt one or the other of these models. Or he may, if he prefer, adopt the suggested headings which we now give.

No. 1.—The contractor shall execute and completely finish in a good, substantial, and workmanlike manner, in accordance with the directions, and to the satisfaction, of the archi-

tect, the several works shown and described in the drawings and specification, and such further drawings, details, and instructions as may from time to time be given by the architect in explanation. The contractors hereby admit that the said plans and specification are sufficient for their intended purposes, and that the works can be successfully executed in accordance therewith, without any additional or extra work other than such work as is necessarily implied therein, or to be inferred therefrom upon a fair and liberal construction. In case of any apparent discrepancy between the drawings and specification, the architect is to decide which shall be followed. (Before the contract is signed the contractors should have ample opportunity of examining drawings and specification, and all necessary details should be prepared and furnished before the signing of the contract.) The new conditions of the Institute provide for an infringement of this desirable rule by stipulating that the architect shall furnish details within a certain time after the receipt of request for same.) A complete copy of the drawings and specification shall be furnished by the architect free of cost to the contractors, and shall be kept on the works until completion of the contract, for the joint use of the contractors and the architect, or their representatives.

No. 2.—The contractors shall commence the said works within one week after date of signing of the contract, and shall actively prosecute the same from day to day until the same works shall in all respects be completed within months from the date of such signing of the contract as aforesaid, provided always that in case the contractors shall be prevented from complying with this article by any strike, lock-out, or combination by or among the workmen, or by any exceptionally inclement weather, or other causes that in the judgment of the architect may be beyond the contractors' control, the architect shall extend the time for completion of the works for such period as he may think fit, and in the event of any such delay occurring the contractors shall at once inform the architect of the fact in writing, and request him to make such extension of the time for completion.

No. 3.—The contractors are to set out the works and are to be responsible for any errors that may arise, either in the original setting out or during the progress of the works and are to amend such errors whenever required so to do by the architect.

No. 4.—All materials to be used in the said works, although not particularly mentioned in the specification and, save as otherwise provided by the specification, or as may hereafter be otherwise required in writing by the architect, shall be supplied and furnished by the contractors.

No. 5.—All materials and workmanship shall be of precisely the kind and quality described in the specification, and the contractors shall, upon the request of the architect, furnish him with vouchers, or apply such tests as he may direct to prove that the materials and workmanship are such as are specified.

No. 6.—The contractors shall within one week from the completion of the said works remove all scaffolding, plant, materials, and rubbish from the premises, and leave premises in a clean and proper state.

No. 7.—The architect is to have at all times access to the works, which are to be under his control, with power to order any deviation therein, or extra works he may consider necessary. The clerk of works is in his absence to be considered his deputy, and the reasonable directions of the clerk of works are to be attended to by the contractors, subject to appeal to the architect. And the contractors shall afford the clerk of works every reasonable facility for examining the works and materials. The clerk of works shall have no power to direct any variation in the contract, or to give orders for any extra works. The architect may require the contractors to dismiss the foreman or any person employed on the works who may be incompetent or misconduct himself, and such person shall not be again employed on the works without the architect's consent. The contractors are not to sublet the works, or any part thereof, without the consent, in writing, of the architect.

No. 8.—The contractors are not to deviate from the drawings or specification unless upon the directions of the architect shown by an order in writing, or by any plan or drawing expressly given and signed by the architect as an extra or variation or unless required to com-

ply with the provisions of any Act of Parliament or the requirements of any local authority. No charge for day work is to be allowed as such unless a written authority by the architect shall expressly say it is to be done as day work, or unless the work cannot, from its character, be reasonably valued by measurements. All vouchers for day work are to be delivered to the architect within fourteen days after the work may have been executed.

No. 9.—Any variation made in carrying out the works is not to vitiate the contract, but the value of any such variation, for which a price may not have been previously given and agreed upon is to be measured and valued and certified for by the architect, and added to or deducted from the amount of contract. For the purposes of valuation of such variation the Bill of Quantities and prices therein are to be used as a basis of estimate. And for this purpose a verified copy of the original priced bills of quantities shall be deposited with the architect within one week after the signing of the contract.

No. 10.—All materials, including scaffolding, tools, implements, machinery, plant, and effects, which may from time to time during the progress of the works be in, upon, or about the premises for use in the said works, shall be deemed to be the absolute property of the employer. But the contractors shall, notwithstanding, be solely responsible for the loss or destruction thereof, and for any damage which may happen thereto by fire, tempest, or any other cause whatsoever, and the contractors shall likewise be liable to make good all damage which may happen to persons or things from any cause whatever during the progress of the works. The contractors are not to bring upon the premises any other materials, scaffolding, tools, implements, machinery, plant, or other matters except those which are actually required for the carrying out of these works.

No. 11.—In executing the said works, the contractors shall not go into possession of, enter upon, or in any way use any part of the land or premises the property of the employer other than that which the architect shall have given permission for the contractors to enter upon for carrying out the said works.

No. 12.—The architect shall have all power to require the removal from the premises of all materials which in his opinion are not in accordance with the specification or the instructions of the architect, and to require the substitution of proper materials or workmanship in accordance with the drawings and specification or instructions. And the contractors shall forthwith carry out such order or requirements. The contractors shall, when so requested by the architect, within such time as the architect shall name, open for inspection any work covered up. And in the event of the contractors refusing or neglecting to comply with such request, the architect may employ any other person or persons to open up the same.

No. 13.—In case at any time during the progress of the works any unnecessary delay shall, in the opinion of the architect, occur in the carrying on of the same, and the architect shall give to the contractors, or leave at their then or last-known place of abode or business, or on the said premises, a written notice to proceed with the said works, and the contractors shall not so proceed to the satisfaction of the architect within fourteen days after such notice shall have been so given or left; or in case the contractors shall at any time or times neglect or omit to pull down or remove any work or materials which the architect shall have certified in writing to be defective or not according to contract within five days after written notice so to do shall have been given to them by the architect, or left as aforesaid, or within such further time as may be specified in the notice; or in case the contractor shall assign, sub-let, or charge this contract, or any part thereof, without the permission of the architect; then and in such case the employer shall be at liberty, without vitiating this contract, to take the said works wholly or partially out of the hands of the contractors and to employ any other person or persons to execute the same, and for that purpose to take possession of and use all materials, scaffolding, plant, tools, implements and goods on or about the said works, and all expenses or damages thereby incurred shall be ascertained and certified by the architect, and shall be paid by the contractors to the employer.

No. 14.—The contractors shall maintain and keep the works in good and permanent repair,

state, and condition, to the satisfaction of the architect, for months after the date, when the architect shall certify that the works have been completed in a satisfactory manner. And any defects, shrinkage, or other faults in the works which may appear within such time from the completion of the building, are to be amended and made good by the contractors at their own cost, and in case of default the employer may employ and pay other persons to amend and make good such defects, shrinkage, or other faults or damage.

No. 15.—Any cost incurred by the employer in carrying out any works for which by this contract he is entitled to employ any other person or persons in default of the contractors, may be recovered by the employer from the contractors, or deducted from any money or monies that may be due to the contractors from the employer.

TRADE CATALOGUES.

MESSRS. MOSSÉS & MITCHELL send us a price list and description of their "vulcanised fibre" and some of the uses to which it can be put, most of which are well known; but we may mention their "Insulating Saddle Staples" for use in fastening electric-light conductors and telephone and messenger wires. The insulating saddle is treated with a moisture-repelling compound, which also coats the metal in such a way as to prevent corrosion and the leakage which would ordinarily take place where the old form of metal staple is used. It is claimed that these possess all the strength of metal staples, and do not abrade the insulation on the wires.

The General Electric Company send a monthly leaflet of their electric apparatus, which is intended to form a serial statement of their improvements, new apparatus, or alterations in prices. Messrs. Buck & Hickman (London) send us their new and very extensive illustrated and priced catalogue of patent and improved tools and machinery for tool-working. This includes boring and tapping machines, lathes for various purposes (slight-cutting, brass-finishing, turning and chasing, facing pipe-flanges, &c.), turners' and brass-finishers' tool-boxes, milling machines, planing machines, shaping and drilling machines, punching and shearing machines, saws of all kinds, gas and steam engines, saw-benches, hand-saws, and combination band and circular saw machines. Great attention seems to have been paid to the band-saws, which include several special contrivances, such as a steel compensating spring, to allow for the free expansion and contraction of the saw while at work, and in the band and circular saw machine a patent arrangement of countershaft for driving, whereby two separate motions are obtained from one countershaft, so that the workman can use instantly either the band-saw or the circular saw. Besides these the catalogue illustrates plate-bending machines, carving tools, paint-mills, pumps, in short everything that can be required to stock a large workshop establishment. The Stuart's Granolithic Stone Co. (London) send us an album (the "Granolithic Souvenir") containing a number of illustrations of their works, with photographs of various tests of their material, and also of buildings in which the material has been used. Among other things there is a photograph of a granolithic slab 10 ft square which is stated to have carried twenty-two tons without any sign of failure.

Messrs. Powis Bale & Co. (London) send us List No. 2 of their stone-working machinery, illustrating circular and horizontal stone-sawing machines, rock drills, stone moulding and planing machines: marble turning lathe, &c. Messrs. G. A. Harvey & Co. (London) send a large catalogue of metal work for various purposes—chimneys, water-heaters, weather vanes, snow guards, zinc roofing tiles, ventilators, corn-bins, buckets, stove pipes; also plant for farms and country houses, such as hutchies, pigeon-cotes, cattle troughs, &c.; and an immense variety of perforated zinc patterns.

Messrs. Lumby, Son, & Wood (Halifax) send us a supplementary catalogue under the title, "Our 1897 Specialities," including various forms of boiler, among others the "Marlor" boiler, which is designed so that any sediment in the boiler falls below the fire bars, where it cannot injure the boiler, and where special means of flushing and drawing off are provided. One of the best things in the catalogue, and one of general application, is the non-radiating nickelled handle, which does not get hot, and has moreover a very neat appearance. The

Expanded Metal Co. (London) send us a pamphlet explaining and illustrating the various methods in which this material can be usefully applied in construction. It contains a good deal of practical information in a small space, and will be of use to architects who intend to make use of expanded metal in fireproof and other constructions.—Mr. John P. White (Pyghill Works, Bedford) sends us a catalogue of some of his grates and chimney pieces, the illustrations to which are quite above the ordinary catalogue level, being artistic drawings of good designs by known artists. The main practical object of the publication is to recommend and describe the "Porcellis Fire Screen and Blower," an arrangement by which a descending sheet of brass, running up and down in grooves at either side of the grate, and counterbalanced by weights, like an ordinary sash window, is made available as a screen to a non-lighted fire, or as a blower (when required) to a lighted one.—Messrs. Strode & Co. send us a book of devices and mottoes for illumination, both for gas and electric light, suitable to the festivities of next month.—Messrs. Alfred Chapman send us a print of the Diamond Jubilee wall decoration which they have prepared; a good piece of decorative design working in the symbolical flowers of England, Scotland, and Ireland.—Mr. W. J. Pethybridge (London) sends us some specimens of papers made by him as specially suitable for colotype printing.

Messrs. Winstone & Co. send us a catalogue of grates and ranges, which appear to be very good in a practical sense, though the ornamental designs have little to recommend them. There appear to be some new contrivances for raising and lowering the fires in ranges with greater convenience. Among the special objects illustrated is a revolving or reversible fire-grate for gas or coal, according to which side is turned to the front.—Messrs. Adams & Co. send us their new catalogue of sanitary appliances, which as usual is admirably got up, and contains illustrations of some important improvements and new patents. Among these may be mentioned the Helios pedestal closet, which is a valve closet made entirely in glazed earthenware, valve and all; the "Helios" lavatory range, especially intended for schools for strength and cleanliness combined, the basins are carried on solid glazed-ware pedestals, and with glazed-ware pillar waste pipes; the "Hadley" anti-siphonic trap, which is said to render the syphoning out of the seal water impossible, by means of an enlargement on the upcast arm of the syphon, containing sufficient water to compensate for loss; and the glazed-ware tubs, in sets, for public washhouses. We may point out that in the designs for lavatory ranges, the plain and massive-looking designs, such as are shown on pages 42 and 47, are far superior in appearance, for all situations, than those which are intended to be ornamental, as on pages 46, 48, and 49; architects would certainly prefer the plainer ones.

OBITUARY.

SIR A. W. FRANKS.—By the death of Sir A. Wollaston Franks, K.C.B., which took place in London on Friday last week, after an illness of some weeks' duration, the Society of Antiquaries has lost its President, and the archaeological world one of its most learned exponents. Augustus Wollaston Franks was born at Geneva in 1826, and was educated at Eton, and at Trinity College, Cambridge, where he graduated in 1850. His antiquarian tastes had then already begun to develop themselves, and within a few months of taking his degree he published an excellent "Book of Ornamental Glazings Quarries." In 1851, he entered the British Museum, as an assistant in the Department of Antiquities, under Mr. Hawkins, the then keeper. The miscellaneous character of the collections with which Mr. Franks thus became associated diverted his attention from architectural antiquities, and henceforth his mind was given to the acquisition of that vast store of knowledge of all branches of archaeology, for which he afterwards became so distinguished. In 1853, Mr. Franks was elected Fellow of the Society of Antiquaries. The *Proceedings* of the Society show how regularly he attended its meetings and how numerous and varied were the objects of interest which he constantly exhibited and discussed. In 1858, on the resignation of Sir Henry Ellis, he was unanimously elected to the responsible post of Director of the Society, an office he held until 1867, and again from 1872 to 1880. In 1862, Mr. Franks was unanimously chosen President of the Society, which distinguished position he continued to hold until his death. Of Mr. Franks's official connexion with the British Museum, that institution affords abundant evidence. Through his

personal influence with their owners, the splendid "Christy, Burges, Slade, and Henderson collections" were bequeathed to the nation, and to them were added, by his own generosity, the valuable series of Oriental and English pottery and porcelain. Of the numerous gifts which from time to time he filled up gaps or materially augmented defective groups, it is impossible to speak in detail, for there is hardly a case in the Department over which he presided which does not contain examples of his liberality. His unostentatious munificence, as well as his valuable services, were fairly recognised in 1888 by his creation as Companion of the Order of the Bath, and in 1894 he was promoted to be Knight Commander of the same Order. Sir Wollaston Franks retired from the British Museum in 1895, but did not long enjoy his well-earned leisure. He was in his seventy-second year at the time of his death.

Mr. C. J. Phipps.—We regret to have to record the sudden and unexpected death of this architect, whose name has become so well known in connexion chiefly with theatre architecture. Mr. Charles John Phipps, F.S.A., was born at Bath in the year 1835. He was articled with Messrs. Wilson & Fuller, architects, of that city, and remained in their office until June, 1857. Almost immediately he commenced practice for himself, and in 1862 he successfully competed for the design for the rebuilding of the Bath Theatre. This theatre proving so successful, other work of a similar kind soon followed, and for the last thirty years Mr. Phipps has been constantly engaged in building new theatres in London and the provinces and elsewhere. Of his recent works the new buildings now in course of construction in the Haymarket rank as the most important. Of this building one portion, namely, Her Majesty's Theatre, has been completed, and the rest is rapidly progressing. Amongst the works executed in London by Mr. Phipps were the following theatres and concert-halls:—The Queen's, Long Acre (now pulled down); the Gaiety; the Vaudeville; the Strand; Sadlers Wells; the Variety, Hoxton; the Haymarket; the Savoy; the Princesses; the Prince of Wales; the Shaftesbury; the Lyric; Hengler's Cirque (subsequently altered by the architect into the National Skating Palace); the Theatre of the Lyric Club; the Queen's Hall (jointly with Mr. Knightley); and Her Majesty's Theatre, Haymarket (just completed). In the provinces he erected theatres at Bath, Bristol, Plymouth, Torquay, Brighton, Eastbourne, Swansea, Worcester, Nottingham, Portsmouth, Sheffield, South Shields, Darlington, Hastings, Leicester, (the Opera House), Northampton (the Opera House), Limerick (the Opera House), Liverpool (the Rotunda and the reconstruction of the Alexandra Theatre), Wolverhampton, and Dover. In Scotland he built, at Edinburgh, the Theatre Royal (first rebuilding, 1873; second rebuilding, 1883); and the Lyceum Theatre; at Glasgow, the Theatre Royal (first rebuilding, 1880; second rebuilding, 1895); at Dumfries, the Theatre Royal; at Aberdeen, the Opera House. In Ireland he built, at Dublin, the Gaiety Theatre and the Leinster Hall; at Belfast, the Theatre Royal; at Londonderry, the Theatre Royal; and at Cork, the Theatre Royal and Opera House. Among other public buildings erected from his designs may be named the Devonshire Club, the Lyric Club, the Gaiety Restaurant, the Star Life Assurance Society's offices, the "Star and Garter Hotel" (new pavilion), the Savoy Turkish Baths, &c.

MR. DAVID GREIG.—The death took place, on the 20th inst., at his residence, Queen's-crescent, Edinburgh, after a short illness, of Mr. David Greig, senior partner of the firm of David Greig & Co., builders, Spittalfield-crescent. He was a member of the Dean of Guild Court.

GENERAL BUILDING NEWS.

THE NEW TOWN HALL, SHEFFIELD.—On the 21st inst., the new Town Hall at Sheffield was opened by the Queen. Illustrations and descriptions of the building have appeared in our issues for June 28, 1890; June 20, 1891; July 11, 1891; and May 21, 1892; while illustrations of the sculptured frieze appeared on July 13 and November 16, 1895. An illustration of the entrance gates was also given in our issue of February 13 this year. The architect was Mr. E. W. Mountford, and the sculpture work was by Mr. F. W. Pomeroy.

REPAIR OF LINLITHGOW PALACE.—Following the course adopted for the past two or three years, the Government have voted another sum for the repair and preservation of Linlithgow Palace. In past years the work has consisted in repairing more dilapidated parts of the ancient structure, such as relaying the floors, renewing the wall heads, &c. This year it is intended to direct attention to the north side of the building and to repair and improve the walls, which in recent years have shown signs of rapid decay. The object of the Board of Works in carrying out these repairs is to have the historical "pile" put into a proper state of preservation.—*Glasgow Evening Times*.

BATT'S HOTEL, DOVER-STREET.—This hotel has been recently undergoing extensive alteration and renovation. In place of a stable and other out-buildings in the rear, a dining-room, kitchen, and service rooms have been built. Messrs. Hilder & Edge, of Great Pulteney-street, have carried out

this work, including the redecoration of the whole of the building. The following specialists have also been employed.—Messrs. Smith & Stevens have supplied passenger and dinner lifts; Messrs. Dent & Hellyer have fitted up entirely new sanitary fittings throughout, and have laid a new system of drainage; electric lighting has been installed by Messrs. Laing, Wain & Dixon, electric bells and telephones by Mr. C. E. Zimard, and hot water, cooling and heating apparatus by Messrs. Charles Heap & Co. Mr. R. Griggs is the architect.

BERKELEY HOTEL, PICCADILLY.—On the 12th inst. this hotel and restaurant was reopened to the public, having been closed since the beginning of December last. During this interval extensive structural alterations have been made in the old portion of the building, and a new portion, seven stories in height, and covering the site of 73 and 74, Piccadilly, has been added. In the old portion the improvements include the enlargement of the restaurant by removing the main walls on the ground floor, a rearrangement of the basement, the introduction of an electric passenger-lift, and complete redecoration. In the new portion an entrance hall to the restaurant, a lounge and cloak rooms, have been provided on the ground floor, and suites of rooms, including reception, bed, and dressing rooms, with bath room, &c., on each upper floor. The whole of the basement of the new portion has been designed and constructed and carried out by Mr. T. Stevens, South Molton-street. The general contractors were Messrs. Kirk & Rhindall, of Woolwich, who, commencing at the beginning of the year, have carried out and completed the whole of the work in five months. The fireproof floors were executed by Messrs. Dennett & Ingle; the decorations generally by Messrs. Campbell Smith & Co.; the sheet metal of the restaurant and entrance by Messrs. Warrings; the passenger and service lifts by the Otis Elevator Company; the cooking range by Messrs. Cuban Freres, of Paris; the smaller cooking apparatus and kitchen fittings generally, also the steam and hot water services and electric lighting, by Messrs. Strode & Co.; the fittings for the electric light being supplied by Messrs. Kir & Randall, and they have also provided an automatic hot water supply for the hotel of over 1,000 gals. per hour if required; the electric bells and telephones by Messrs. Jackson & Coleby; the plumbing, drainage, and sanitary fittings by Messrs. Dent & Hellyer; and the new furniture by Messrs. Morris, King, & Norton, of Birmingham. Mr. T. S. Inglis was the clerk of works. The architect is Mr. Robert Griggs (London).

THE NEW WORKHOUSE QUESTION, HUNTSLEY.—At a meeting a few days ago of the Hunslet Board of Guardians the question of the erection of a new workhouse was again discussed at length. Mr. J. Farrar moved that the committee (Mr. Dodgshun) be requested to complete the plan of the suggested alterations on the existing workhouse, to show the alterations in the children's ward, and the additional accommodation to be obtained, and also to prepare plans for the erection of new vagrant wards. He said it was premature to propose that they should erect a new workhouse at a cost of 40,000, or 50,000.—Mr. Hargreaves, in reply to the resolution, said that in his opinion the new workhouse would cost nearer 50,000, than 40,000. The proposed alterations on the present workhouse would provide additional accommodation for thirty-six adults, fifteen children, and eight old persons.—Dr. Hawkyard asked the mover and seconder of the resolution if they would agree to substitute this motion:—"That Mr. Dodgshun be asked to prepare plans to show new receiving wards, new tramp wards, how the present workhouse could be extended so as to give more room for the old men, and to provide a larger kitchen and new bath-rooms, and how the school building could be adapted for fifteen children, and the rest of the building be adapted for hospital purposes, with suitable accommodation for nurses." Mr. Farrar and Mr. Hargreaves agreed to accept this resolution, and after some further discussion the resolution was carried.

POLICE BUILDINGS, KILMARNOCK.—Plans have been prepared by Mr. Walter W. Reid, and have been approved of, for the erection of the new police buildings in Sturrock-street, Kilmarnock. The external walls are to be built of white stone. On the ground-floor there will be the Chief Constable's room, charge-room, guard-room, production-room, lavatory accommodation, and eight cells. The court-room will be in the upper flat, access for the public being obtained by an entrance from Market-lane, which is a private street, off Sturrock-street for the use of the magistrates and witnesses. There is also a room for the magistrates, and separate rooms for male and female witnesses. Eight cells are situated in this flat, and lavatory accommodation is likewise provided there. The building will be heated with hot-water pipes, the heating-system being in the basement, where there is also a lamp-room.

ALTERATIONS AT EAST FREE CHURCH, PETERHEAD.—Operations have been commenced for the

entire reconstruction and renovation of the interior of the Free Church, St. Peter-street, Peterhead. The scheme comprises the reslating of the church, reconstructing the interior, building a suitable hall and vestry, &c. The architects are Messrs. J. & R. M. Millan, Aberdeen, and the contractors are a messrs. work, Wm. Hendon, Peterhead; joiner work, J. B. Dickie, Peterhead; slater, Wm. Simpson, Peterhead; plasterer, Wm. Shand, Peterhead; plumber, John Ferguson, Peterhead; painter, George Cran, Peterhead; glazier, Edward Copland, Aberdeen.

PRESBYTERIAN CHURCH, WALTON, LANCASHIRE.—The foundation stone of a new Presbyterian Church was laid recently at the corner of Rice-lane and Orrell-lane, Walton. The building scheme includes purchase of site, erection of lecture hall, with requisite committee-rooms, &c., and church. The material used will be Yorkshire shoddies, with red stone dressings, and the principal entrances will be through an open porch, minor porch, and vestibule, as well as through cloisters, &c. The inside length of the church will be 75 ft.; the breadth across the body of the edifice, 37 ft. 6 in.; across the transepts, 40 ft. 6 in.; and the size of the organ chamber will be 10 ft. by 9 ft. About 450 sittings will be provided, and the plans permit the future erection of a gallery to give accommodation for another 100 seats. A vestry, session-house, infants' room, and ladies' room are included, and connected with the adjoining lecture hall being obtained by two staircases, the hall being 50 ft. by 31 ft. 6 in., and capable of seating 300 persons. The contractors are Messrs. J. & G. Chappell; the masonry is in the hands of Mr. James M'Dermot; and the architect is Mr. R. G. Sykes.

ST. LUKE'S CHURCH, DEEPFASH, ROCHDALE.—The eastern portion of this church (consisting of chancel, transepts, organ chamber, vestries, &c.) was erected some ten years ago, and building operations have just been commenced of the new portion. The work now being erected consists of a nave, side aisles, &c., to be used as passages only, and a baptistry at the west end. The principal entrance is through a porch on the south side, while the other entrances are also provided on the north. The aisles and baptistry are divided from the nave by a lofty arcade, the baptistry floor being raised above the nave level. Externally and internally the church will be faced with small pressed bricks, relieved with red Rainhill stone dressings. The roofs will be covered with green slates, and the windows are to be filled with tinted ecclesiastical glass. The internal woodwork is to be of pitch-pine, unvarnished, the floors of the aisles and baptistry to be tiled, the latter with encaustic tiles in ornamental designs. The style adopted is Early English. The works are being carried out from the designs, and under the supervision of Mr. K. Knill-Freeman, of Bolton and Manchester, the architect for the formerly-erected portion.

BAPTIST CHURCH, BELFAST.—Three memorial-stones were laid recently of a new Baptist church, which is in course of erection on the Antrim-road, Belfast. The church and schools are built of Belfast perforated brick, with red sandstone dressings, and consist of a church, a school, a play area, and school to accommodate 300 children, with vestries and lavatories attached. On either side of the main entrance are the entrances to the main gallery, which extends across the end of the church. The principal feature of the interior is the baptistry arrangements, which consist of large baptistry lined with marble and porcelite, the steps leading directly from the vestry doors, and immediately behind the baptistry is an ornamental Gothic screen, partly supporting the choir gallery, the steps to which lead up from behind the screen. These arrangements are all contained within a large chancel-like recess, separated from the main body of the church by a large flat arch of moulded brick and stone. The school building has kitchen arrangements and yard. The cost of both buildings is 3,700. The architect is Mr. J. A. Hanna, of Belfast, and the contractors are Messrs. Henry Laverty & Sons. Messrs. Musgrave & Co. supply the heating apparatus, and the plumbing work is being done by Mr. J. J. Milliken, Belfast.

HOME FOR NURSES, SWANSEA.—It is proposed to celebrate the Jubilee at Swansea by erecting in connexion with the hospital a home for nurses. It is intended to build the new block of buildings at the rear of the administrative block and connected with it by a corridor. In the basement it is proposed to provide the heating apparatus. On the ground floor accommodation is provided for eight nurses. On the first floor accommodation is provided for fifteen nurses. Overlooking the lawn will be a verandah and a small tower at the corner of the building, which will be used as a ventilation shaft. The plans for this work have been prepared by Messrs. Wilson & Moxham, architects, who are now carrying out the new operating theatre at the hospital.

ST. PETER'S CHURCH, TORRY, ABERDEEN.—The new Episcopal church of St. Peter is at present in course of erection on the north side of Victoria-road, Torry. The building, when completed, will consist of nave, with porches on the north and south sides; chancel, with a chapel and bell-turret on the south; and sacristy and choir vestry on the north side. With the exception of the window tracery, which will be of freestone, the whole of the exterior stone-work will be of pink granite, the general surface of the walls of thin split-faced courses. The roof,

covered with Scotch slates, will be continuous over nave and chancel, its apex being 68 ft. from the floor of the nave. The height of the nave walls will be 47 ft. The nave is 4 ft. 6 in. lower than the level of Victoria-road, with steps at the west end down from that level extending the whole width of nave and aisles. The nave arcade consists of five arches with piers 10 ft. apart and 26 ft. 3 in. from the floor to the springing. These piers are attached to the aisle wall by internal buttresses. The division between nave and chancel is marked by a pier 5 ft. 6 in. wide, and pierced with doorway for a roof lift, reached by a turret stair on the south, and also from the organ-gallery on the north side. The altar is raised twelve steps above the nave floor. The south aisle of the nave leads by steps up to the side chapel, 38 ft. by 15 ft., which will be divided from the chancel by an iron grille. This chapel will have a separate door from Victoria-road. The north aisle continues by the side of the chancel, and is connected with it by a few steps. The upper part of the church will be lighted by a series of eight clearstory windows on either side and a wheel window in the west gable 11 ft. in diameter. The total length of the church internally is 116 ft. 6 in., the extreme width 52 ft. 6 in., and it will provide accommodation for about 500 persons. The contractor for the organ-gallery is Mr. John Morgan, Aberdeen, and the architects are Messrs. Kinross & Tarbolton, Edinburgh.

PREMISES, MARKET-STREET, EDINBURGH.—New premises for Mr. Macpherson, of the Cockburn Hotel, Edinburgh, are to be erected in Market-street. The building has been designed in the Baronial style. It is to be used in connection with the hotel to replace the premises in Cockburn-street which the city has acquired, the ground being necessary for the proposed extension of the Council Chambers. The new premises will be lighted by electricity, and heated by hot water, as well as by open fires. The architect under whose directions the work will be carried out is Mr. John G. Adam.

SESSION HALL, HALE END, ESSEX.—The foundation stone has just been laid at Hale End, by Mrs. Andrew Johnston, of a new Union Mission Hall. The new building is being erected at the back of the present hall. It is to be of red brick with stone facings, and is to have a slate roof boarded inside. The premises comprise the hall itself, which is 50 ft. by 34 ft., and is to accommodate 400 persons. The entrance to the hall from outside is by a porch. In the rear are three class-rooms and a kitchen. The architect is Mr. Boreham, of London, and the builders Messrs. Thos. Osborne & Sons, Woodford.

PUBLIC SCHOOL, YOKER, NEAR GLASGOW.—This school is in course of erection in Elgin-street, Yoker, for the Old Kilpatrick School. The building is three stories in height, the ground floor being utilised for the infant department and the First Standard, while the other standards are located on the first and second floors. The headmaster and mistress have their private rooms on the ground floor in close proximity to the respective entrances for boys and girls, while the rooms are also provided for the male and female assistants on each floor. On the upper floor a portion will be utilised as a cookery room, and there is also provision in the way of cloak rooms and other offices for both scholars and teachers. The cost is estimated at about 13,000, and accommodation will be given for some 1,250 scholars. The whole work is being carried out from the plans of Mr. Henry Higgins, jun., architect, Glasgow.

PROPOSED NEW MUSIC HALL FOR WOLVERHAMPTON.—A special session for transferring licences was held at the Wolverhampton Police Court on the 22nd inst., when an application was made for the sanction of various alterations to the Empire Music Hall and Vaults, Queen-square and Cheapside. Mr. Ward, of the firm of Messrs. Owen & Ward, who is the architect of the proposed building, said that there would be nine entrances, and no doorway would be of less width than 5 ft. There would be a front in Cheapside in a way the Public Works Committee would suggest. The building would be lighted by electricity, but there would be a supply of gas in case the electric light should fail. It was explained that the Borough Surveyor was satisfied with the plans, but had suggested a fire screen, which would be provided. The cost will be 42,000. The magistrates retired to consider the matter, and on their return the Mayor said that the application had been unanimously granted by the magistrates, on the understanding that the provisions in Cheapside must be satisfactory to the Public Works Committee.

PROPOSED NEW TECHNICAL SCHOOLS, SWANSEA.—It is proposed to erect new Technical Schools at Swansea, iron plans prepared by Mr. H. Wills. The two new buildings to be erected comprise accommodation for the teaching of chemistry, metallurgy, physics, engineering, and also for intermediate purposes. They will form an L-shaped block to the south-west of the existing buildings, to which they will be connected with a covered cloister, and with which they will be built in harmony. The new buildings will also comprise accommodation for the caretaker, and a Committee room. The technical portion of the new schools will cost about 9,000, and the fittings and apparatus about 4,500.

SAVINGS BANK, KEYHAM, DEVONSHIRE.—Branch premises for the Union Savings Bank at Keyham are being erected by the contractor, Mr. William

Littleton. The architect is Mr. Henry George Luff, of Devonport.

ALTERATIONS TO A BANK, REIGATE.—The London and County Bank has recently been altered and improved. The work has been executed by local firms, and Messrs. Baker & Penfold were the architects, and Mr. R. Killick was the builder. Messrs. R. Penfold & Son did the stone masonry.

NEW CHURCH, PENARTH.—The new English Congregational Church at Penarth, was opened a few days ago. The most noticeable feature externally is the tower at the right-hand corner of the main building, which is surmounted by a spire rising to a height of 112 ft. The spire is built chiefly of Bath stone, whilst the church, schoolroom, vestries, and offices are carried out in grey Newbridge stone, with the quoins of Bath stone. The church building is capable of accommodating 600 adults, and consists of a nave and chancel, the latter raised above the floor of the nave, and within it are placed the choir stalls with the organ facing the congregation. At the northern side of the chancel arch is the pulpit of mahogany and pitch pine, the whole of the seating being of this wood with mahogany mouldings. There are no galleries, with the exception of a small one over the vestibule. Messrs. Habershon & Fawcner, architects, Newport and Cardiff, prepared the designs of the structure; and Mr. D. G. Price, Penarth, carried out the work. The entire cost of the building is about 6,500l.

BUSINESS PREMISES, ABERDEEN.—New premises are to be erected for Messrs. Sangster & Henderson in Broad-street, Aberdeen. The buildings were designed by Mr. R. G. Wilson, architect; and the contractors are—Masonry, Messrs. Pringle & Slessor; carpentry, Messrs. Watt & Clark; slating, Mr. James Wilson; plastering, Mr. George Gibb; painting and glazing, Messrs. J. Garvie & Sons; ironwork, Messrs. McKinnon & Co.

CHURCH, HYSON GREEN, NOTTINGHAMSHIRE.—On the 20th inst. Lady Laura Kidding laid the foundation-stone of a new church on Bobbers Mill-road, Hyson Green. The church, which is to seat 600, is being built of Bath stone and bricks from Loughborough and Sibley. Inside, the building will be 110 ft. long, 52 ft. broad, and 43 ft. high to the top of the nave roof, and the church will be lighted by a large window at the west end, and by windows in the aisles and clearstories. The architects are Messrs. Christian, Caröe, & Purday, of London; and the builders Messrs. J. Norris & Sons, of Ascot.

BUSINESS PREMISES, NEWCASTLE.—Messrs. H. & A. Hunter, livery stable proprietors and job masters, Newcastle, have just enlarged their premises. The additions have been made in communication with the existing building behind Trinity Church, New Bridge-street, one entrance being from the old yard and the other from Higham-place. The sale yard is 100 ft. long by 33 ft. wide. On the right side of the entrance is a ladies' waiting room and lavatory, and on the opposite side are the caretaker's house and the harness rooms, with a store room above. For the sale yard light is obtained from an iron-girdered glass roof, 40 ft. high. On the left side of the yard are ten loose-boxes, and on the right side there are fourteen stalls. Altogether on the ground floor there are fifty stalls and boxes. At the west end of the sale yard is a store room, also the engine room, properly fitted out to raise the patent hoist and run the dynamo for the electric light throughout the building. Over the loose-boxes on the ground floor is a large balcony for visitors, 90 ft. long by 8 ft. wide; and another balcony on the opposite side, to be reserved for ladies, 100 ft. long by 4 ft. 6 in. wide. The stable on the first floor, with access from the ground floor, is 114 ft. long by 30 ft. wide, with stalls, and contains boxes for thirty-eight horses. Adjoining is a granary, 51 ft. by 24 ft., with an apartment for the general office. On the second floor is a carriage repository, 114 ft. by 31 ft., in direct communication with the hoist, and another granary, 50 ft. by 24 ft., and a similar loft above this room is situated on the third floor. Mr. W. Lister Newcombe, Newcastle, was the architect; the chief constructor, including the stable fittings, was Mr. W. Machlin; the cement floors have been laid by Messrs. W. B. Wilkinson & Co.; the plumbing by Mr. Rowell; the metal castings by Messrs. Swinney Brothers, Morpeth; the iron roofs by Messrs. Hindson, Gateshead; the painting and colouring by Messrs. Richardson, Newcastle; the stoves and hardware by Messrs. Eady & Sons, Newcastle; the hoists by the Otis Company; the gas engine and shafting by the Otto Company, Newcastle; and the electric lighting by the Corlett Electric Company, Newcastle; while Mr. C. Dixon was clerk of the works.

RESTORATION OF BISHOP'S WALTHAM PARISH CHURCH, HANTS.—For some time past structural repairs have been in progress at the parish church of St. Peter's, Bishop's Waltham. The main outlines of the work of restoration are as follows:—The south gallery with the three dormer windows specially put in to light it have been removed, and a new arcade built to agree with the northern arcade, thus bringing the two aisles into harmony. The columns carrying the arches of the twelfth century north arcade, which, owing to the spreading of the main roof, had been pushed out of the upright, have also been rebuilt on a substantial foundation, and solid stone piers have taken the place of hollow

ones. New plates have been inserted to carry the roofs of the nave and aisles, and the rafters bolted thereto, and tie rods have been fixed to keep these roofs, as well as that of the chancel, from spreading. The old flooring has been removed, and the earth having been excavated to some depth and replaced by concrete, wood blocks have been laid all over the church on a cement foundation. The chancel arch, which was formerly much distorted, has been put into shape, one side of the arch having to be entirely rebuilt. The chancel roof has had to be entirely stripped, as many of the rafters were decayed. These have been replaced, and the roof re-tiled. The outer side of the roof of the south aisle has been similarly treated. The hot-water pipes have been placed under the level of the floor, and a new and more powerful boiler supplied. The small gallery has been fitted up for the school children. The old Communion rails have been cleaned and scraped to show the plain oak, and are in keeping with the pulpit and the new choir stalls, which are of plain oak and of local handiwork, having been carried out by Mr. Charles Churcher. The work has been done under the superintendence of Mr. T. G. Jackson, R.A., and his clerk of works, Mr. Moxford.—*Hampshire Chronicle.*

NEW INFIRMARY, PAISLEY.—The memorial stone of the new infirmary being erected in Paisley was laid recently. The infirmary is being erected in Barbour Park, Calside, from plans prepared by Mr. T. Graham Abercrombie, Paisley. It consists generally of two stories and attics, with the front portions of the wings, and also the central blocks slightly jutting out from the main building. The number of beds provided will be between 140 and 150, and there are different departments for children and for men and women. The cost, it is understood, will be 72,000l.

PARISH ROOM, ELY.—A meeting was held at the Vicarage, Ely, recently, when it was decided to build a Parish Room in commemoration of the Queen's Diamond Jubilee at a cost of 800l. The room will accommodate 350 persons. The architects (Messrs. James and Sweet-Escott, of Cardiff) were instructed to proceed with the plans and to invite tenders for the erection of the building upon a site given by Lord Windsor, situate at the back of the post-office.

IMPROVEMENTS AT HUTTON CASTLE, BERWICKSHIRE.—Improvements are being carried out at Hutton Castle, Berwickshire, the property of Lord Tweedmouth. Two new approaches to the castle have been made, and a lodge has been constructed at the west drive. Lord Tweedmouth intends to provide additional bed-room accommodation and buildings for servants, &c. Further stable accommodation will also be erected, but arrangements have not yet been made for these. The old tower is to be made habitable, the centre part being raised one story. The new portions will have asphalt roofs, with embrasures and parapets. There will also be internal alterations. The architect is Mr. George Duns, of Duns, and the contractors for the work in the centre part of the building are—Mason, Henry Steel, Greenlaw; glazier, James Crombie, Duns; slater and plasterer, William Fortune, Chirnside; plumber, Abel Ford, Coldstream.

PRIMITIVE METHODIST CHURCH, BROOKWOOD, SURREY.—Memorial stones of a new Primitive Methodist church and hall were laid at Brookwood recently. The building will be of brick, with Bath stone dressings, and will be in the Gothic style. It will be 45 ft. long by 30 ft. wide, and the schoolroom will provide seating accommodation for 450 persons. Included in the building are an entrance vestibule, gallery, minister's and deacons' vestries, schoolroom, and some half-dozen class-rooms, with a tower 50 ft. high. The total cost of erection is estimated at 1,700l. Messrs. Aiken & Greene, of Plaistow, are the builders, and the architect is Mr. Clark Hallam, Stepney Green.

SANITARY CHAMBERS, GLASGOW.—New sanitary chambers have been erected at Glasgow, at the junction of Cochrane-street and Montrose-street. Practically the whole of the ground floor is devoted to the Sanitary Inspector and his staff, &c. The only exceptions are the south-west corner, which is devoted to the vaccination department, and comprises rooms for the office and waiting and operating rooms; and the north-east corner, where there is a room in which suspected patients may be isolated until examined. On the first floor the Medical Officer of Health, and the junior officer, have their rooms, and accommodation is also provided for the veterinary surgeon and the other medical assistants. The rest of the story, and also the greater part of the second floor, is occupied by the inspecting sanitary officers. Those for each district of the city have a room set apart for their use. A caretaker's house is also provided, and the large square tower which surmounts the building is used as a chemical laboratory. The principal novelty in connexion with the chambers is the proposed bacteriological department. Also on the second floor is an exhibition room, where it is proposed to show and test all forms of sanitary appliances which may be submitted to the Sanitary Inspector for his opinion. The site for the chambers cost 11,000l., and the buildings about 19,000l.

EMPIRE THEATRE OF VARIETIES, OLDHAM.—This building is in course of erection on the site formerly occupied by Retiro House, at the corner of York-hire-street and of Waterloo-street. There are two

entrances to the pit of the new structure, each 10 ft. wide, and two each 6 ft. wide to the circle, all from Waterloo-street. In addition to these, there are two exits to the pit, each 7 ft. 6 in. wide, one into Woolcoat-street and one into Retiro-street. All steps and passages to exits are of fire-proof construction. There are three private boxes on either side of the proscenium opening. The box staircases also lead to the orchestra stalls, and from these staircases, and at the stage level, a means of access to the stage is provided for the use of the orchestra. The proscenium opening is to be provided with a fire-proof asbestos curtain, and all openings between the stage and any other part of the house will be covered by iron doors. The circle is carried on steel stanchions, girders, and cantilevers. There will be seating accommodation in the pit stalls for close upon 2,000, and in the circle and boxes for about 600. At the back of the pit and under the footpath in Waterloo-street is a refreshment bar about 40 ft. long, and at either end of this there are lavatories, &c. Both the pit floor and the circle are made with a fall towards the stage. All round the back of the circle is a promenade about 7 ft. 6 in. wide, and behind this again, divided from the auditorium by an arcade, are refreshment bars, cloak-rooms, lavatories, &c., for both ladies and gentlemen. The refreshment bars are raised four steps above the promenade floor, so that a view of the stage can be obtained through the arcade. A store-room is provided beneath each bar. The board-room will be placed in the central tower, and access thereto will be obtained by means of a staircase leading from the larger bar in the circle. The electric light will be adopted throughout, and, in addition, a large sun-burner will be provided. The front elevation is of rough brick covered with cement, relieved with moulded cornices, strings, and architraves. There will be a glazed verandah along the whole of the front, with ornamented pediment in the centre glazed with leaded lights. This verandah will be supported on wrought-iron cantilevers. The stage is at the Retiro-street end. On either side will be the artists' dressing-rooms, each room being supplied with lavatory, with hot and cold water. There will be two staircases on either side for access to these rooms. The manager's office is situated over the boxes on the prompt side, and will be connected by means of telephones with every part of the house. The building will be heated by hot water. The work is being carried out from the designs and under the superintendence of Mr. Sidney Stott, architect, Oldham.

DEAF AND BLIND SCHOOL, PENKHLIN, STAFFORDSHIRE.—A school for the deaf and blind was recently opened at Penkhill. The institution is built within the grounds of Josiah Spode, the potter. The mansion on the site, built in 1803, has now been converted into the administrative department of the new blind and deaf school. New buildings have been added to the rear of it, or eastwards, for the deaf children, and to the right or southwards, for the blind. From the circular entrance the main vestibule is reached, with the visitors' room on the left. The staircase hall is lighted from the dome, and from this extend corridors left and right, that to the left giving access to the kitchens, stores, teachers' sitting and dining rooms, &c., with the laundry and technical instruction room running at right angles. The corridor to the right gives access to the master's dining-room and office and to the rooms devoted to the blind, consisting of day-rooms, class-rooms, music-rooms, and teachers' sitting-room. In the auditorium, with master's drawing-room and general bath-room on the right, and the large dining-hall on the left. At the head of this corridor is the central hall, with class-rooms on either side for the deaf children, and extending right and left are also corridors, terminated by the day-rooms for the deaf children, the left hand being for boys and the right for girls. From the boys' day-room on the left access is gained to the technical instruction rooms. From the corridors fireproof stairs reach up to the various dormitories and masters' and servants' bed-rooms. Over the laundry and technical instruction rooms are the sick wards, consisting of two rooms, with nurses' room between, with bath-room and conveniences cut off by cross ventilation from the rest of the institute. The ceiling of the old house has been utilised, a portion being capable of being fixed as a work-room for the blind, and the hot-water heater for the supply of hot-water to baths, housemaids' sinks, &c., being placed in another portion, the rest being used as stores. A dispensary, lavatory, and conveniences, both upstairs and down, are provided. The floors of all corridors are fireproof except those in the master's part upstairs. The walls of all corridors (except to master's part) are of brick, and the staircases have tiled dados, and the whole building is heated by steam. Inlet ventilation is provided by means of Tobin brackets, and the foul air is extracted by tubes running from the ceilings into high towers (in which are placed water storage tanks) or by flues run up with the chimneys. The central hall is fitted with gymnastic appliances. There is accommodation for 150 children, and the necessary teaching and servant staff. The principal contractors for the several works were as follows:—Buildings, part of fittings, gasworks, and water mains, Mr. J. R. Yoxall, of Stoke; heating, Messrs. Dawson & Co., of Stalybridge; hot water and painting to old portion, Messrs. J. Bickley & Co., of Hanley; engine and boiler, Messrs. Thomas

Shore & Son, Hanley; sanitary appliances, Twyford, Limited, Hanley; the dados, Messrs. Milnes, Hollins, & Co., Stoke. The whole of the work has been carried out under the superintendence of Messrs. R. Scrivener & Sons, architects, Hanley. The total cost has been about 20,000.

SANITARY AND ENGINEERING NEWS.

SEWAGE SCHEME, WHITWORTH, LANCASHIRE.—The new sewage purification works of the Whitworth Urban District Council, which have been constructed at Tonacliffe, Whitworth, by Messrs. Hinitt and Murphy, C.E., of Manchester, were opened on the 12th inst. The outfall sewers and the main sewers laid through the district are of a total length of 8½ miles, and there are several miles of branch sewers now being laid which will, when executed, provide the district with a complete system of sewerage. The system of treatment of sewage adopted for these works is one of chemical purification in settling tanks combined with subsequent filtration through artificial filter beds. The works, as designed, provide for extension, if required.

RAILWAY, BUDLEIGH SALTERTON.—The new Budleigh Salterton Railway was opened on the 14th inst. The line joins the Sidmouth branch, which is connected with the London and South-Western Railway at Tipton St. John. Thence to Salterton the single rails run through the valley of the Otter to the sea. There are at present only two stations, one called Budleigh, which provides for East Budleigh and Otterton, and the other called Salterton, which provides for the Sidmouth branch. The line is for goods traffic at Newton Poppleford and Colatze Raleigh, and at the former place a station will in all probability shortly be built. The length of the line is 6 miles 4 chains, and it has been constructed under the direction of the engineer, Mr. W. Clarke, C.E., by Messrs. Lucas & Aird.

SEWERAGE SCHEME, BARMBY MOOR DISTRICT, POCKLINGTON.—The Pocklington Rural District Council have instructed Mr. D. Balfour, M.Inst.C.E., of Newcastle, the engineer for the Urban Scheme of Main Sewerage and Sewage Disposal for the town of Pocklington, to prepare plans and report on a scheme for the drainage of Barmby Moor District, to be connected to the above by arrangement with the Urban Council.

SEWAGE SCHEME, WOKINGHAM.—Mr. F. H. Tulloch, Local Government Board Inspector, attended at the Town Hall, Wokingham, recently, and held an inquiry into the subject matter of an application to the Local Government Board by the Town Council of Wokingham, for special permission to borrow 5,000l. for works on the sewerage and surface water drainage. Those present included Mr. J. May (Town Clerk), Mr. J. Manley (Borough Surveyor), and Mr. A. G. Bates (Gas Works Manager).

SEWAGE WORKS, BRADFORD.—Mr. Renzi Walton, C.E., Inspector to the Local Government Board, held an inquiry in the Council Chamber, at the Bradford Town Hall, recently, into the application by the Bradford Corporation to borrow 50,000l. for works of sewerage and drainage. The Town Clerk (Mr. Geo. McGuire) appeared on behalf of the Corporation in support of the application, and he was attended by Mr. J. H. Cox, Borough Surveyor, and others. The Town Clerk said the works for which the application had been made might be described as follows:—The proposed scheme would comprise new ones required for the drainage of districts in the borough, new sewers to replace old sewers which were no longer suitable, and special relief sewers for the carrying off of storm water. From time to time 282,000ft. had been expended in the construction of sewers alone, in accordance with the main sewerage scheme of Bradford, and these works were distinct from sewage disposal works. That total amount had all been expended, and 50,000l. was required to go on with the scheme.

SEWAGE DISPOSAL WORKS, ALNWICK.—The new sewage disposal works at Alnwick have just been opened. The scheme just completed was decided on after an inspection of the sewage disposal works at twenty-three different places by Mr. Geoffrey Wilson, Town Surveyor, and various deputations with him. It consisted, in the first place, of making provision for the diversion of storm and surface waters from the main sewers in the town into existing storm water culverts; and the diversion of the regular flow of sewage into the new high level intercepting sewers and its purification by precipitation in settling tanks and filtration of the clarified water through oyster beds, the filtered water from the under drainage being discharged into the river by a new outfall below the Bog Mill, three-quarters of a mile below the old outfall, and more than half a mile above Hawkhill Bridge. The plans for the new works were prepared by Mr. Wilby and Mr. James Moir has acted as inspector of works under him, and Mr. R. Hudson, of Sunderland, has been the contractor.

LOCAL SEWERS IN LONDON.—The Main Drainage Committee of the London County Council have sanctioned the construction of the following local sewers:—(1) 450 ft. of 12-in. pipe and concrete sewers in Dewbury-street, St. Leonard's-road respectively. St. Marylebone: 980 ft. of 4 ft. by 2 ft. 8 in. brick and concrete sewer and

950 ft. of 12-in. pipe sewer from Bradley-terrace along the east, south, and west sides of Clarendon-square by Hayes-place and Harewood-place to Marylebone-road on the site of the proposed station and hotel buildings of the Manchester, Sheffield, and Lincolnshire Railway.

FOREIGN.

FRANCE.—A special committee has been appointed to organise, for the 1900 Exhibition, the retrospective exhibitions of Fine Art and Decorative Art. It includes among its members MM. Roger Ballin, Baudouin, Bouvard, Ralph Brown, Corroyer, Dulert, Ch. Garnier, and other well-known architects and artists. M. Ch. Yriarte, the eminent architect, is also a member of the committee.—The students of the Ecole des Beaux Arts are making a formal complaint as to the construction and planning of the "loges," originally intended for sixty students, and now often containing from 250 to 300; a wooden structure, too, on the third story of the building, with only very small exits, &c.—The Société Centrale des Architectes has awarded commemorative medals to three artisans, M. Piquet, M. Melles, and M. Couvreur, for their courage in rescuing a number of persons from the late fire at the risk of their own lives.—M. Huet, the Inspector-general who succeeded Alphonse as Inspector-general of "Ponts et Chaussées," is retired, and there is some difficulty about finding an adequate successor to him. An engineer will probably be chosen, though most of the work is more within the province of an architect.—At the Salon, M. Harnpignes has obtained the "medaille d'honneur" for painting. M. Harnpignes was born in 1819, at Valenciennes, and studied at the Académie des Beaux Arts in the Salon of 1853; since when he has exhibited every year. The medal for sculpture has been awarded to M. Mathurin-Moreau, whose remarkable work "Les Exilés" was published in the *Builder* some years ago. He was born at Dijon in 1822, and was a pupil of his father first, and then of Ramey and Dumont. At Cologne he was an architect under the name of M. de Harnpignes, but M. Pontremol came near obtaining it.—The Société Centrale des Architectes has lost one of its original members, M. Charles Clément Le Coeur, who has just died at the age of 92, at Pau, where he had founded a local Art Society and organised a museum of which he acted as curator. He wrote a learned work on the architectural curiosities of Béarn.

GERMANY.—There was an interesting ceremony at Munich in connexion with the inauguration of the New Central Law Courts. The architect of the building is Professor Frederic Chiersch, who received a distinction on the occasion of the opening, from the hands of the Prince Regent. Two garrison churches, however, have been completed at Berlin, and their inauguration took place with considerable ceremonial. One of the garrison churches is for the Catholic community, and the other for the Lutherans. Both buildings are of considerable importance, and we shall take an early opportunity of referring to them again. At Cologne a factory has been completed on a rising bank building, for a branch of the German Reichbank; the Gothic style has been adopted. Mr. Hasak is the architect.—We notice from the advertisement columns of our German contemporaries that a competition is being arranged at Munich for a model design for villa residences, and premiums of the value of 500l. are offered. The assessors include Professor Frederic Chiersch.—We regret to record the death of a very popular architect, Herr Mathias Berger.—We notice from our official contemporary of Berlin, that there will be a first vote of 2,500l. for preliminary expenses in connexion with the representation of Germany at the Paris International Exhibition. The total of the vote, which will be spread over three years, is to be 25,000l.—There is to be a new casino at Wiesbaden, and a competition has been opened for sketch designs. The programme of the competition has been framed under the auspices of the Municipality; Messrs. Ende, of Berlin, Waldf, of Dresden, and Thiersch, of Munich, having been called in as advisers. These gentlemen will also act as assessors. The premiums are for 300l., 200l., 100l., and 50l. in value.—The Statistical Office at Berlin has just issued some particulars regarding the number of theatres in Prussia, their accommodation, &c. It appears that the largest theatre in Prussia is the Frankfurt Opera House, which has 1,000 seats, whilst the New Private Theatre at Berlin has 1,800 seats. There are apparently thirty theatres which have accommodation for under 1,000, and about twenty-five that can hold an audience of 1,000 to 1,500.

—From an article in the *Deutsche Bauzeitung*, it appears that the reconstruction of the bridges over the River Spree has practically been completed, and that the new bridge shortly to be constructed at this place will be the Aisen bridge, which will cost 25,000l. At present the principal bridge in course of construction is the one on the line of the Potsdammer-street.—To those interested in modern horticultural buildings we would call attention to an article in the *Centralblatt für Bauverwaltung* of May 22, with illustrations of the new conservatory in the Botanical Gardens, which are being hid out by the Government.

THE CAPE.—Owing to the building depression on the Rand large numbers of artisans are coming down South. Most of the men are shipping directly home, though a certain number remain in Cape Town, where the building trade is just now brisk, and the demand for labour in excess of the supply. The City Club at Cape Town is about to be rebuilt at a cost of 45,000l., the architect being Mr. Herbert Baker, by whom the work was won by open competition. Under the same architect the rebuilding of Mr. Rhodes's house is far advanced, the contract sum being about 40,000l. A large new hotel has been commenced at Cape Town in the upper part of the City, under the auspices of the Castle Mail Company, the architects being Messrs. Dunn & Watson, of London. The design has been most carefully prepared, and will be a welcome addition to the architecture of the city. The same architects' design for the Castle Company's own office in Adderley-street has just been completed, and both in appearance and quality of building is far ahead of any in the Colony hitherto erected by private enterprise.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Messrs. Whitelegg & Whittaker, architects, Manchester, have removed from their former address to Somerset Buildings, 19, Etna-street, Manchester.—Mr. Arthur Blomfield Jackson, who was in partnership with the late Mr. C. J. Phipps, and has been associated with him in his more recent works, will carry on the practice at the same address (26, Mecklenburg-square).

TRADE NEWS.—The directors of Stuarts Granolithic Stone Company, Limited, Regent Dock, London, Birmingham, and Edinburgh, recommend a dividend of 10 per cent. for the year ending 31st Dec. 1896.—**THE JUBILEE CELEBRATIONS.**—In the House of Commons, on Tuesday, the Home Secretary, replying to Mr. Hogan, said he had no definite information respecting the intention to crowd the roofs and front rooms of numerous old buildings along the route of the Jubilee procession. There was no law to prevent persons of inviting as many guests as they liked to their own houses, but the County Council, with whom he had been in constant communication, had considerable powers with regard to dangerous structures, and he had very good reason to know that they were quite alive to their responsibility in this matter.

CHURCH STRUCK BY LIGHTNING.—St. Clement's Church, Leigh, Essex, was struck by lightning, Tuesday afternoon. The turret and belfry were entirely wrecked, and the church was filled with smoke, while the clock was demolished. A large quantity of debris blocked the steeple stairs. Three large stained-glass windows were broken. The damage is estimated at 1,000l.

THE CONSISTORY COURT.—At a sitting of the Court, in St. Paul's, on the 19th inst., Dr. Tristram, Q.C., Diocesan Chancellor, granted faculties for the erection by the Corporation, and by several City Companies, of seats in St. Paul's-churchyard, for the Queen's procession on June 22. He granted similar borrowings in respect of St. Mary-le-Strand, St. Dunstan-in-the-West, and St. Clement Danes churchyards. It was stated that a well-known contractor would pay 5,750l. for the privilege at St. Clement Danes, and that the money would be devoted to the repair and adornment of the church.

EXTENSION OF THE ELECTRIC LIGHTING WORKS, &c., HANLEY.—Colonel J. T. Marsh, one of the inspectors of the Local Government Board, recently held an inquiry at the Town Hall into three applications made by the Hanley Town Council. The first was to borrow 15,000l. for the extension of the electricity works, the second to borrow 5,000l. for the completion of the park, and the third was to borrow 800l. for providing underground conveniences at the top of Broad-street. There were present, amongst others, Messrs. A. Challinor (Town Clerk), J. Lobley (Borough Surveyor), Sutherland and Cowell (Electrical Engineers), Burton (Assistant Surveyor), and Mawson (Park Designer). The Town Clerk, in making the application, stated that in February, 1893, the Local Government Board sanctioned the borrowing of 21,000l. for providing plant, machinery, and apparatus for supplying electric light, under the Order of 1891, and since then other loans had been sanctioned, bringing the total expended up to date to 46,110l. If the present application was granted the total capital would be 61,110l. The demand for the light was continually increasing, and he could not expect consumers to testify to their appreciation of the illuminating system.

THE STRAND IMPROVEMENT SCHEME, &c.—The Select Committee of the House of Commons, of which Mr. Rankin is Chairman, resumed consideration of the omnibus Bill of the London County Council, under which it was proposed to widen the Strand, and to remove the block of houses between the church of St. Mary-le-Strand and St. Clement Danes. Mr. Littler, Q.C., and Mr. Freeman, Q.C., having addressed the Committee, the room was cleared. On the re-admission of the public, the Chairman said: "The Committee consider that the preamble of the Bill, as far as relates to the Strand improvement scheme, has been proved. With regard to the principle of the Bill, they are of opinion that it is not in itself unjust, but in the present scheme they consider it can only be justly

and usefully applied to those properties which have a frontage upon the north side of Holywell-street. They also consider that the new street, being of great width, will require refuges in the middle in various places, and they also wish to call attention to the alteration, without stating what it should be, which will be necessary in sub-Clause 1 of Clause 41, which is the definition of the area over which betterment should be placed.—The Committee then proceeded to consider the remaining portion of the Bill which related to the widening of Tottenham Court-road, at the Oxford-street end, by the removal of the east side of Tottenham Court-road and Boziers-court. By this proposal the western side of Boziers-court will become the western side of the widened thoroughfare. Mr. Talbot, representing the County Council, said that, having regard to the decision just given, the Council would only seek to impose the improvement charge upon the property which, after the removal of the block, would front upon the widened portion of the road, the property between the southern corner of Tottenham Court-road and Hanway-street. The Council's advisers felt that the case of the eastern side of Tottenham Court-road was so analogous to the case of the south side of the Strand that they could not ask the Committee to include it in the betterment area. The Chairman announced that they found the preamble of this part of the Bill also proved.

ARCHITECTS AND BUILDERS.—On the 18th inst., Mr. Fred. E. Weatherly delivered an address on "Contracts" to the members of the Bristol Master Builders' Association, in the Board-room of the Chamber of Commerce. Mr. A. Kruss, President of the Association, was in the chair, and Mr. Weatherly said he must first express his indebtedness to Mr. Hudson's book on building contracts. He referred to the peculiarities distinguishing building contracts from ordinary contracts, pointing out that they were full of complexity, of risk, and multiplicity of detail. It was not fair to construe building contracts in the same bald, hard and fast way that other contracts were construed. He called attention to the architect's position as master of the situation, being the valuer, who decided all disputes, and whose decision was final. Moreover, he was the judge of his own work. He was the agent of only one party to the contract, and his decisions could not be impeached except on a charge of fraud, which was, rightly, a terribly difficult charge to support. The arbitration clause was therefore of vital importance. No one would dispute that architects were men of the greatest skill and integrity, and in Bristol and the West of England things seemed to work smoothly between architects and builders. It was not against the best and capable men that they had to guard themselves, but against the young and inexperienced. The very powers given to architects by the common forms of building contracts were precisely what might cause friction and even ruin to builders and disaster to employers in cases where the architect was young and inexperienced, and where ignorance and perhaps temper or wounded vanity might promote friction. He enlarged on the fact that an architect did not guarantee that his drawings were correct, his plans feasible, or his calculations accurate; and the builder had no remedy if he undertook to carry out a contract according to a plan which was afterwards proved to be incorrect. He ventured to think too great power was placed in the hands of the architect. Builders had to fight in order that the drawings and plans should be guaranteed by the architect or his employer; and if they were not correct it should not be the builder who should suffer. He referred in some detail to the form of contract, specially dealing with the relation of the architect and builder, and calling attention to important matters which were excepted in the reference to arbitration. He understood there had been endeavours on the part of builders to frame an arbitration clause which should be reasonable and fair to both parties. Unfortunately, however reasonable builders might think that clause was, he understood that the Institute of Architects refused to accept it. It seemed to him, however, that the contract form they desired showed them to be very long-suffering, as they might reasonably ask for more than they did. He also dealt with several points of interest to builders in connexion with contracts. What all persons desired was some form of contract which should enable all parties to work with the greatest harmony and with the greatest spirit of independence, without one party having undue power over the other. A hearty vote of thanks was given to Mr. Weatherly for his address.—*Bristol Times.*

OLD ROMAN ROAD AT STROOD.—For some time past traces of the old Roman road have been discovered in Rochester and Strood. The road was first exposed at the foot of Star Hill, and it has been seen at intervals all along the street. Portions of it were turned up a week or two since, at the foot of Rochester Bridge, near by the Castle Club, while during the excavating operations now going on in connexion with the storm water drainage works at High-street, Strood, the workmen have been constantly throwing out portions of the paving all along from the foot of Rochester Bridge. Near to the railway bridge, in the centre of the High-street, they came across the Roman road, about 3 ft. from

the surface. It is in a most perfect state. Wheel ruts are discernible, and it is thought that on the road being opened further in the direction of Station-road, the other wheel ruts will be discovered and the origin of the Roman wagon thereby established beyond all doubt. An interesting point of the discovery is that it shows the construction of the road throughout, and illustrates what the place was like before the Romans made the road. The land was undoubtedly marsh, and before the paving was laid, oak piles were driven so as to form a foundation, and then by a very careful method of preparation the road was laid sufficiently high so as to bring it up to the level of the old Roman bridge across the river. Mr. George Payne, F.S.A., has inspected the spot, and taken measurements. He has also numbered certain of the stones with a view to the same being preserved for exhibition in the Rochester Museum.—*Chatham News.*

DINNER, BRIGHTON MASTER BUILDERS.—The annual dinner of the Brighton Association of Master Builders was held on the 20th inst., at the Clarence Rooms, Hôtel Metropole, Brighton. Alderman Botting, J.P., Chairman of the Association, presided. After dinner the loyal toast was honoured at the invitation of the Chairman. Mr. J. K. Nye proposed "The Mayor and Corporation," and Alderman Davey responded. Mr. G. S. Godfree proposed "The Association of Master Builders." He said he understood the Association was formed not so much for the protection of the master builders as for the protection of the workmen of the town. The Chairman, in responding, said it was quite true that the Association was not formed for the purpose of fighting the workmen of the town. One and all were prepared to say that on no occasion had they had a serious difference with their own men, but they had frequently been interfered with from outside. The men, wisely or unwisely, had joined unions which called upon them at certain times to strike, and he thought the masters had been inclined more to pity them than to blame them. There was much that was good in the unions, but the abuse was that at certain times when they could make good money the men were called out and hounded to remain idle. Their men in Brighton were called out under such circumstances four years ago, and that Association was then formed—as much to protect their workmen as themselves; and from that time to the present there was the best of feeling between the masters and the workmen. The difficulties were raised always by certain men who got their living out of the workmen, and who went over the country disturbing the peace between masters and workmen wherever they could. There was only one name to call it, and that was a bad form of Socialism. There was a good form of Socialism where there was a desire to elevate men generally, and lift them to a better position. He thought it possible they might have a repetition of strikes in the country, because the union leaders watched for prosperity, and regarded the time when workshops were full of work as the proper one for a strike. The master builders must, therefore, be prepared for it was where they were not ready that strikes were declared, and if they kept together as they had done during the past four years he did not think there would be any trouble in Brighton. Referring to the new Employers Liability Bill, he said he hoped the Association in London, of which theirs was a branch, would be very proper one for a strike in resisting the extension of the Bill to the building trade. Up to the present moment the Bill was restricted to what were called dangerous trades; but there was no doubt that in Committee a very strong attempt would be made to make the building trade also responsible for all accidents. Where there was carelessness on the part of the master builder he was certain he ought to pay, for every precaution should be taken for the safety of the men, and he was certain that in Brighton generally that was done, but an attempt would doubtless be made to saddle the employer with all responsibility, however much the workman was to blame for carelessness.—Councillor Wilson proposed "The Visitors," for whom Mr. Howard Gates responded. Mr. Parsons proposed "The Chairman," Alderman Botting responding.—Councillor Holloway proposed "The Vice-Chairman." Mr. Lynn, in responding, said he knew a case in which an apprentice got heavy damages against his employer. The law costs broke the employer, and the apprentice, after a brief holiday, returned, and set up in his place.—Mr. Garrett and Mr. Parsons also responded.

ORGAN, ST. SAVIOUR'S COLLEGIATE CHURCH, BOROUGH.—The Bishop of Southwark dedicated, on the 10th inst., a new organ at St. Saviour's Collegiate Church, Borough. The organ has been built by Messrs. Lewis & Co., Brixton. The case was designed by Sir Arthur Blomfield, A.R.A.

ARCHÆOLOGICAL DISCOVERY, IPSWICH.—A discovery of exceptional archaeological interest has been made in Fore-street, Ipswich. Men have been engaged pulling down some old premises occupied by Messrs. Martin & Newby, and when they came to the wall at the back they discovered two rough piers, about 4 ft. thick, constructed of flint and York stone put together with Roman cement. It was with the greatest difficulty that they could break away any portion, but the space round was cleared, and Mr. Watling, the archaeologist, had no hesitation in declaring that the piers were once part

of the East Gate of the town. The width of the gate, according to the space between these remains, was about 17 ft., but the height must be speculative, as the piers do not stand more than 6 ft. high. The brick wall was apparently built on the old town wall, which was connected with the piers, and which, it is evident, runs each side under the existing wall. This was built about 1700, and the bricks are in a splendid state of preservation. They are perfectly smooth, and very much the same shape as those in use at the present day, though, if anything, a trifle shorter than those of more recent date taken from the top of the wall.—*East Anglian Times.*

CAPITAL AND LABOUR.

CARPENTERS' DISPUTE, LONDON.—A large number of the carpenters employed by Messrs. Waller & Co., of Belgrave-square, and Messrs. Allen & Co., in the erection of Jubilee grand stands at Charing Cross street, were on Wednesday in consequence of the refusal of the employers to concede them an advance of 2d. per hour on their present rate of wages. Upwards of 120 workmen were employed on the two undertakings, and in all cases they were in the receipt of wages equivalent to 10d. an hour, which is the recognised trade unit rate for London carpenters. A large section of the workmen, however, appeared to have grown suddenly dissatisfied with these terms, and justified their attitude by a reference to other cases in London where workmen are being paid a higher rate of wages for this class of "emergency" work. The works foreman for the contractors refused to accede to their request, and consequently the dissatisfied workmen, numbering over fifty, left work. The works foreman states on behalf of the contractors that no notice has been given them of the demand, which they considered altogether unreasonable.

THE STRIKE IN THE PLYMOUTH BUILDING TRADE.—The representatives of the Plymouth Master Builders' Association are canvassing through the three Western counties for carpenters and plasterers. Several more men whom they have induced to agree to the terms of the agreement with which each delegate is armed have arrived in the town, and, it is stated have been put to work.

IPSWICH BUILDING TRADE STRIKE.—Neither parties to the dispute in the Ipswich building trade have made any advances towards a settlement of the carpenters' and joiners' strike. The men are gradually going away to other places, some thirty or more having left, and to members of the Society strike pay of 15s. per week has been distributed. Somewhat to their surprise, it is stated, non-Society members who have come out were also paid—the married men at the rate of 11s. per week, and single men 8s.

THE CARLISLE JOINERS' STRIKE.—The strike amongst the joiners still continues and the prospects of a settlement seem as remote as ever. No overtures have been made by either side, and the ranks of the strikers are being thinned daily by departures to other towns. Of the 142 men who came out seventy-two have now left and commenced work elsewhere, and seventy remain in the city. Of the numbers who have left it is stated that only two are receiving less than 9d. an hour.—*Carlisle Journal.*

THE CARPENTERS' STRIKE AT DUDLEY.—A meeting of the carpenters and joiners of Dudley and district, amongst whom a strike is now existing, was held in the Windmill Inn, Old Mill-street, Dudley, a few days ago. Mr. H. Crump said that that was the seventh week of the strike, which had been declared for the purpose of securing an advance from 7d. to 8d. per hour, and the adoption of a code of working rules. Mr. J. Matthews (Birmingham), who presided, expressed surprise that the Dudley employers should have so long resisted the very moderate demands of the men. The wages at Birmingham were 9d. per hour, and in Wolverhampton they were 8½d., but Dudley had long been notorious for under payment in the various trades.—Mr. George Wilson proposed "That we, the carpenters of Dudley and district, are still determined to remain firm to our demands of 8d. per hour and code of working rules, and pledge ourselves to use every legitimate means to bring the same to a successful issue."—Mr. B. Round seconded the motion, which was supported by Mr. Vaughan (Wolverhampton), Mr. G. Davis (Birmingham), and Mr. Davies (Wolverhampton), the delegates, giving the men on strike assurance of continued help from the surrounding districts, and pointing out that even in Wednesday and Darlaston the carpenters had had an advance. The resolution was carried unanimously.—Mr. H. Crump proposed "That we, the members of the building trade of Dudley, protest against the action of the Sanitary Committee of the Dudley Town Council, in allowing the fair wages clause to be violated by the employment of underpaid labour on contracts, and urge upon all members to use every means to secure representatives who will see that the objects of the fair contracts resolution are carried into effect." Mr. Joseph Round seconded the resolution, which was carried.

STRIKE OF BUILDERS' LABOURERS, OMAGH.—The labourers engaged in the erection of the new asylum, the new infirmary, and the new Roman Catholic Church in Omagh have struck for an advance of

wages. The men at present have a wage of 12s. per week, and are demanding a rise of a halfpenny an hour.—Freeman's Journal.

MEETINGS.

FRIDAY, MAY 28.
Royal Institution.—Professor Moissan on "The Isolation of Fluorine." With experiments. 9 p.m.

SATURDAY, MAY 29.
Lewisham Antiquarian Society and St. Paul's Ecclesiastical Society.—Afternoon meeting at Pullborough and Hardham, 5 p.m.
London and Provincial Builders' Foremen's Association.—Monthly Meeting, the Memorial Hall, Farringdon-street. 7.30.

MONDAY, MAY 31.
Royal Institute of British Architects.—Special General Meeting to receive the Report of the Council on the Election of Candidates for Fellowship. 8 p.m.
Surveyors' Institution.—Annual General Meeting to receive the Report of the Council and the announcement of the result of the election of officers for the ensuing year. 3 p.m.

WEDNESDAY, JUNE 2.
Royal Archaeological Institute.—Viscount Dillon, and Mr. W. St. John Hope, M.A., on "An Inventory of Arms and Armour belonging to Thomas, Duke of Gloucester, in 1399." (2) Mr. James Hilton, F.S.A., on "The Coronation Stone at Westminster." 4 p.m.
London and Provincial Builders' Foremen's Association.—Paper by Mr. T. Cain Hughes, entitled "Notes on North Lanca-shire." 8 p.m.
Builders' Foremen and Clerks' Work Institution.—Ordinary meeting of the members. 8 p.m.

THURSDAY, JUNE 3.
Society of Antiquaries.—Ballot for the election of Officers. 8 p.m.
Royal Institution.—Professor Dewar on "Liquid Air as an Agent of Research." II. 3 p.m.
Northern Architectural Association.—Annual Exhibition. 5 p.m.

FRIDAY, JUNE 4.
Royal Institution.—Mr. W. H. Prece C.B., F.R.S., on "Signalling through Space without Wires." 9 p.m.

SATURDAY, JUNE 5.
Edinburgh Architectural Association.—Visit to Torphichen Church.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

8,614.—WATER-CLOSERS, TRAPS AND MOUNDS: P. J. Davies.—The inventor claims (1) the construction and casing in one piece (except capping piece) of simple siphonic traps of lead, with or without diaphragm; (2) casting lead siphons in one or more pieces to be cast in one piece, or in connection with the bit of hinge, and thereby setting up friction resistance to the action of the hinge. Other combinations of a hinge "with an adjustable spring are described and claimed.

10,940.—HINGES AND SIMILAR MECHANISMS: H. Hyde.—The inventor claims a hinge for controlling the action of all kinds of doors, with an adjustable spring, which, when the door is opened and closed, is compressed or extended, as the case may be, by the action of an eccentric surface, cam, or their equivalent, formed upon or affixed to, or in connection with, the bit of hinge, and thereby setting up friction resistance to the action of the hinge. Other combinations of a hinge "with an adjustable spring are described and claimed.

11,612.—ATTACHMENT FOR USE IN MOULDING: R. J. Bell.—The attachment is designed to cut a mould and a fret, if required, at one operation. Attachment consists of a piece of steel, one end of which is screwed on revolving cutter stock, the other end of conical shape, and terminating in a parallel spindle of small diameter, the point being shaped like a wood-boring bit. A slot is formed through the central part of attachment. In this slot the moulding cutter is placed, and secured by a set screw. In action the design is passed on the wood, and the stock carrying attachment is set in motion. The piece of wood is now forced down upon the bit-shaped end of the attachment, and, by a species of routing action, the pattern is cut out. Duplicates from the work thus cut can readily be obtained, and frets cut in the ordinary way by the saw can be moulded by this invention.

13,845.—METALLIC LATTICE: B. E. W. Siffon.—In order to form a cheap and portable lattice for fencing and other purposes, inventor connects two series of metal strips so that they expand into the usual diamond-shaped lattice form; but at each crossing point of the strips he forms aperture in strips for rivet of a somewhat elongated form, and adopts between the strips a distance piece or washer, connecting the three thicknesses at such crossing by a rivet. This expedient allows of a certain amount of "play" or self-adjustment, and subserves several purposes. 21,444.—SPINNING SAVING: M. Hines & J. Peckover.—Inventor aims in his mechanism at supporting the spinning operation upon and carrying it along in a smooth, steady manner, securing a uniform pressure, spacing, and holding sweater under trying conditions, and at the same time, and redistributing it to saws, uniformly maintaining slabs in their true position, regulating water supply, and securing general economy and efficiency. For these purposes, inventor designs a stone-sawing machine the combination with a frame having three trackways of front and middle saws arranged to travel on the lower and narrower of the said ways, and a rear car mounted to travel on the highest and wider trackway, and adapted to pass the said middle car. An endless carrier provided with plates or buckets conveys the abraded material from the kerfs and discharges it at points above the stone.

21,445.—CUTTING COWLS: H. E. Carr.—Inventor constructs his cowls, either of metal or earthenware, with an outside straight pipe and an inside straight pipe of smaller diameter, having a fixed or movable double cone on top of the small pipe inside. Cone may be a fixture or may rise and fall on a sliding rod.

NEW APPLICATIONS FOR LETTERS PATENT.
MAY 10.—11,541, D. Williams and E. Davies, Gas, Smoke, and Foul Air Extractor.—11,542, J. Thompson,

Dust Excluder and Ventilator for Sliding Windows.—11,577, G. Westgarth, Window Fastener.
MAY 11.—11,653, J. Lawrence, Gully Trap Applicable to all Traps.—11,673, J. Cole, Window Sash Fasteners.—11,687, G. Healey, Sash Fasteners.—11,689, R. Roberts, Sash Fasteners.—11,715, W. Henley and others, Apparatus for Use in Erecting Buildings and other Structures of Concrete.

MAY 12.—11,771, H. Groomie and J. Wynes, Self-Controlling Screw.—11,831, J. Wood, Window Sash Fasteners.—11,841, G. Scholefield, Bolts or Fastenings.—11,845, H. Alexander, Machine for Pressing Strips.—11,846, G. Ashford, Fasteners for Window Sashes, Fanlights, Casements, &c.—11,925, E. Smith, Stoneware or Earthenware pipes.—11,925, H. Coward, Construction of Fireproof Doors.—11,925, J. Jensen, Fire Grates.—11,943, T. Farley, Sash Fasteners.—11,954, T. Palmer, Brick-making and Pressing Machinery.
MAY 14.—11,975, H. Minnie, Ornamenting Wood.—11,990, F. Schacht, Door Checks or Holders.—12,006, A. Constable, Stop Gates for Sewage and Irrigation Purposes and for Flushing Manholes in Sewers.
MAY 15.—12,015, R. Vevers, Window Frames.—12,070, C. Lancaster, Wood Screws, &c.

PROVISIONAL SPECIFICATIONS ACCEPTED.

5,738, A. Clifford, Flushing Tank or Waste Water Preventer.—10,736, J. E. Keane, Scaffold Cramps.—9,447, J. R. S. Black, Compositions and Paints for Preserving Structures.—10,000, C. Fischer, Catches or Fasteners for Sash and Folding Windows, &c.—10,471, T. Holford, Window Sash Fasteners.—10,520, G. Ashwell, Sash Fasteners.—10,556, J. Colman, Windows.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

10,690, F. Lynde, Lavatory Basins, &c.—11,384, G. Taylor, Chimney Flues.—12,229, A. Logan, Stall Flooring.—12,570, W. Griffiths, Means for holding ajar Doors, Window Casements, &c.—4,779, W. Wise, Enabling Bolts and the Shafts of various Articles to be easily secured in Wood.—10,000, C. Fischer, Catches or Fasteners for Sash and Folding Windows, &c.—10,471, T. Holford, Window Sash Fasteners.—10,520, G. Ashwell, Sash Fasteners.—10,556, J. Colman, Windows.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

May 6.—By DOUGLAS YOUNG & Co. (at Sutton). Sutton, Surrey.—Lenham-rd., forty plots of building land, f. 53,397 and f. 3,850.
Berhill-st., twenty-seven plots of building land, f. 1,378.
Lichfield-rd., nine plots of building land, f. 728.
Warwick-rd., eleven plots of building land, f. 831.
By W. G. WOODS & Co. HAYWARD (at Chippenham). Laocock, Wilts.—"The Laocock Brewery," f. with twenty-one public and beer houses attached. 26,600.
By HENRY HENNING (at Birmingham). Bordesley, Edgb., Warwick.—17, 18 and 19, Victoria-st., f. 725.
14, 15 and 16, Victoria-st., ut. 724 yrs., g.r. 44, 100, and 100. 445.
Handsworth, Edgb., f. 10 (odd), Furney-rd., ut. 73 yrs., g.r. 111. 1,359.
Edgbaston, Warwick.—Willow-av., &c., twelve building plots, f. 738.
By O. SMITH (at Plymouth). Halberton, &c., Devon.—"Luson Farm," 123 a. 4,318.
"Brownstone Farm," 176 a. 1 r. 7 p. 4,450.
Enclosures of land, 14 a. 0 r. 33 p. f. 490.
Four cottages, blacksmith's shop, and 1 a. 1 r. 5 p. f. 585.
May 7.—By W. W. READ & Co. Holborn.—High Holborn, one-tenth share of figr. 250l., reversion to 74 yrs. 675.
High Beech.—Lippett's Hill, a plot of land, 3 a. 2 r. 21 p. f. 500.
Buckhart Hill.—Queen's-rd., figr. 124, reversion in 80 yrs. 380.
Old-rd., "The Bull Headed Stag" p-h., and 2 a. f. 1,000.
Palmerston-rd., a plot of building land, f. 910.
Palmerston-rd., "Fairview," and half an acre, f. 2,600.
Blackheath.—69, Humbler's-rd., f. 354.
By WYATT & SON (at Southampton). Southampton.—Jail-st., &c., a freehold building site, area 4,900 sq. ft. 4,200.
113 and 115, Priory-rd., f. 359.
85 and 87, Duke's-rd., with a plot of land, f. 750 (odd), Kent-rd., with a plot of land, part f. and part f. 665 yrs., g.r. 71, 168. 330.
75, Kent-rd., f. 975.
4, Maddison-street, ut. 604 yrs., g.r. 54, 58. 120.
Shirley, Winchester-rd., "Prospect Cottage," f. 495.
May 8.—By MADISON, MILES, & Co. (at Norwich). Acle, Norfolk.—"Monks Farm," 234 a. 1 r. 10 p. f. 6,200.
By B. BROWN, KNOWLES & Co. (at Gloucester). Ashleworth, Glouc.—A freehold cottage with land, 3 a. 1 r. 33 p. f. 150.
May 10.—By P. HODSON. Hornsey.—42, Malvern-rd., ut. 80 yrs., g.r. 61, &c. 201. 260.
Willenden.—58, 60, and 62, Mayo-rd., ut. 98 yrs., g.r. 164, 100. 205.
62 and 64, Mayo-rd., ut. 89 yrs., g.r. 114. 1,015.
Bilting-rd.—58 and 60, St. Peter's-st., f. 800.
By MAPLE & Co. Hampstead-rd.—9 and 11, Oakley-sq., ut. 46 yrs., g.r. 254, r. 100. 1,115.
By HUNTER & HUNTER. Windsor, Berks.—"High-st." "The Castle Hotel," area nearly half an acre, f. 7,400. 10,080.
Kensington.—123, Bedford-gardens, f. 1,000. 600.

Paddington.—24 and 26, Beethoven-st., ut. 794 yrs., g.r. 144, r. 804. 1,625.
Harlesden.—1 and 29, Bruce-rd., ut. 814 yrs., g.r. 144, r. 604. 470.
Queen's-rd., a freehold building plot, f. 100. 100.
By G. MARSDEN (at Warkworth). Warkworth, Derby.—"Barn Close" and "Hopton Swamp," 4 a. 1 r. 4 p. f. 341.
Bailey Croft House, area 123 a. 100. 595.
May 11.—By PERCY H. CLARKE. Chelsea.—51, Leader-st., ut. 114 yrs., g.r. 44. 130.
Fulham.—9, Muggs-rd., ut. 694 yrs., g.r. 47, 58, 61, r. 324. 400.
18 and 24, Noe Park-rd., ut. 474 yrs., g.r. 12, 108, r. 812, 48. 615.
123, Moore Park-rd., ut. 694 yrs., g.r. 54, 58, r. 354. 325.
By J. BRICK. Herne Hill.—107, Norwood-rd., ut. 74 yrs., g.r. 61, r. 400. 340.
By E. H. HOBBS. Clapham Common.—South side, two blocks of building land, f. 3,610.
22, Cedars-rd., ut. 62 yrs., g.r. 204, &c. 904. 560.
By RUTLEY, SON, & VINCE. Clapham.—27, Lambour-rd., ut. 474 yrs., g.r. 61, 68, r. 384. 305.
Carmen Town.—125, Arlington-rd., ut. 40 yrs., g.r. 104. 200.
14, James-st., ut. 15 yrs., g.r. 54, 58, r. 384. 140.
By E. & H. LUMLEY. Loch Fyne, Argyllshire.—"The Ballimore Estate," about 8,000 a. 50,000.
By DEBENHAM, TEWSON & Co. City of London.—22, Water-lane, f. 1,740.
Holloway.—Brecknock-rd., figr. 244, ut. 52 yrs., g.r. 24. 460.
Brecknock-rd., &c., figr. 664, 108, ut. 52 yrs., g.r. 24, 108. 1,380.
Kensal Town.—Prince of Wales-rd., figr. 144, 148, ut. 51 yrs., g.r. 17, 18. 460.
Canobury.—St. Paul's-pl., figr. 764, 128, ut. 29 yrs., g.r. 104. 820.
Belgrave.—Eaton-sq., figr. 604, ut. 27 yrs., g.r. 36. 880.
Easton-rd. and Easton-sq.—figr. 147, ut. 10 yrs., g.r. 484. 160.
Easton-rd.—Burton-cres., figr. 364, 108, ut. 9 yrs., g.r. 111. 600.
Bryanston-sq.—Upper George-st., figr. 394, 188, ut. 7 yrs., g.r. 111. 210.
Hyde Pk.—Montagu-sq., figr. 684, 58, ut. 5 yrs., g.r. 111. 230.
Bayswater.—16, Alexander-st., ut. 52 yrs., g.r. 94, r. 554. 452.
By ROBINSON & PERKIN. Notting Hill.—83, Chester-rd., ut. 74 yrs., g.r. 84. 330.
Gray's Inn-rd.—24, Gough-st., ut. 124 yrs., g.r. 54. 115.
By JONES, SON, & DAVY (at Messing Hall Tavern). Leytonstone.—High-rd., "The Elms," p-h., ut. 434 yrs., g.r. 204, with goodwill. 27,650.
By FLEURBAERT, SONS, & ADAMS (at Messing Hall Tavern). Bousbroune, Herts.—"The Crown Hotel" and 16 a. f. with goodwill. 11,500.
City of London.—Giltspur-st., "Gadd's Coffee House," with beer licence, f. 2,610.
By HERRER & SONS (at Leeds). Leeds, Yorks.—125, North-st., area 150, yds. 1,600.
By NICHOLSON, GRIEVAIS, & Co. (at Sheffield). Upper Hallam, &c., Yorks.—"Standedge Lodge," and the Standedge and Hallam Moors, &c., 2,112 a. 1 r. 17 p. f. 40,000.
Farm lands, moor lands, &c., 648 a. 2 r. 10 p. f. 11,000.
White Path Moss, Moor and farm lands, 909 a. 2 r. 59 p. f. 9,000.
The "Grange and Trout" p-h. and 2 a. 1 r. 25 p. f. 3,600.
Sheffield, Yorks.—Lealey, "Grange Bank," f. 150 to 164 (even), Devonshire-st., and 14 and 16, Broomhall-st., f. 3,214. 6,950.
By FENN & Co. (at Ipswich). Holton St. Mary, &c., Suffolk.—"The Holton Place Farm," 236 a. 0 r. 4 p. f. and c. 2,350.
"Fuller's Farm," and an enclosure, 16 a. 2 r. 16 p. f. 630.
Green, Wenhams, &c., Suffolk.—"The Castle" or "Acacia Farm," 42 a. 2 r. 17 p. c. 500.
Holton St. Mary, Suffolk.—Two freehold cottages East Bergholt, Suffolk.—Four cottages and three enclosures, 10 a. 0 r. 2 p. f. 150.
By H. DUKE & SON (at Dorchester). Dorchester.—Maurimbury Way, 41 plots of building land, f. 732.
Herringswell-rd., four plots of building land, f. 540.
May 12.—By COOPER & GOULDING. Stoke Newington.—24 and 26, Ayrstone-rd., ut. 824 yrs., g.r. 104, 108. 470.
By FURBER, PRICE & FURBER. Chaik Farm.—34, Regent's Pk.-rd., f. c. 704. 810.
Hackney.—11 and 13, Brunswick-st., f. 780.
By G. E. CLARKE. Loughton.—Queen's Pk.-rd., "Bell Co." with lough and shop, and plot of land adjoining, f. 514. 785.
Walthamstow.—12 and 34 to 46 (even), Fraser-rd., f. 1,200. 2,625.
Leyton.—29 and 31, Copeland-rd., f. 504, 48. 600.
By J. J. DEVERELL. Holloway.—15, Anson-rd., ut. 684 yrs., g.r. 61, 68, &c. 604. 535.
By ISMAY & Co. Hendon.—Burroughs-lane, "The Laurels," "Oak House," "Ivy House," and "The Ferns," also plot of land, and f. 1,004. 1,850.
By D. YOUNG & Co. Peckham.—7 and 9, Montpelier-rd., ut. 45 yrs., g.r. 81, 168, r. 564. 460.
Clapham.—22, Jeffrey's-rd., f. c. 504. 535.
Dulwich.—99, Woodvale, ut. 79 yrs., g.r. 104, 108, &c. 504. 400.
Snarbrook.—New Wancaster-rd., "The British Queen" p-h., f. r. 504, with goodwill. 2,500.
1 to 6, Eastrow, f. c. 430. 240.
1 to 4, Frontrow, f. c. 694. 560.
1 to 5, Voluntary-pl., f. c. 560. 195.
Voluntary-pl., a plot of building land, f. 100. 300.
Ilford.—Barking-side, "Beehive Cottage," f. 100. 300.

CONTRACTS AND PUBLIC APPOINTMENTS.

CONTRACTS.

Table with columns: Nature of Work or Materials, By whom Required, Forms of Tender, &c., Tenders to be delivered, and Nature of Work or Materials.

CONTRACTS—Continued.

Table with columns: Nature of Work or Materials, By whom Required, Forms of Tender, &c., Tenders to be delivered, and Nature of Work or Materials.

PUBLIC APPOINTMENTS.

Table with columns: Nature of Appointment, By whom Advertised, Salary, and Application to be in.

Those marked with an asterisk (*) are advertised in this Number. Contracts, pp. lv. vl. viii. & xxi. Public Appointments, pp. xviii. & xxi.

Main table listing various land parcels with columns for location, area, and other details.

PRICES CURRENT OF MATERIALS.

Commercial, Queen-st., "Lucan Lodge," ut. 371 yrs, gr. 207, s. r. 100. By HERRING, SON, & DAWE. Clapham...

Table listing materials and prices. Columns include item name (e.g., Greenheart, Oak, Pine), quantity, and price. Includes sub-sections for TIMBER and METALS.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us not later than 4 o'clock on Thursday...

Table listing tenders for construction projects. Columns include project name, location, and amount (e.g., ABERAMAN, BALLYMAHON, BLYTH).

E.L.GIN.—For the erection of a house on the farm of the Raich, Longmorn, for Mr. William Ramsay, of Longmorn, Mr. C. C. Doig, architect, Elgin...

E.L.GIN.—For the erection of business premises, South-street, for Mr. Charles Forsyth, Mr. C. C. Doig, architect, Elgin...

FENSTER.—For the erection of Emmanuel's Church, St. Thomas, Mr. Harold Breakspere, architect, Corswall, Wilts...

GAINFORD (Durham)—For the execution of Gainford sewerage works, Mr. Robert Robinson, Engineer, Darlington...

Contract No. 2.—Sanitary Pipes. Wm. Dodds... £1,922 4 11 R. McDonald... £1,514 3 2...

Contract No. 3.—Ironwork. Blakeborough & Sons... £220 8 6 Adamson... £199 17 3...

GRAYS (Essex)—For the erection of school buildings, Bridgeway, for the Grays Thurock School Board...

GREAT YARMOUTH.—For additions, &c., to school buildings, St. Andrew's, Great Yarmouth...

HAPPISBURGH (Norfolk)—Accepted for iron bungalow, for Dr. L. G. Colman, Hatfield...

HOPTON (Great Yarmouth)—For erecting a pair of cottages for Mr. C. S. Orde, Hopton House, Messrs. Botley & Olley, architects...

KENDAL.—Accepted for golf pavilion, for W. Harbrow, South Bermonsey, £250.

KETTERING.—For the execution of drainage works, &c., for the Urban District Council, Mr. T. Reader Smith, C.E., Market Hill, Kettering...

KETTERING.—For the execution of works of sewage disposal extension, for the Urban District Council, Mr. T. R. Smith, C.E., Market Hill, Kettering...

LONDON.—For the erection of conveniences, Hilly Fields, Brockley, for the London County Council...

LONDON.—Accepted for erecting a stand at the Yorkshire Society's Schools, Westminster Bridge-road, for viewing the Royal processions—

W. Harbrow, Iron Building Works, South Bermondsey, £179

LONDON.—Accepted for shedding, for Mr. H. G. Flett, King's Cross—

W. Harbrow, Iron Building Works, South Bermondsey, £151 10

LONDON.—Accepted for alterations at "The King's Arms" public-house, Mile End, E. Mr. Herbert Riches, architect, 3, Crooked-lane, King William-street, London, E.C.—

Thomas O'Brien & Sons, £1,750

LONDON.—For laying down pipe-stewers, Upper Richmond-road, S.W., for Mr. H. Shepherd Cross, M.F. Mr. F. H. Harvey, surveyor, 13, Lavender Hill, S.W.—

Geo. Wilson & Co., £299 | C. W. Killenback & Co., £233

W. Seaker, £295 | H. Benham & Co., £274

H. Woodham, £263 | J. Jackson, £199

PAIGNTON.—For erecting a villa residence, Dartmouth-road, for Messrs. Bridgman & Bridgman, Messrs Norman G. Bridgman and Walter H. Bridgman, architects, of Torquay, Paignton, and Teignmouth. Quantities by Mr. Vincent Catermole Brown—

E. Westlake, £265 | G. Webber & Mauder, £263

R. Harris, £60 | H. Webber & Sons, £59

PONTYFRIDD.—For the erection of a church, Carnetown, Abercynon, for the Rev. D. Lloyd Davies. Mr. G. E. Halliday, architect and Diocesan surveyor, 14, High street, Cardiff. Quantities by Mr. John W. Rogers, 14, High street, Cardiff—

Ed. Jones, £4,841 16 8 | Wm. Garner, Aber-

Wylliams & Thomas, 3,790 18 6 | Jare Junction*, £2,470 22 0

C. Jenkins & Son, £370 4 2 | Ed. Malouwan, £470 r 6

James Williams, £348 4 2 | W. J. Bloxham, £348 0 0

Henry Smith, £360 0 0 | Williams Bros., £472 22 2 1/2

* Accepted.

RAWTENTALL (Lancs.).—For the erection of a fire station and stables, King-street, Contract No. 2, for the Corporation. Mr. A. W. Lawson, Borough Surveyor, Municipal Offices, Rawtentall—

Daniel Diggle, £6,350 0 | Moore Bros., Rawten

Ormerod Ashworth, £4,000 10 | stall, £3,328 10

Henry Tuckett, £440

* Accepted subject to certain deductions to be made by Corporation. Withdrawn.

SALISBURY.—For the erection of three pairs of semi-detached villa residences, Wyndham-road, for Mr. J. Follitt. Messrs. John Harding & Son, architects, Salisbury—

E. Witt, £3,495 1 | Wort & Way, £3,400

H. J. Kite, £485 | G. Harns, £320

E. Hale, £450 | E. Day, £340

Webb & Co., £350 | Vincent & Folland*, £250

* Accepted.

[All of Salisbury.]

SNARESBROOK (Essex).—For decoration to house at Snarebrook, N.E., for Mr. A. N. Colson. Mr. Herbert Riches, architect, 3, Crooked-lane, King William-street, London, E.C.—

T. Osborn & Sons, £245 | F. J. Evans*, £157

W. Munday, £199 | * Accepted.

SOUTHALL (Middlesex).—For levelling, paving, &c., White-street, for the Southall Northon Urban District Council. Mr. H. R. Felkin, engineer, District Council Offices, Southall—

W. Steen, £247 | H. Lee, Southall*, £210

A. & B. Hansford, £27

* Accepted.

SOUTHEND-ON-SEA.—For the erection of a brick wall for the Corporation, Mr. H. Harlick, Borough Surveyor, Clarence-road, Southend-on-Sea—

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F. Dupont, Southend-on-Sea*, £95 0

Jones & Fields, £9 0

* Accepted.

SOUTH SHIELDS.—Accepted for the erection of new wards and making extensions to the Ingham Infirmary, Westoe, South Shields. Quantities by Mr. J. Savage, Newcastle. Mr. Henry Gieves, architect, Albany Chambers, South Shields—

Goodwin & Son, South Shields, £5,998

THRAPSTON (Northants).—For the execution of water supply works at the market, for the Thrapston Market Company. Mr. J. M. Siddons, Surveyor, Oundle—

Freeman & Son, £192 | C. Pettit, Thrapston*, £185

* Accepted.

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T. Stringer, £790 2 2 1/2 | W. Heaton, £108 10 0

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Kirk & Randall, £6 7 1/2 | J. Jackson, £5 7 1/2

B. Cooke & Co., £9 0 0 | W. Greig & Son, Strat-

Shillitoe & Son, £6 7 1/2 | ford (accepted), £5 4 3/4

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JUNE 5, 1895.

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The Architecture of our large Provincial Towns.

VII.—LEICESTER.



ALTHOUGH Leicester is a town with a historic past crowded with great names and important events which have left their marks upon the political, social, and religious life of the country; and although there is no lack of interest in its mediæval structures and remains; it is not of the past that the visitor is apt to think most, who notes the activity and prosperity indicated by its crowded thoroughfares and handsome modern buildings. If the life and trade of the nineteenth century had passed Leicester by, it might have become a place of pilgrimage for the archeologist and the tourist; as things are the chief pilgrims are commercial travellers, whose visits have little to do with the buildings of the past, but a great deal, although they perhaps do not think of it, with those of the present and future. Old Leicester covered a very considerable area for a mediæval town; but it was only about a sixth or a seventh the size of the present one, which has spread mainly along the valleys and up the sides of the hills to the south and east, and, though only to a comparatively small extent, across the river to the west. It was protected by walls on the south and east, and by the River Soar on the other two sides; the castle being strongly posted, on a hill overlooking the river, at the south-west corner. The oldest part is no doubt the poor district on the low ground in the bend of the stream, through which the new, dismal, black brick viaduct of the Manchester and Sheffield railway is being carried. Immediately under this viaduct is the only piece of Roman workmanship remaining, except the ruined wall near St. Nicholas'

Church: it is merely a piece of mosaic pavement of ordinary geometrical pattern, but the workmanship is exceptionally good, and it is being carefully housed in a well-lighted chamber.

The main streets of modern Leicester converge upon an irregular open space called the East Gates, whence tramways run along the principal thoroughfares to the outskirts: by Gallowtree Gate, Granby-street, and the London-road, to the south; by Humberstone Gate and the Humberstone-road to the east; and by Belgrave Gate and the Belgrave-road to the north-east. The old main street, High-street, which runs westward, though still an important business thoroughfare, is narrow; and so is Churchgate, leading north. Gallowtree Gate and the region just west of it is the present centre of the town. Here are not only the Market-place and the Municipal buildings, but the clubs, banks, insurance offices, and most of the good shops. There is a minor residential quarter growing up on the hill west of the river, but the principal one is to the south on both sides of the London-road. This may be said to begin at the railway station; indeed, the whole region south-east of the railway is mainly residential, the average size and importance of the houses increasing as the hill is ascended and the distance from the centre increased, until in the extreme south are what are practically large country residences. A pretty feature of the town is the "New Walk," a broad asphalted footway, planted with trees and mainly bordered by old-fashioned residences and small gardens, which runs from Belvoir-street almost in the middle of the business region, to Victoria Park on the outskirts. Of the three parks, Victoria Park is an open common on the summit of the southern hill, and Spinney Hill Park a newly laid out public garden on a steep slope facing the south, in the midst of a thickly-populated neighbourhood, where it must be much appreciated. Abbey Park is older, prettier, and better grown, and is on the large island to the north. The refreshment pavilions in both the last-named have

some architectural pretension and picturesque-ness, though the one in Spinney Hill Park, by Mr. Stockdale Harrison, is hardly equal to some of his more serious designs.

There is certainly in Leicester architecture a more strongly marked tendency to good taste, as opposed to mere costly ornament, than is usually found in towns where the commercial element is the most important; but there is an equally strongly marked tendency among tenants to cover up good architecture with huge name-boards and advertisements, which seems, to say the least of it, a great pity. The natural building material of the country seems to be a red brick, of which every kind and tint is to be seen (including, unfortunately, the pallid, shiny kind that is so important an element in the dreary aspect of most poor neighbourhoods in the Midlands). Notwithstanding the presence of various stones and terra-cotta and an unusually large sprinkling of modern half-timber work, Leicester is essentially a red brick town.

The principal public civil edifice, the Municipal Buildings, erected by Mr. F. J. Hames in 1874-76 as the result of a competition, is itself a "Queen Anne" red brick structure of good character; not, perhaps, very imposing or monumental, and rather too much based upon domestic examples to have a very official expression; but designed in quiet, good taste, for the most part, and well grouped. The most striking and satisfactory features in the front are the end bays of the middle block, with their long windows; and the least satisfactory is the centre bay, which has an ugly-shaped opening on the first floor and a gable with a very weak outline. The long balcony, carried on enormous corbels, is exceedingly helpful in pulling the design together, and in marking the ground story with a good deep shadow. The tower is well placed, and the concentration of features in the upper part effective, though the detail is not, perhaps, very interesting. The building is conveniently planned, but is said to be already too small for the business of the town, and a new Town Hall is in



St. Margaret's Church.



Courtyard, Old Town Hall.

contemplation. A great part of it is taken up by the Crown and Nisi Prius Courts, which occupy nearly all the space within the main corridor, and are fine rooms, with natural oak fittings very tastefully designed. The Council Chamber is at the north-west corner, and is also a fine room. The small square in front is laid out as a public garden, in the middle of which is a small bronze fountain. The Old Town Hall is a small hall, with an open roof of rough-hewn timbers, and a range of windows in the upper part of the wall similar in character and arrangement to most of the earlier halls of the mediæval guilds. It belonged to the Guild of Corpus Christi before it was purchased by the Corporation of the town, and is said to have been erected in 1350, though no more than a part of the entrance end can be of quite so early a date. The Mayor's parlour, facing the end of the picturesque little courtyard, is said to have been added in 1636; but it is possible this was only an alteration; its carcase, and that of the building now occupied by the old library, opposite, have all the appearance of being parts of the original building. The rooms occupied by the library in particular have been formed by dividing up a large upper apartment, which, from its position, may be suspected of having been the dormitory. The Mayor's parlour is a fine old panelled room with a magnificent chimney-piece, and fragments of some beautiful and probably very old yellow stained glass in the windows; it is kept apparently as a show place only, and the hall itself seems given

over to cooking classes, and is filled up with lumber and cooking apparatus.

The assizes are still held, as they have been for centuries, in the great hall of the castle, but the alterations made in 1831 have covered up all there may be of architectural interest within, while outside it is buried behind a plain square block erected in the last century, and by other buildings; all that is now to be seen of the hall is the top of the roof rising behind them, decorated with four great iron ventilators. A ruined gateway, and a remnant of curtain wall, complete what is left of this historic castle, for the second gate, now called the magazine gateway, is of very late date and not built for defence, and is (probably rightly) conjectured to have been connected with the collegiate church that once stood in the Newarke. The Market Hall, with the Corn Exchange on the upper floor, stands on the west side of the irregular-shaped Market-place, and is a stucco building of no great interest, within or without, although the clock turret is picturesque at a little distance. The finely conceived double stone stairway to the Corn Exchange, designed by Mr. Ordish, is, however, a very excellent piece of work, well worthy of the town and of its prominent position. The East Gates clock tower, erected in 1868, by Messrs. Goddard, Paget, & Goddard, is a very ornate structure, much more satisfactory in its general conception than in its details, but a picturesque object, which no visitor to the town is likely to forget. The Corporation gas and electric light offices in Millstone-lane were originally erected in a rather heavy

Gothic style; but Mr. Edward Burgess has recently made a very interestingly-designed and imposing addition to the structure. The chief feature is a massive-looking, octagonal angle tower or pavilion, very plain in the lower part, except as regards a small window over the door, but breaking into a mass of pretty French Renaissance detail at the top. The upper stories of the flanks are formed into recesses separated by polygonal brick piers and brought forward again in the form of bay windows. The ground story is of stone and unbroken, and there is a broad, plain frieze and a cornice. It is all very largely and simply conceived and beautifully detailed, and is altogether a very pleasing piece of work. The Waterworks office, in Market-street, by Mr. Charles Baker, is a little building of early Gothic character, in better taste and with less exaggerated detail than is usual in that class of work. The only other structure connected with the government of the town which calls for notice is the pump-house of the drainage pumping station, which is, contrary to all precedent, a very satisfactory piece of architecture; a good square, solid-looking structure with a large upper range of windows and strongly-marked angle piers, a fine sense of scale and withal interesting detail; it was designed by Mr. Stockdale Harrison. Of this we shall give an illustration shortly.

Of the remaining public secular buildings, the old News Rooms in Granby-street and the Central Free Library in Belvoir-street, are monuments of the Greek revival; as is also the Phoenix Fire Office, near the latter.



External Stairs to Corn Exchange. By the late Mr. Ordish.

Such work is not perhaps interesting, but as against much that is done now, it does strike one as having style, and its refined and scholarly details worthy of recognition. The Assembly Rooms in Hotel-street has a tame stone front of the Adam period. The cab-yard of the Midland Railway Station has a new red brick and terra-cotta screen wall next the street, which might have been more satisfactory if rather more care had been taken with the outline of the clock turret and the curvature of the arches. The best of the branch free libraries is that in Narborough-road in the western suburb, by Mr. Stockdale Harrison; a striking little Dutch Renaissance structure of some originality, and, except as regards the tower and the vases on the gate-posts, adequately detailed. The main entrance door is especially satisfactory, and the interior is well lighted and well, if plainly, fitted. The Post Office, in Granby-street, is a heavy-looking erection, apparently intended to be Perpendicular in style, but with exaggerated details. The new building beside the Midland Station, not yet occupied, is, however, rather better; very hard and unsympathetic, but in good taste and fairly well detailed. The museum at the corner of the New Walk and Hastings-street is in the form of a Classic temple with a tetrastyle portico of enormous Tuscan columns: it is perhaps needless to say that it is really a two-storied building. Connected with it is the Art Gallery, which makes no architectural pretension, but is well lighted and contains some good pictures and prints; among others, several interesting records of old Leicester architecture.

In virtue of their architectural importance,

the coffee-houses designed by Mr. Edward Burgess for the Leicester Coffee House Company deserve to be mentioned first among the commercial buildings in the town. The two principal ones are the new "Victoria" in Granby-street and the one in the East Gates, built in 1885. The latter is a picturesque, gabled red brick and half-timber corner building, with red tile roofs and well-designed chimneys. The windows of the upper floor are large quadrant-cornered oriels under a boldly projecting broad plaster frieze supporting the eaves, and on the ridge is a timber ventilating turret of squat proportions. The dark coloured paint, of which Mr. Burgess seems fond, makes the upper parts look a little heavy, but, as a whole, it is an exceeding satisfactory piece of work. The "Victoria" is an unusually original and effective stone building, standing, unfortunately, in a narrow street where it is not well seen, and where its most prominent feature—a high conical roof, finishing with a small domed turret—is almost lost. The style is French Renaissance, and the roof is cut into by a characteristic dormer three stories high, and is flanked by large turrets. A deep shadow over the ground story is obtained by recessing the whole of the centre part of that level. Some of the details are eccentric, and not equal in effect to the general arrangement. The "Rutland," in Humberstone Gate, is a quiet, restrained design, with plain gables and mullioned windows of Elizabethan character. The "Albert," in Belgrave Gate, is rather heavy, with large scale details, and altogether less satisfactory than the others. The only two of the hotels that need be noticed are the

"Royal," the new wing of which, by Messrs. Everard & Pick, facing the garden in front of the Municipal Buildings, has a well-designed and not over assertive red brick front, with a stone ground story and good dormers, and the "Wyvern," by Mr. Wakerley, of which we give a lithograph illustration. Of the two principal political clubs, the Liberal, in Municipal-square, is architecturally the more interesting. It is another of Mr. Burgess's François I. designs, with high pitched roofs, large windows, and high dormers.

The banks are respectable but uninteresting buildings; even the neat little new entrance to the Northamptonshire Union Bank in Gallowtree Gate is spoiled architecturally on close examination by indifferent detail. The Prudential Assurance Company's offices in the same street, presumably by Mr. Waterhouse, is a characteristic red brick and terra-cotta building, with a red granite flush plinth reaching to the springing level of the arches over the ground floor windows. The front of the Alliance Assurance Company's premises in Horsefair-street, by Messrs. Goddard, Paget & Goddard, is quietly and well designed, the treatment being most successful in the lower part. Of shop fronts, the most commanding on the irregular north-west side of the market-place is No. 38, by Mr. Charles Baker; and the most striking on the east side is No. 57, a new and very charming piece of work by Mr. Stockdale Harrison, in which good use is made of the momentarily fashionable, and certainly effective feature, of ranges of windows deeply recessed between columns. The details, including a



Technical and Art Schools. (Messrs. Everard & Pick.)

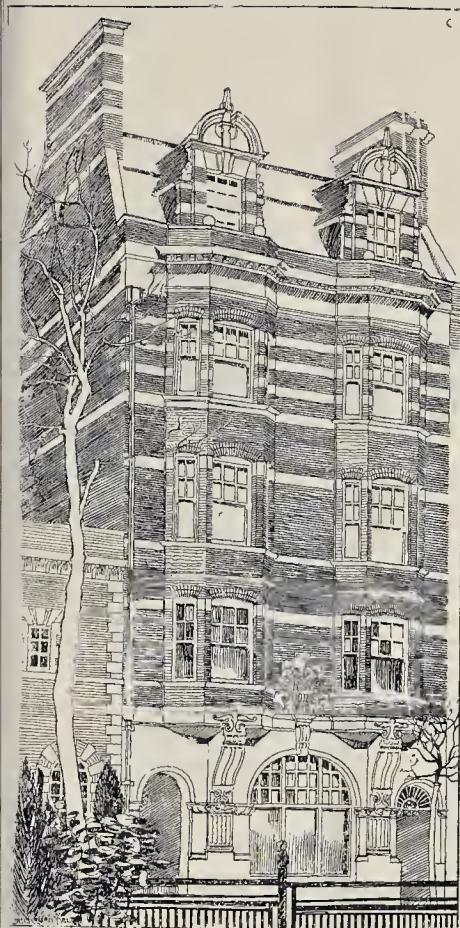
little architectural carving, are good, and distributed with taste and judgment. This front stands between two older ones of some merit, by Messrs. Goddard, Paget and Goddard, and Messrs. R. J. and J. Goodacre respectively; the dormers of the latter being especially pleasing. In the centre of the market-place is a gilt statue of the fifth Duke of Rutland, erected in memory of his having been for fifty years Lord Lieutenant of the county; it is a fair piece of work, and now that the gilding is weather-stained, it is rather pleasant looking than otherwise.

At the bottom of Gallowtree Gate is the buff terra-cotta front of Messrs. Thomas Cook & Son's offices, by Messrs. Goddard, Paget & Goddard, consisting, on the first floor, which is the most successful part, of four deeply-recessed elliptical arches, divided by Italian Renaissance three-quarter columns, with an upper story of mullioned windows, above which are four small equal gables, pierced by circles; the detail is very good, and the whole front decidedly effective. In Granby-street, next to the Co-operative Society's premises, is a very charming little two-storied, gabled, white wood front to a hairdresser's shop, as excellent in detail as in idea. The Co-operative Society have premises in both High-street and Granby-street; the former are of little interest, but the latter is a fairly effective structure in the French Renaissance style, and would probably look even better but for the extreme smallness of some of the mouldings. Opposite to a great aggressive stucco building a little farther up the street, is a block of shops, with a series of quiet gables in red brick and Mansfield stone, designed in very good taste; and still farther, at the corner of Campbell-street, a new block, with an excellently designed and detailed half-timber upper part, by Messrs. R. J. and J. Goodacre, forming a pleasant contrast to the

imposing and gorgeous Wyvern Hotel next door. The best piece of modern architecture in High-street is that which forms 81 and 83; a pair of very plain and simple gabled fronts, with broad windows to the first floor slightly projecting in a flat segmental curve. There is very little in them, but everything is good and the effect is decidedly pleasing. No. 95, which is still unfinished, has some bold and well-proportioned features, and looks as if it would be a very satisfactory piece of work. The upper part of the large draper's shop at the corner of Belvoir-street and Market-street is a bold and remarkable design by the late Mr. Isaac Barradale, consisting of a heavy-looking overhanging timber gable, flanked by equally bold dormers, and surmounting a stone oriel or turret on the angle: it is very striking, but far less satisfactory than the quiet and broadly treated house next door in Market-street by the same architect, with its white sun-shutters and projecting rough-cast top story. In Halford-street there is a rather restless but effective stone front to a tailor's premises, with deeply recessed windows round which rustications of somewhat too small a size are used; one feels regret in looking at it that, for want of a trifle more quiet and sense of scale, it falls just short of being a really first-rate piece of work. No. 12, Grey Friars, is a pretty and rather curious little office front, we believe by Mr. Barradale. What little there is of the main front wall is of a dull red terra-cotta; but nearly the whole of the upper part is a projection of white wood-work filled in with rough-cast and crowned with a double gable; and the ground floor is largely door and window, with grey terra-cotta dressings and quaint little pilasters. Just opposite is a larger office building of rather more ordinary half-timber character, but well treated, with broad windows and long, strongly marked cornices.

It is so rarely that factory architecture even aims at anything more than the satisfaction of practical requirements in the simplest possible way, that buildings of the kind which are really fine architectural monuments come upon one as pleasant surprises. Of such there are at least two in Leicester. The older is the Atlas Works, in Campbell-street, by Mr. Barradale. It is a four-story red brick building with three tall crow's-foot gables in the manner of the Dutch waterside warehouses. The windows are square headed within shallow arched recesses, the heads filled with the characteristic bold brick cusping and tracery. It is a fine piece of design, even apart from the skill with which the general character and details of the original examples are imitated. The other is Messrs. Faire Brothers' new premises, in Rutland-street, from which the scaffolding was just being removed in April. Whatever the opponents of terra-cotta may say, this is a really delightful example of the appropriate and pleasing use of the material. The ground story, with the exception of the entrance door, and the projecting end bays, are severely plain, but the space above and between these is filled with ranges of coupled windows, very richly detailed and deeply recessed between massive-looking piers which support a strongly marked and rich cornice carrying a high balustrade. Behind this balustrade, and crowning the design, is an attic of wide semicircular-headed windows. Mr. Edward Burgess is the architect of the building, and in this case, while abandoning the great dormers and other stock features of his favourite François I. style, he has certainly made a very charming use of its details and ornaments.

Leicester is almost as fortunate in its ecclesiastical as in its commercial architecture. It has five Mediaeval churches, two of which are exceptionally interesting; no less



Additions to the Royal Hotel. (Messrs. Evcard & Pick.)



Dwelling House (Mr. E. Burgess). St. John's Church (Sir Gilbert Scott).

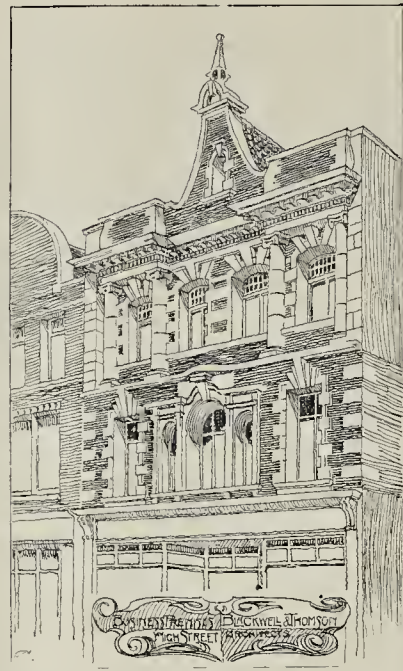
han four by Sir Gilbert Scott, all of which are good, and one by Mr. Street; besides at least one recent one of great excellence. St. Mary's "in the Castle," is generally considered the most interesting of the old churches, though we think St. Margaret's may fairly dispute the position with it. St. Mary's is said to have been built in 1107, and to have been partly rebuilt and enlarged towards the east by Robert Bossu, the son of the founder. As a matter of fact there seem to have been two enlargements eastwards before the end of the Norman period. The only part of the original structure remaining is the lower part of the walls at the west end, and this has been cut through on the north and south to form the Early English arcades. The later and richer Norman work at the east end is, however, almost intact. The nave and chancel are under one roof and make a long narrow interior; the north aisle is very narrow, but the south, which is of the Decorated period, is about twice the width of the nave and nearly as high; the striking effect of the interior is no doubt due to the strong contrast thus introduced between the proportions of the two main parts. The position of the tower is peculiar: except for the west wall it stands wholly

within the south aisle, within 3 ft. of the Early English nave arcade with which it seems to be contemporary; from the fact that it is open to the church on all sides this would seem to be an original arrangement, but it is hard to say what can have been the object of blocking up one side of the church in this way. The open roofs are handsome flat-pitched ones of the Perpendicular period, and there is an upper range of Perpendicular windows to the broad aisle evidently inserted to improve the light, which, even with them, is not too good. Sir Gilbert Scott restored the church, and the beautiful choir screen, pulpit, lectern, and stalls, and the fine east window of the south aisle are presumably his work. The fine church of St. Margaret is very little damaged by either neglect or restoration, and the history of the main portion is more clearly readable than that of any of the other old churches. It appears to have been originally built in the Transition period as a cruciform edifice with a very low nave arcade and narrow aisles; one of the responds of the nave arcades remains. Early in the fourteenth century the south transept was obliterated by rebuilding the nave arcade of the same height as the old transept arch, and the aisle of the same width and height as

the transept itself. Then the north side was treated in the same way, and, finally in the Perpendicular period, a clearstory with three-light windows was added. The magnificent tower, chancel, and south porch are also of the Perpendicular period. It is almost certain that the tower (date 1444) takes the place of an earlier one, for the fourteenth century respond of the north arcade remains, and the aisles (of the same date) to which it is opened by Perpendicular arches, overlap it. In erecting the tower the builders seem to have let down the end arch of the south arcade and rebuilt it. The present rich fifteenth century chancel took the place of an earlier and smaller one, as shown by the triangular lights over the chancel arch. The east window and the niches flanking it are later insertions, or the whole east wall has been rebuilt; both the form and the tracery of the window are poor, and not much better than the gaudy glass they frame. The vicar informs us that the old stalls are now in Aston Church, Birmingham, and he would much like to obtain their restoration, but has not hitherto succeeded. He seems to take a great and understanding interest in his fine old church. There is a room over the south porch with a fireplace and two hagioscopes,



Shop, Market-street. (The late Mr. Isaac Barradale.)



Business Premises, High-street. (Messrs. Blackwell & Thomson.)

one of which looks directly across the church; towards what object it is difficult to guess, unless it was one of those paintings of St. Christopher which sometimes faced the main entrance of a church. There are traces of a stair-turret on the north-west side of the chancel arch; the doorway visible in the upper part of the nave wall may have been for access to the aisle roofs; it is too high to have been used to get on to the rood gallery. In the chancel is an altar-tomb on which there is a very well executed alabaster effigy of Penny, Abbot of Leicester and Bishop of Carlisle and Bangor, who died in 1519.

St. Martin's, a large cruciform church with a lofty spire at the crossing, though said to be a very early church, rebuilt in 1400, is, so far as internal and external appearances go, almost entirely a modern Gothic revival structure; which is hardly surprising, seeing that it was in the hands of Mr. R. Brandon for over twenty years. The chief original remains are the north doorway, a poor piece of work; the curious and beautiful wooden vault of the north porch; and some of the inner or rear arches of the south aisle windows, with their shafts and caps. Mr. Pearson is now building a new two-storied south porch, and renewing the outer arches and tracery of the south windows. However regrettable from a historic point of view Mr. Brandon's restorations may be, the architectural results, with some notable exceptions, such as the corbels of the nave roof, are very fairly satisfactory. There are a good many rich

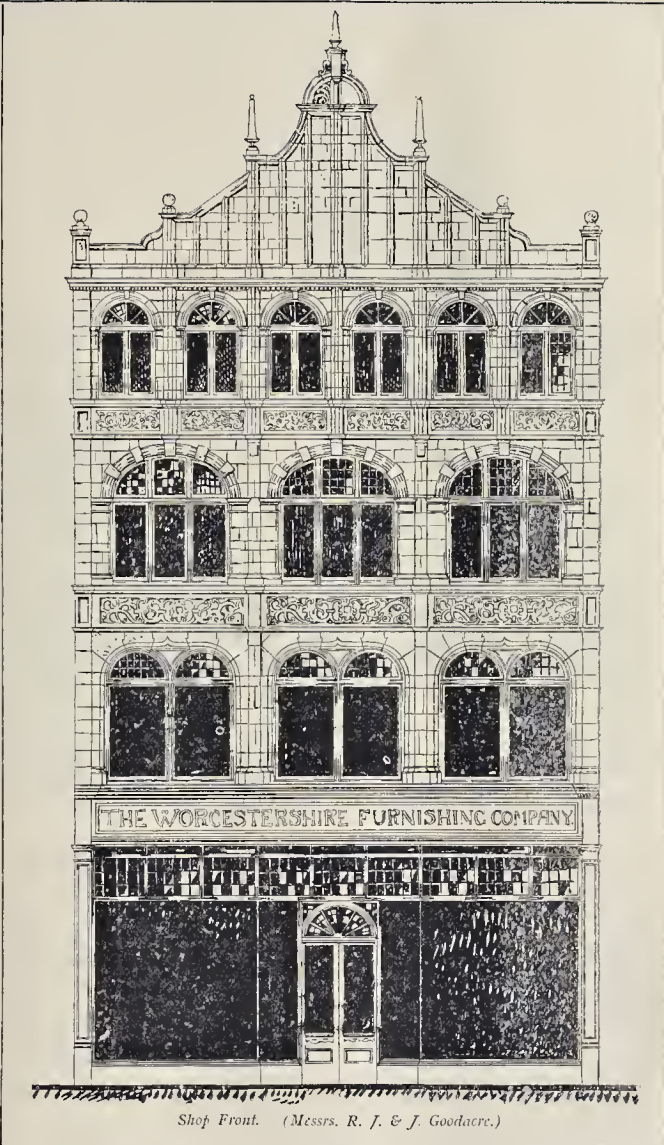
and interesting monumental slabs in the church. St. Nicholas's is an obviously ancient edifice, but it has been so often, and almost always barbarously, altered and repaired that there is very little purely architectural interest left. Even its history is difficult to trace. Roman bricks are visible in the walls in several places, notably in the arches of two little openings, formerly windows, in the nave, and in some "herring-bone" work on the outside of the tower. The little round arches at the crossing, on which the tower stands, and their imposts, are plain and heavy, but the masonry over them is neatly squared, and contrasts with the rough rubble work of the side walls. The parapet of the tower and the corbel table and intersecting arcade under it are original, but the parapet has been spoiled by raising on it in modern times. The place of the south nave arcade is taken by one gigantic rough brick arch. In the chancel are some Early English details of poor character, which have some appearance of being insertions—possibly the body of the work is earlier. The building owes little to such modern work as has been done to it, and the north transept is a positive outrage on an edifice the age of which should inspire some respect. All Saints' Church, in High Cross-street, has suffered a good deal from modern restoration; the only certain trace of the original Norman edifice now visible is the inner order of the west door. The lower part of the tower is said also to be original, but it has been cased externally; its angle buttresses are of the odd circular

form of those to the tower of St. Peter's, Northampton, but of a single shaft instead of three. The Early English jambs of the arches to the tower and chancel seem to be original, and have the fillet on the shaft running up over the bell of the cap—a curious feature which Mr. Brandon has copied at St. Martin's. The richly-carved font is Early English, and of the same curious and unusual form as that at St. Mary's. The pulpit is a roughly-carved but rich piece of Perpendicular woodwork, with a Reformation cornice and modern stone base. The roofs are fair examples of fifteenth-century work, a good deal restored. The church has a rather cold, uncared-for look, partly due to damp stains in the plaster, but a good deal also to the horrible yellow-grained nave seating, and the equally objectionable varnished modern seating and match-boarded dado in the aisles. The east window of the south aisle is filled with good modern glass.

The earliest of the churches built by Sir Gilbert Scott in Leicester is St. John's, near the Midland Station, opened in 1854. It consists of a short nave of four bays with wide aisles and no clearstory, a chancel with a polygonal apse and short transepts, of which the east one (the chancel is to the south) is a tower and the other an organ chamber. It is, like many churches by the same architect, rather dark. Outside, the most striking feature is a well-proportioned tower and spire, the latter with unusually short broaches. The church is one of the many which cause a sigh of regret that Scott's good taste, which guided him so

splendidly in dealing with forms and proportions, did not prevent his spoiling his work by a mixture—sometimes an incongruous mixture—of various coloured materials. St. John's fine spire is quite spoiled by its red and white banded masonry, and the body of the church is vexed with bands of soft yellow stone introduced in the red granite rubble walling. St. Andrew's is a small aisleless church with shallow transepts, a chancel with a round apse, and a gabled bell turret at the west end. It is faced inside and out with various coloured bricks in diapers, which spoil an otherwise pretty little building by their restlessness. The chief feature is an open roof carried on double arched principals. St. Matthew's, another cheap church for a poor district, is a less original building consisting of three almost equal aisles. It is faced outside, like St. John's, with red granite, the quoins and window dressings being of white ashlar and red bricks! St. Saviour's, on the Spinney Hill, is the latest, as well as the largest and most architecturally successful, of Scott's Leicester churches; it was opened in 1877. It is faced almost entirely, inside and out, with red bricks, stone being very sparingly used except in the spire, which is wholly of that material; even the piers of the nave arcades are of brick. The spire is an irregular octagon on plan, with very small broaches to bring it to the square of the massive-looking tower. The richly carved intersecting arcade and the rose window on the west front are very striking, and lead to a good effect inside also. The crossing is vaulted in brick on stone ribs, and the chancel has a wooden vaulted ceiling. The four great round, polished granite shafts at the crossing seem to strike a jarring note, but on the whole the architect seems to have freed himself for once, with surprising effect, from both the "precedents" and the private theories which often cramped his great abilities and led his taste astray. The most marked feature of St. Peter's, (by Mr. G. E. Street), is the effectiveness of all the mouldings and details; the proportions are rather low, and, in one particular, the planning appears to the unsophisticated observer clumsy, though very likely it was well thought out and deliberately introduced. We refer to the arrangement whereby the transepts embrace a bay of the nave, of the same width as the others, and another very narrow bay which is thrown into the chancel. The church has a small western transept with the tower in the middle of it forming an extension of the nave. The nave piers are of an unusual and interesting section, but there is a slip where the label moulds of the arcades are allowed to intersect the lower part of the string over them very awkwardly.

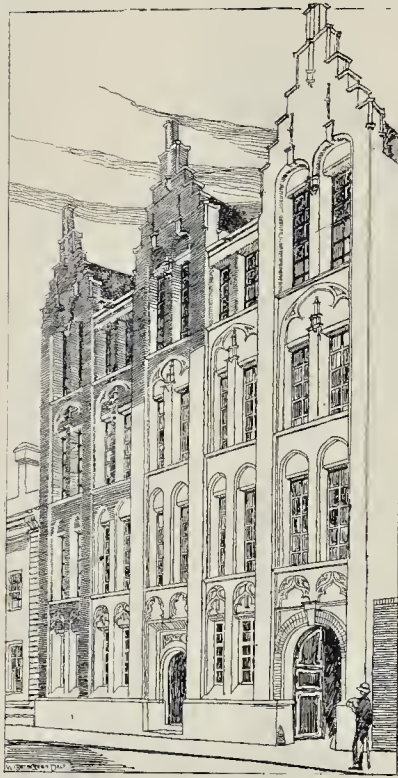
Among the other modern churches, that of the Holy Trinity, originally built by Mr Sydney Smirke, and altered in 1855 by Messrs. Flint & Wickes, and again in 1871 by Mr. S. S. Teulon, deserves to be mentioned for its spacious and striking interior and fine coffered ceiling, as well as for the clever and pleasing way in which the shallow sanctuary and little side passages have been added in a sort of Romanesque style, which harmonises surprisingly well with the original severely Classic work. The church stands at an irregularly-shaped corner, and the entrances are very neatly and cleverly planned. Of the two churches by



Shop Front. (Messrs. R. J. & J. Goodacre.)

Mr. Christian, St. Mark's, in Belgrave Gate, is rather dull and heavy looking; it is built in the severe lancet style, of a hard blue stone, and has a spire with a rather exaggerated entasis. The other, in the western suburb, is a short low-proportioned red brick edifice of good but severe character, the most satisfactory feature being a solid-looking square tower with a high-pitched slate roof. The best of the more recent churches is that of St. John the Baptist, in Clarendon Park-road, south of Victoria Park (Messrs. Goddard & Paget). The interior of the nave especially is a remarkably pleasing piece of work. It is of lofty proportions, and flanked by low double ambulatories, and triforium galleries formed in the depth of the buttresses. It is lined with white and very pale yellow bricks in bands, which harmonise with the stone of the piers, window-dressings, &c., and look very soft and pleasant. There is a

deep west gallery over the baptistry and narthex. The chancel is less successful; the east wall is very much broken up, and the side galleries are heavy looking, but there is beautifully coloured and well designed glass in the windows. The exterior is faced with red brick and stone, and has character in its proportions, and good detail, but is not so striking as the interior. Of the numerous other places of worship it is only possible to mention a few. St. Stephen's Presbyterian Church, in the upper part of the New Walk, is a well-proportioned and detailed modern Gothic building in the Geometrical style, and would be even better but for the poor, thin-looking tower. The Melbourne Hall (Independent) is an original octagonal edifice, with a high, conical roof; severely plain in character, but impressive externally from its mass, and internally from its spaciousness; the roof is carried by plain



Warehouse, Campbell-street. (The late Mr. Isaac Barradale.)



Warehouse, Belvoir-street. (Mr. J. Tait.)

timber framed principals, meeting in the centre, with a plaster ceiling halfway up the cone, and on the rafters between the principals. The Clarendon Park Congregational Church on the London-road, by Mr. J. Tait, is remarkable for the fine feature at the west-end, which, for want of a better word, one must describe as a broad, low tower, covering all the west end of the building, and culminating in a rich belfry stage, nine arches wide.

There are several large schools in Leicester which are architecturally interesting, of which the Wyggeston charity is responsible for two—the "hospital" has been removed to the outskirts into a building of no interest—the boys' school and the girls'. The former is in an Early Gothic style, and is by Mr. Charles Baker. The latter, by Mr. E. Burgess, is a pleasant, quiet, red brick and stone gable building, with mullioned windows and quaint battlements, in Humberstone Gate. It is set back from the road, and its most prominent features are a nicely-proportioned double gable, and a pretty little half-timber entrance lodge. The Melbourne-road board school is a large, simple, characteristic-looking block, built of a strong-coloured brick, the most striking features of which are the great hall, with its large semi-circular headed windows and well-marked external cornice, and a lofty turret terminating in a quaint and picturesque belfry with battered sides. The Medway-street board school, also by Mr. Burgess, is a more elaborate building, rather rich in fact for a board school, built of good plastic red bricks

with Jacobean details, and exceedingly well grouped. The new technical school is a palatial building in the Newark by Messrs. Everard & Pick. It is a good piece of work of red brick and stone, and some of the details are of quite unusual excellence; but it is entirely spoiled by gigantic windows of great sheets of plate glass set in poor little thin mullions. If such windows were a *sine qua non* it would have been better to have erected a perfectly plain front, and saved one the pain of seeing a good building spoiled; for it is only too well known that no architectural talent has yet solved the problem of making such windows presentable.

Domestic work, though we take it last, and cannot spare much space to speak of it, is by no means the least important section of the architecture of Leicester. There are not many old houses left; Leicester is too prosperous a place not to have rebuilt the greater part; but at the south end of the town, on both sides of the London-road, are an immense number of architecturally good modern residences of all sizes, some of them of quite exceptional merit. The two principal old houses in the Newark, the one called the Chantry House and the large gabled one next to it, have been so mutilated and covered up, the one with ivy and the other with stucco, that there is not much of architectural interest left; but a good wrought iron gate to the latter is noticeable. The old Trinity Hospital close by, too, was so terribly "restored" in George III.'s reign that nothing remains to attract the eye but

the chapel. The only house here worth notice for itself is a little square red brick eighteenth century one, facing the castle gate from beyond the technical school: it is to be hoped that the students may be able to learn from it something of the æsthetic value of repose and scale and surface. No. 19, Friar-lane is a larger house of a similar kind, with a good cornice and central pediment over a "Venetian" window. Round St. Martin's Churchyard are also some old houses with good doorways, notably two on the east side; and there is one with an old walled garden in High Cross-street, nearly opposite All Saints' Church.

The first modern building to notice, on leaving the business part of the town by the London-road, is a pleasant-looking house opposite the railway station, built by Mr. Burgess, with rough-cast in the upper part and projecting oriels and gables; the dark-coloured paint and black bricks introduced tend to make it a little heavy, but it is a very attractive little residence. In the district, on the west of the road before arriving at Victoria Park, a house in the modern picturesque style, built by Mr. Isaac Barradale, at the corner of West Walk and Princess-street, strikes one especially, on account of its solid, real-looking, half-timber work and well-shaped large bay window and chimney stalk. A block of four houses near the top of Regent-road also make a very good group, and almost all the houses in the row at the top of the New Walk are above the average; among the forest of timber gables, however, the buildings that are content to trust to solid

brick and stone, provided they are well proportioned and detailed, strike one as the more restful and dignified. Beyond the Park, at the corner of Knighton Park-road and St. Mary's-road, is a prettily-grouped low, half-timbered house; and nearly opposite to it a still better grouped large brick one, in which the cheap effects of rough-cast, tile-hanging, and the like are scrupulously avoided; it is, however, a little spoiled by some weak cut-brick angle piers in the upper parts. There are several good small houses in the lower part of Springfield-road, notably "Ivydene," with a broadly-treated brick gable and stone parapet, and the pair of houses next door with four equal rough-cast gables, a long white wood cornice and a broad balcony; "Tyndale," opposite, is also noticeable for its original and satisfactory treatment. Ratcliffe-road, at the extreme end of the suburb, is mainly taken up by a few large houses of a superior class, all with very good architectural character; the most striking buildings in the road, however, are two little gentlemen's cottages; the one plain almost to affectation, with roofs of a very rough grey slate, and plain square white window-frames, but admirably grouped and proportioned; the other, "The Knowie," a low oblong building with double-curved brick gables at the ends, and a row of casement-windows under the eaves, brought together by placing delicately ornamented plaster panels between them; it has also a large square bay projecting over the porch with a long, low, projecting window beside it. On the other side of the London-road the most noticeable building is a symmetrical block of four houses in Stonegate-road, with great rough-cast covers under the eaves, and some good chimneys.

In conclusion, there is one little thing in Leicester which is not a building, but is certainly worthy of the architect's notice. It is a very fine pair of wrought-iron gates and posts, probably of seventeenth century workmanship, standing just within the wall of the General Infirmary in Oxford-street. They are, unfortunately, sadly in want of repair, and apparently fast rusting away.*

NOTES.

We noted last week the fact that the Government intended to include builders in the Workmen's Compensation Bill. On Tuesday, the Home Secretary brought in his amendment, by which the Bill is made applicable to "employment in, on, or about any building exceeding 30 ft. in height, which is being constructed or repaired by means of a scaffolding, or on which machinery driven by steam, water, or other mechanical power is being used for the purpose of the construction, demolition, or repair thereof." Considerable discussion took place as to the limitations in this clause, and it was urged that workmen on small and low buildings should be brought within it. We are entirely in sympathy with these objections. The clause should not be limited as it is. The fact that the majority of men working on buildings will come within the operation of the Act only makes the needless exclusion of a small minority more unjust. Moreover, if the clause had been made applicable to any building which is being constructed, demolished, or repaired,

there would be no probability of the litigation which will be caused by the clause in its present form.

THE annual report of this interesting but little known museum (little known at least to general sightseers) seems to show that it is becoming more appreciated, at all events as a place of study. The number of ordinary visitors for the last three years was as follows: in 1894, 3512; in 1895, 4940; in 1896, 4860; but the number of students in the same years was, respectively, 12, 107, and 209. We are informed that, with the permission of the trustees, the museum has been thrown open on Saturday afternoons to various clubs, technical classes, and institutes, the various societies having the museum and its contents described to them by the Curator. This privilege seems to have been so very fully appreciated, that in several cases the members asked to be allowed to pay a second visit; about nineteen different societies availed themselves of this permission. It may be added that on students' days and private days the museum is practically never closed, for all foreigners and strangers in London are invariably admitted on presentation of their cards, while the general public have but to write for tickets, and they can also view it on closed days; but as there are no attendants present during the period the museum is closed to the public, or on private days, it is necessary to give sufficient notice to the Curator. Visitors to London who have any interest in architecture and archaeology should not omit to see the Soane Museum, not only for the contents but for the house itself, which is exceedingly ingenious and original in its planning and arrangement.

FROM the *Deutsche Bauzeitung* we learn that the principal Architectural Students' Society, known as "The Motiv," will celebrate the fiftieth anniversary of its existence on June 9. It is a curious coincidence that this Society should have been founded in the same year as our Architectural Association. It appears, however, that the initiative for the formation of this Society was not due to independent architectural pupils, as was the case in London, but to some proposals of the popular master of the old Building Academy at Berlin, the late Professor William Stier. Though classes are not arranged on the same lines as those of the Architectural Association, since Berlin has its Royal Technical College, with its Government classes, and the members of the Society are almost all students at this institution, there is also a policy of mutual assistance in connexion with the official examination. The members of "The Motiv" have their "coaching" class, their executive publishes model examination papers and a catechism, and much is done to help those who are backward, &c. "The Motiv" will commence its anniversary celebration with a memorial service at the grave of Professor Stier, and there will afterwards be various official and social gatherings. As in the case of the Architectural Association, there will be a special Jubilee number of the Society's publication. It would be interesting to have the exact date of the formation of "The Motiv," as it appears that both the London Society and the Berlin one were started in the same month.

Ownership of Architect's Drawings. THE Margate School Board have adopted rather a shabby line of behaviour towards their architect, Mr. R. Dalby Reeve, in informing him that the balance of the account due to him for the Cross-street and Salmstone Schools would be paid when he had handed over the plans to the Committee. Such a line of action is tantamount to an admission by the Committee that they knew they were exceeding their powers, or suspected so, and therefore put the screw on the architect, so to speak, to induce him to do what they could not compel him to do by regular means. Mr. Reeve, in a reasonable and sensible letter in reply, showed that he had never been led to expect such a demand, and argued that the drawings were by custom the architect's property; that he had made a special study of school-planning, and was not to be expected to give up the results of his study for use by other persons; that moreover the drawings contained memoranda which were of use to him and of no use to the Committee. His position, we observe, was strongly supported by several members of the Board, but ultimately it was decided that the legal aspect of the question should be discussed in private by the General Purposes Committee. So far there can be no doubt that the Margate School Board have put themselves in the wrong, whatever view may be taken of the legal question. If they have a legal right to the plans they could have obtained them without the expedient, undignified as regards themselves and uncorporate to the architect, of declining to pay till they had possession of them; if they have no legal right to them, they are endeavouring to entrap the architect into foregoing his just claim by a threat to withhold the money justly due to him, until he complies with their wishes. In either sense it is not a very creditable business.

Right to Light. THE recent decision of the Court of Appeal in *Broomfield v. Willamys* may be regarded as a useful explanatory case in the law of light. There is no principle more clear than that a grantor may not derogate from his own grant, that is to say, in the case of the sale of a house a vendor may not afterwards, if he owns the adjoining land, obstruct the lights of the house which he has sold. But there have been some exceptions grafted on this principle, as, for example, that when the purchaser well knew that the adjoining land was to be built upon, subject only to this, that there was to be a passage of 20 ft. between the new buildings of the grantor and the house sold to the grantee, the latter could not object to the obstruction of the light. This has caused an impression that if a purchaser knows that the adjoining land is "building land" he must not complain if his lights are presently obstructed. The case to which we refer has put matters into a more accurate state. Referring to the cases which seem to have modified the general principle, Lord Justice Lindley said that they do not throw any doubt upon it, but that they show that on clear evidence this right may in particular cases be modified or limited. In the present instance, while the defendant was able to show that the plaintiff knew that houses were to be built on adjoining land, he was not able to show that there was any understanding that the light of the house sold was to

* The next of this series of articles, on the architecture of Derby, will appear in our issue of July 17.

be seriously obstructed; on the contrary it was shown that the defendant had built higher and closer than was in contemplation. The result of the case is, therefore, that the mere fact of a purchaser knowing that adjoining land will be ultimately built on does not constitute acquiescence in a future obstruction.

THE Factory and Workshops Act, 1895, is almost throughout a statute which its title properly describes. But in Section 23, Sub-Section 2, there is to be found a provision which ought not to have been in this Act, but should have been placed in a short statute by itself. It states that the provisions of the Act with respect to notices of accidents and the formal investigation of accidents shall have effect as if the word "factory" included "any building which exceeds 30 ft. in height and which is being constructed or repaired by means of a scaffolding," and any similar building "in which more than twenty persons, not being domestic servants, are employed for wages." The employer of the workmen in the first case, and the owner of the building in the second, is to be regarded as the owner of the factory for the special purpose of notice. For the provisions in regard to it we have to go back to Section 18 of the Act. Briefly stated, these provisions are to the effect that when an accident occurs which causes loss of life or such injury to a workman that he is unable to attend for three working days, notice shall be sent to the inspector of factories for the district, under a penalty of 5*l*. The notice must contain the residence of the person injured, and the place to which he has been removed. We call attention to this matter since we believe that large numbers of persons engaged in the building trade, and also in other occupations, are—as is most natural—still ignorant of these provisions of this Act. As we have already said, it is absurd for these directions to be placed in a Factory Act, since they are of very general application, and might without difficulty have been placed in a short statute which could have been called the Notices of Accidents Act, and which might very well have been made applicable to all building and similar work.

MR. MORDEY'S paper on Dynamos, read before the Institution of Electrical Engineers on May 20, was the most important paper read to that Society this year. Although there was not much in it that was absolutely novel, yet the clear and convincing way in which the advantages of toothed armatures were stated, and the methods for getting rid of sparking at the commutator were pointed out, mark a new departure both in the theory and practice of dynamo construction. In this country smooth-cored armatures are more common because the collection at the brushes is so good. Toothed armatures, as ordinarily wound, give rise to violent sparking at full load, and the regulation is not good. On the other hand, there are many advantages, both electrical and mechanical, which the toothed kind has as compared with the smooth-core type. In the United States the 500-volt railway generators have almost all toothed armatures, and on the Continent this kind is generally preferred. Mr. Mordey's methods of overcoming sparking are so simple and elegant that it is surprising that no one thought of them before.

They may not be applicable to large machines of low voltage, such as are used in electro-plating work, but for dynamos of moderate size, say twenty or thirty horsepower, they are easily applied.

PROFESSOR MASON, in an interesting lecture on "Sanitary Problems connected with Municipal Water Supply," delivered before the Franklin Institute of Philadelphia, has tried to estimate the annual saving which would accrue to the people of that city, if one disease alone—typhoid fever—were eliminated. Assessing the value of each human being at 2,000 *dols.*, the cost of each funeral at 25 *dols.*, the lost wages of convalescents for 43 days at 43 *dols.*, and the cost of nursing and doctor's bills at 25 *dols.* per case, he finds that the total annual tax levied by typhoid fever upon the City of Philadelphia is no less than 1,392,226 *dols.*, or, roughly speaking, 280,000*l.*, and concludes that "public works which could eliminate a reasonable fraction of this great tax, would certainly pay for themselves in the course of a few years, even though they were originally expensive." There is no better investment for a community than good water, coupled with good drainage; and in reference to this, Professor Mason devotes considerable space to the subject of the purification of water, discussing the influences of agitation, aeration, sedimentation, and higher organic life in the self-purification of water, and the rule is laid down that "the rate of self-purification of water varies directly as the amount of contamination." It is interesting to find that Professor Mason places the old world before the new in the matter of water-supply, and even goes so far as to poke fun at his countrymen for scrutinising "the water offered them in foreign capitals, when what they are in the habit of drinking at home would not be tolerated for an instant in the great cities of Europe."

WE are glad to see that the auditor of the Local Government Board has surcharged the Amphyll Urban District Council the amount paid to a "water diviner." It is difficult to understand the childish state of mind, which, at the present day, can seriously believe in the virtue of the divining rod. It is a relic of mediæval ignorance, which the education and the science of the nineteenth century has not yet quite destroyed. It may be asked by the stupid, but well-meaning persons, who believe that a man can be guided to a spring of water by a piece of stick, how it comes that water is sometimes found in spots indicated by the stick. The answer is that it is usually mere accident. As a matter of fact, water may often be obtained in smaller or larger quantities in many pieces of land, and if a passer-by were to walk twenty yards into a given field, and borings were made at the end of the twenty yards, it is quite possible that a supply of water may be found. If the person who accidentally hits on the place happens to be a water diviner, the finding of the water is set down to the virtue of the stick. Again, also, we hear nothing of the diviner's bad shots. In other cases, a man with a keen eye may often notice circumstances in the vegetation or formation of a field which will indicate that water is at hand. Here, again, the discovery is set down

to the wonderful rod. It may appear to sensible persons unnecessary to point out these things, but when we find apparently sane persons, intrusted with local management, believers in this ancient folly, it is as well to try and show up the nonsense; and how easy it is, either by accident or observation, to indicate a spot where borings will touch water.

THE Committee for the Survey of the Memorials of Greater London (a rather fanciful title) have put forth a report of their progress during the last two years. Some 1,000 drawings, photographs, or sketches have been made of ancient objects of interest in London. The first publication of the Committee was the monograph on Trinity Hospital, Mile End, which we noticed at the time of its appearance, and which represents the form and character which will be adhered to in all the future publications. The Committee has monographs in preparation on the Old Palace of Bromley-by-Bow; Aldgate Church; Hill Hall and the work of John of Padua; Bow Church; Mile End-road; the Great House at Leyton, and Essex House, Bow.

THE Earl of Romney has decided to sell his mansion, and park of about 500 acres, known as The Mote, distant one mile from Maidstone. The moated castle of the Leybourne family passed in turn to the Shoffords, Dillons, Burghershes, and Widvilles. To Richard de Widville, father of Edward IV.'s queen-consort, succeeded Sir Thomas Wyatt, of Allington Castle, the statesman and poet, to whom Henry VIII. granted in capite by knight's service the Manor of Maidstone. On his son's attainder, 1554, it was granted by Queen Mary to her kinsman, Cardinal Pole. It subsequently devolved upon Sir Humphrey Tufton, Bart., ancestor of the Earls of Thanet. Sir John Tufton, *obit* 1685, bequeathed The Mote to his niece, who alienated it to Sir John Marsham, Bart., whose descendant, Sir Robert, was elevated Lord Romney. He married a daughter of Admiral Sir Cloudesley Shovel; their grandson, advanced Earl of Romney on June 22, 1801, built the present house (*vide* J. P. Neale's view, in his "Seats"); his wife Frances, Lord Egremont's daughter, exercised her remarkable taste in landscape gardening in laying out the grounds, where a Doric temple commemorates the review by George III., on August 1, 1779, of 5,300 Kentish Volunteers. Marsham and Romney streets, Westminster, took their names from this family.

AT Messrs. Waring's, in Oxford-street, an exhibition is being held of ancient tapestries and embroideries, chiefly Italian and Spanish of the sixteenth and seventeenth centuries. Prominent among the exhibits are several vestments of very beautiful designs—two chasubles of yellow brocade, ornamented with figures of saints under semi-circular canopies, the intervening spaces being filled by well-designed arabesques. A frontal of late Italian workmanship is remarkable for the delicacy of the colour and arrangement of the flowers introduced, the whole worked on a pale cream background. A super-frontal and an altar frontal have heraldic shields introduced,

Notices of
Accidents.

The Economic
Value of
Pure Water.

Memorials of
Greater London.

The Mote,
Maidstone.

The Water
Diviner.

Mr. Mordey
on Dynamos.

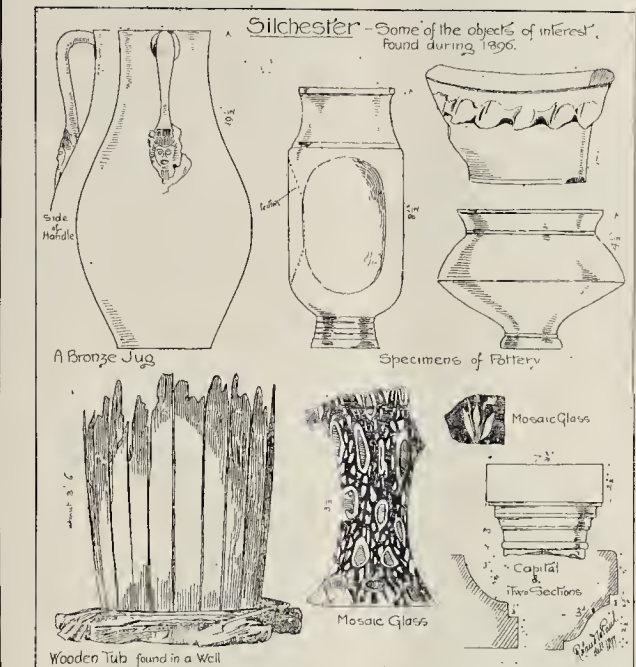
Exhibition of
Tapestries, &c.

the latter bearing arms crowned by a cardinal's hat, and a cope from the Indo-Portuguese settlement of Goa has a curious representation of Adam, Eve, and the Serpent in the centre. Three panels from a series of four represent scriptural scenes—the "Magi," "Flight into Egypt," the "Presentation in the Temple." A hanging of green plush, embroidered with an elaborate border in silver thread, and a double shield in the centre with the arms of the Franciscans surmounted by a crown, is also worthy of notice, and there are also numerous smaller pieces of work which will be of interest to visitors to the Exhibition.

A CORRESPONDENT sends us a Brilliant Chance cutting from the *Halifax Guardian* with an advertisement of the Hipperholme Urban District Council, inviting competitive designs for the new offices which they propose to erect at a cost of 2,000*l.* "A premium of 10*l.* is offered for the successful design, which is to become the property of the Council" (the italics are ours). Not a word is said even as to employing the successful architect on the building. In other words, the Hipperholme District Council invite architects to give them work of the value of 50*l.* (drawings without supervision) for 10*l.*, with the additional privilege of seeing their work spoiled, if there is anything good in it, by being carried out by some one else—probably an official surveyor.

SILCHESTER.

The exhibition at the rooms of the Society of Antiquaries, Burlington House, in connexion with the excavation of the Roman City of Silchester in Hampshire has, for the past six years, been one of the most interesting archaeological events of the season, and this year, the seventh of the series, the interest is well maintained, although, perhaps, of not the same architectural importance as in one or two former years. The system of excavating the city in divisions or insule was continued during 1896, and those marked XV. and XVI. on the plan were dealt with. They are on the west side of the city, Insula XV. being bounded on its west side by the city wall, while Insula XVI. is surrounded on all its four sides by streets. The foundations of several blocks of buildings were discovered in Insula XV., and from the presence of a large number of pits and hearths, and furnaces over certain portions of the area, it is supposed that it was devoted to the dyeing industry. "A large area"—we quote from the report—"in the northern part of the insula, wherein were neither buildings nor pits, was perhaps used as a bleaching ground." Two wells were also discovered on the east side of the insula, one of which contained the remarkable wooden tub which we illustrate. It measures roughly in its present state nearly 3 ft. in diameter at its base, and between 3 ft. and 4 ft. in height. It was successfully raised from the well in which it was found, but the bands of birchwood by which it was held together were lost in the process, owing to decay. It stands on a rough wooden platform of four logs, also shown in the sketch. The tub will, with other objects of interest, be removed in due course to the Reading Museum. On the south side of this insula there was a large house of the "corridor" type, and in the adjoining insula were three more houses, one a large one of the "courtyard" type, a smaller one of the "corridor" type, with remains of the hypocaust, and traces of a third of the same type on the south side of the insula. As, however, there seem to have been no important, if any, discoveries of pavements or other architectural details, these houses do not call for special description, interesting as they of course are when considered as a part of the arrangement and planning of the city as a whole. A line of pipe was discovered running east and west along the south side of the two insule, and on its being followed to the city wall one of the lesser gates to the city was unearthed. Accord-



ing to the report, "it had a single opening 12 ft. wide, the jambs of which were standing to a height of over 6 ft. The roadway to it had subsequently been raised, and the gate reduced to 7 ft. in width by blocking it with masonry." "This gate seems to have been "approached by a wooden bridge over the ditch." Besides the two insule already described, excavations were carried out south of the parish graveyard, its extension having been decided upon in this direction. Traces of a small house were found, and a small piece of worked porphyry. Among the many objects of interest found during the excavations are a considerable number of jars, pots, and other pottery, some good bowls of Samian ware, and a bronze jug, simple in form, with a delicately ornamented handle. This and one or two of the pots are illustrated amongst our sketches. They are reduced from measured drawings, and the leading dimensions are added. One, a small fragment of the rim of a bowl, shows a delicate treatment of leaf ornament which is very effective.

The two fragments of mosaic glass are of very beautiful colour. Both have a yellowish ornament on a rich dark blue ground. The centre of the large irregular-shaped markings on the larger piece of glass is green, with a thin border of red. It may be compared with the beautiful little glass bowl in last year's exhibition, which we illustrated at the time, although the glass in this case appears more opaque. A small capital and two fragments of moulded stone are given. In addition to these are a large number of bladebones of sheep, found in a large pit in Insula XVI. with circular perforations, said to have been "used in the manufacture of counters." There are many bronze ornaments, two small bells of the same material, and four gilt brooches. It will be seen that the result of last year's work is by no means unimportant, and the interest of the exhibition is largely increased by the many beautifully-coloured drawings made by Mr. G. E. Fox of the pavements and other architectural points of interest found at various times during the progress of the works.

CHURCH, LITTLE ILFORD.—The foundation stone of the new church of Saint Michael and All Angels, Romford-road, Ilford, has just been laid. The new church is to be built in the Perpendicular style, somewhat freely treated, and is to cost 6,000*l.* The architect is Mr. Charles Spooner, and the builder Mr. John Gaynor.

THEATRE ARCHITECTURE AT THE VICTORIAN ERA EXHIBITION.

In this country it is most unusual to find architecture represented in any of the many exhibitions that are held annually to illustrate the advancement in some specific art or industry, and it is hence a matter of congratulation, and a step in the right direction, that the construction of theatre buildings has not been forgotten in the Drama Section at Earl's Court. This section, without its architectural room, would have given but an incomplete idea of the progress made in the presentation of our plays, for there is no doubt that the rendering of modern drama is, to a great extent, dependent on the equipment of the structure in which both artist and audience are temporarily housed.

The management of the Drama Section of the Victorian Era Exhibition was in the hands of a small but representative Committee of Actors, under the presidency of Sir Henry Irving, with Mr. Pinner and Mr. Clement Scott to attend to the literary side, Mr. Edwin O. Sachs as the architect member, and Mr. Austin Brereton as secretary. The scope of the section is comprehensive, and the exhibits vary from notable manuscripts in show-cases to the full-size representation of the complete mounting of the Drury Lane pantomime of last Christmas. In respect to the Architectural Room, which practically comprises a hall 40 ft. by 20 ft., with a small annex, it would, perhaps, be as well to quote from the catalogue, which says that "this special collection was arranged particularly in view of the great progress made in theatre planning and construction during the latter half of the Victorian Era, and that care has been taken to include every class of building, the various departments of construction, and the work of all architects who have been conspicuously associated with the erection of our playhouses."

The number of exhibits in the Architectural Room is approximately 250, and these have been divided under the following headings:—

1. Important London and Provincial Theatres of to-day, and the principal Playhouses at the commencement of the Victorian Era.
2. Examples of Playhouses representing the work of Theatre Architects of the last twenty years.
3. An example of Modern Theatre Construction in its most advanced form.

4. Examples of Theatre-Construction, fittings and appliances.
 5. Architectural, Technical, and Legal Publications on Theatre Construction.
- About eighty of the exhibits belong to Group I., and about 100 to Group II.

Commencing with the first group, the central feature comprises three sepia drawings of the elevations of Drury-lane Theatre, of the Covent Garden Opera House, and the old "Her Majesty's" Theatre, all being copies from the original designs. There are also three sheets of plans showing the area level, and some photographs of Covent Garden and Drury Lane, as they now stand. Over these exhibits, which are lent by Mr. Sachs, are two long sheets, showing the block plans of some forty modern playhouses in London and the provinces, drawn to a uniform scale, for the purposes of the exhibition. It is curious to observe the great variety in the location of our theatres, the difference in superficial area and shape. There are only a few examples of theatres standing on isolated sites, and having a symmetrical plan. This does not speak well for the importance attached to the suitable housing of the drama. The central feature is flanked by a number of proof plates from "Modern Opera Houses and Theatres," which we have already had occasion to refer to, and by a collection of photographs taken inside London Theatres, and showing the principal features of each auditorium. These photographs are excellent in themselves, but form a sad proof of the want of architectural feeling shown in almost all of our London Theatres. If the typical theatre architect were to call himself a theatre surveyor, and openly entrust the architectural treatment to men who have the necessary capabilities for design, it would be a step in the right direction, although it is, of course, not pleasant to acknowledge that a class of building which should rank among the first in the structures of to-day has, as yet, scarcely ever been carried out by a prominent member of the profession. We only know of one recent instance, where Mr. Colcutt was called in to design the exterior of the Palace Theatre of Varieties, and where a better policy was adopted, and then there was of course also the single instance of a competition, *i.e.*, for the Shakespeare Memorial Theatre.

Turning to the second group in the Architectural Room, which is intended to represent work by architects associated with theatre construction, we find that the principal position has been accorded to the Shakespeare Memorial Theatre, just referred to. There is a large perspective of the Memorial Tower, which we remember in an Academy Exhibition; a coloured view of the principal staircase; some photographs, and a set of copies from working drawings, with two very excellent details of the construction of the Tower. The winners of the competition design were Messrs. Unsworth & Dodgshun, and on the retirement of Mr. Dodgshun, Mr. Unsworth executed the work.

Next in importance in this group is a very representative collection sent by Messrs. Darbyshire & Smith of Manchester, who seem to have grasped the spirit of this exhibition more than any of the other exhibitors, and have shown particularly clear drawings of the principal plans and sections of their theatres, supplementing them by some views. As regards the architectural treatment of their exhibits, not very much is to be said; the best is the Palace Theatre of Varieties at Manchester, which deserves notice, though the façade of the building and the detail of the interior do not accord with the fine conception of the plan. Of other buildings by these architects, we notice the New Exeter Theatre, and then also the design of the so-called "Irving Safety Theatre," which we remember having heard of after the fire at the Paris Opera Comique. The catalogue explains that the principles of this "safety plan" were defined by Sir Henry Irving and the architects, and although there is nothing particularly novel in the design, the clearness of the plan is excellent.

Another important exhibit in this group is a collection of work by the late Mr. C. J. Phipps, who, shortly before his death, sent a number of plans of the Gaiety Theatre, the Wolverhampton Theatre, the Prince of Wales' Theatre, and others; also a very complete set of drawings with perspectives, colour studies, &c., and photographs of the Lyric Theatre in London, and two plans and a printed perspective of Mr. Tree's new theatre. The collection is exceedingly representative of the deceased architect's work, and some of the colour studies, as for instance,

of the Gaiety Theatre, and the Lyceum Theatre, merit attention.

There is also a separate collection of photographs, only of theatres by Mr. Matcham, but as the latter has unfortunately not sent any plans, which, to our mind, would have been far more interesting than the photographs of the plastic decoration, this series is only of minor importance. Messrs. Wylson & Long have sent some particularly excellent photographs of their work in various music halls and theatres, and they have the merit of being the only exhibitors who have sent a model of some importance. Their design for the hall of the Blackpool Winter Gardens is well illustrated by a large 6-ft. model, cleverly executed by Mr. Boekbinder, and it is a pity that there are not other models of this description at the Exhibition. The work of Messrs. Wylson & Long is somewhat distributed; the principal photographs and some perspectives having been hung in the principal room, whilst the large model and their working drawings occupy space in an annex.

Before leaving the principal room it would, however, be well to add that there are two show cases with publications belonging to Group V. These include some interesting Parliamentary prints from Her Majesty's Stationery Office. Mr. B. T. Batsford has lent "Machinery in Theatres," and "An Historical and Descriptive Account of London Theatres," the frontispiece of the latter being an excellent representation of the old Drury Lane Theatre. Mr. Batsford has also exhibited a copy of "Modern Opera Houses and Theatres," in a special binding. There are various minor publications from other publishers. Some space at the end of the principal room is occupied by a large frame with records by Mr. Sachs of notable theatre fires which have occurred in England during the Victorian Era, and these are supplemented by various sketches.

In the small Annex, which is as yet in an unfinished state, we find an interesting collection of drawings of the Palace Theatre of Varieties, or, as it was originally known, Mr. D'Oyley Carte's "English Opera House." This is apparently the example for group 3. Mr. Colcutt's line drawing of the front elevation takes up the principal position, and with it a perspective and some reproductions from sketches. On either side there is a collection copied from working drawings showing various parts of the construction. In this room, too, are provisionally hung various engineering drawings of Iron Curtains, Stage construction, Hydraulic Machinery, &c., but this portion was quite incomplete on the opening day.

CANTERBURY CATHEDRAL.

On Saturday last the Chapter House was reopened after repairs carried out under the supervision of Sir A. Blomfield, and after decoration by Mr. A. O. Hemming under that architect's directions. The object in the decoration has been only to repaint what was there before, according to the remains of colour found on the work.

Sir A. Blomfield has kindly sent us the following account of the state of the building, and the work done—

"The roof of the Chapter House is of peculiar construction—framed with crossed rafters, about 7½ in. by 7½ in., without any principals, the rafters being about 164 in. apart on the average. On the whole, the timbers were found in wonderfully sound condition, but nearly all the plates, and many of the rafter feet, were completely rotten, the effect of leakage. All decayed timbers and chimsy repairs in fir and deal have been removed, and have been replaced with well-seasoned oak. A great deal of the old timber is chestnut. Whether from that cause or not, I cannot say, but I never saw a roof so singularly free from dust and cobwebs. The boarded ceiling underneath was found to be almost entirely rotten, though most of the ribs were sound enough to be retained. They were all, however, very imperfect, large pieces having completely disappeared, and many parts roughly repaired, indeed. All has now been put into a state of thorough and substantial repair in oak.

The walls, windows, &c., which, from long neglect and exposure to the weather had got into a very bad state, have been carefully repaired; the Purbeck marble shafts, many of which had disappeared altogether, have been replaced with new, the old being retained where possible; and generally the building

has been treated as one which is again to be made use of, and not one which is to be regarded simply as an interesting but useless ruin.

The floor, which is at present a fruitful source of damp in certain conditions of the weather, is to be relaid with Hopton Wood stone on a bed of concrete. The present floor is composed of various stones and other materials of heterogeneous nature, roughly laid, without any plan or design, on the earth. Although among these stones are the matrices of some magnificent brasses, they have all been brought from elsewhere—some from the nave of the Cathedral, and it cannot be said that the present floor is, in any sense, hallowed by antiquity.

The decorations, which have been carried out, under the architect's directions, by Mr. Hemming, the artist of the new east window, are in nearly every respect simply a reproduction of what was actually found on the ceiling, walls, and arcading. In the very few particulars which were not clearly prescribed by what was found, the endeavour has been to introduce nothing incongruous."

The east window, by Mr. Hemming, which was unveiled on the same day by the Prince of Wales, contains twenty-one figures of historical personages, selected for their immediate connexion with Canterbury; these are Queen Bertha, St. Augustine, King Ethelbert, Archbishop Theodore, St. Alphege, Archbishop Lanfranc, St. Anselm, St. Thomas à Becket, Henry III., Archbishop Stephen Langton, St. Edmund, Edward I., Edward the Black Prince, Archbishop Simon of Sudbury, Henry IV., Henry VIII., Archbishop Cranmer, Archbishop Laud, Archbishop Tillotson, Queen Victoria, and Archbishop Benson. The portraits are accompanied by the arms of England at the time of their reign, and other accessories of interest. The window is the gift of the Freemasons of Kent.

THE LANDING PLACE OF AUGUSTINE

On July 2 the bishops who attend the Lambeth Conference will visit the place where Augustine is believed to have landed in Thanet. The generally-accepted spot lies within an easy walk from Minster, native place of Thorne, the Saxon monk, or from Sandwich. Starting, for instance, from the latter town at the Davis, or David's, Gate on the quay, and crossing the new bridge which spans the Wantsum (or Stour) one stands in Stenhose, or Stonar—the supposed Lapis Tituli of the Roman occupation in Thanet, the then island which Pope Gregory, with his fondness for word-playing, called the *Angulus Angliae*. On the left hand rises from the river's remoter bank a high bluff, or cliff, crowned by the walls of Richborough, the Rutupiae of a time when it formed a sea-haven and fort established by Vespasian and Severus. Under foot, and stretching for three miles in a straight line across the marshes that lie within a bow of the Wantsum, is the road leading almost due northwards to Ebbe's Fleet, and thence, skirting Pegwell Bay, to Ramsgate. About half-way to Ebbe's Fleet are Shellness and the "Red Lion" inn, where a ferry affords access to Richborough. The Ebbe's Fleet coastguard station stands solitary in the Stone Lees marshes at a point three miles distant from Sandwich, and four from Ramsgate: hard by is the object of our quest.

A road from the turnpike gate-house leads to Minster; going north-west we gain the field where, reputedly, Augustine and his forty monks from Gregory's convent on the Caelian Hill made their landing, A.D. 597. A memorial stone erected by the late Lord Granville in 1884 stands just half a mile from the present shore and one mile from Ebbe's Fleet, towards Ramsgate. It is believed that the interview between the missionaries and Æthelberht and his wife, Bertha, daughter of the Frankish Chariberht, King of Paris, took place at a slight eminence in Cotmanfield—the modern Cottington. The king and his retinue remained on the mainland, on the river's, or rather estuary's, right bank; fearing magic or enchantment, he stipulated that the meeting should be in the open air, and that running water should flow between him and the strange emissaries from Rome. We may smile at his superstition; we must approve the hospitable and tolerant, albeit guarded, language of his memorable reply to the preacher's appeal. Then, giving Augustine leave to cross the water, he accorded him further audience beneath the walls of

Rupprester, or Richborough. Thence he invites the visitors to his own Kentish capital. As they, carrying aloft a silver cross and a painted picture of Christ, come within view of Bertha's chapel, dedicated to St. Martin of Tours, on the hill outside Canterbury, the monks break forth into a litany of supplication, and cries of praise.

For their first abiding-place Æthelberht assigns to them Stapel or Stable Gate, by a pagan temple close to the present St. Alphage's Church. On June 2, Whitsun-day, he is baptised in his consort's church. Augustine rededicated the heathen fane to St. Pancras, and there, in his own abbey of SS. Peter and Paul, was he buried A.D. 613, together with Bertha and her bishop, Luidhard. Thither, too, they removed from Reculver the body of the king who had given Augustine welcome and protection. It is fitting that the abbey should now be a missionary college, and that Lanfranc's cathedral has arisen over the ruins of Augustine's pristine foundation of Christ Church, a testimony to the second, and lasting, reception of the new faith.

THE LONDON COUNTY COUNCIL.

A SPECIAL meeting of the London County Council was held on Friday last week at the County Hall, Spring-gardens (Dr. Collins, Chairman, presiding) to further consider the adjourned report of the Special Committee on the Works Department. The recommendations of the Committee were printed in our last issue, as well as an amendment on recommendation (a), which was moved by Lord Onslow, and seconded by Sir G. Lushington, to the effect that no further work should be entrusted to the Department, and that it should be referred to the General Purposes Committee to consider and report as to the arrangements necessary for the due completion of the works in hand, and for dealing with the central works in Belvedere-road.

Mr. Hoare, Chairman of the Works Committee, resumed the debate, remarking that Lord Onslow first of all said that he was in love with the system of direct employment, and then, by his amendment, sought to prevent the Council directly employing labour.

Mr. Roberts said that in those instances in which the Works Department had failed, it had been through mismanagement and not through any inherent defect in the Department. He believed the Department could yet be made a fair success. No doubt it had suffered through the underpaying of officials, but upon the whole he believed that the works executed by the Department were more substantial than those carried out by contractors. If Lord Onslow's amendment were adopted, the considerable loss already incurred would be enlarged to a huge deficit, which would be a scandal to London; and he hoped the Moderate Party would not be allowed to bring about that result. He therefore opposed the amendment.

Mr. Beachcroft, Vice-Chairman of the Council, supported the amendment, which he urged was the only logical conclusion to the state of affairs disclosed by the inquiry. The confidence of the Council in the Works Department had been destroyed, and it appeared that while nothing was gained by the establishment of the Department, considerable danger was involved in its continuance. The main issue was as to the maintenance of the workpeople; but was it necessary for the enforcement of the principle of direct employment, to which both parties were more or less committed, that there should be a Works Department at all? Could they not do the same in all their Committees as the Parks Committee and the Fire Brigade Committee had done?

Colonel Legge contended that the Department had had a fair trial, and had failed. Mr. Shaw Lefevre said that it would be most unwise to revert to the contract system. The heads of Government departments had experienced the unwisdom of putting all its work out to contract, and had in fact been obliged to do a good deal of their work by direct employment. He was convinced that the employment of direct labour was an advantage to a municipality like theirs, and also an advantage to labour. It was true that the Department's figures showed a small loss, but it was nothing in comparison to what the loss had been had they given the work to contractors.

Mr. Steadman quoted figures to show that loss on works during the present Council was due largely to the policy adopted by the Moderate party of starving the Works Depart-

ment. Any one who knew anything about the works which the Department had done must admit that London had good value for its money, certainly very much better value than contractors would have given for a bigger amount.

Colonel Rotton said that the Department should be dealt with in the manner proposed by Lord Onslow, leaving the work which could best be executed by direct labour to be carried out departmentally.

Mr. Dickinson thought the intentions of the Moderates might very well be gauged by the words in which Lord Onslow concluded his speech, "The Works Department is useless, dangerous, and ought to be abolished." He was quite unable to understand why they took up that position, because it was never suggested to the Committee of Inquiry that the Department ought to be abolished. It was said that new facts had come to light since the inquiry closed, which had led the Moderates to change their opinions, but that was not the case, for every one of the so-called new facts was anticipated, and stated by Mr. E. White before the Committee. What, then, was the reason for this change of front?

Dr. Longstaff said that the very fact that the members of the Council were elected was the chief reason why they should not carry on this Works Department. If the House of Commons were to interfere with the work carried on by the different Government departments, it would probably fail as the Council had failed. Having made a loss by the Department, let the Council acknowledge it, and make an end of the Department. The Moderate Party were not responsible for this foolish investment.

Mr. Costelloe held that the amendment was essentially hostile to the system of direct employment. No doubt there were difficulties in the management of a great business which was not under the personal control of proprietors, but he believed those difficulties could be overcome if the loyal co-operation of all parties were secured. The Council should not wantonly throw away 100,000*l.* in order to put themselves in the hands of contractors, but should rather find some means of exercising a more efficient control over the Department.

Mr. E. Hubbard, M.P., said he was of opinion that the direct employment of labour to a large extent by an elected body like the Council was likely to have a prejudicial effect, because the workmen they employed, having votes, became a privileged class.

Lord Tweedmouth appealed to the two parties in the Council to come to some agreement whereby the Department might be maintained. He protested against abolishing it at a great loss to the ratepayers, and suggested that the Council would do itself harm by displaying a weak and vacillating policy in such an important matter.

Upon the motion of Mr. Taylor, the debate was adjourned to Tuesday.

At the usual meeting, on Tuesday, the debate was resumed by Mr. Antrobus, who supported the amendment.

Mr. H. Marks, M.P., contended that the reports of Mr. Waterhouse and Mr. Gruning were themselves a conclusive indictment of the Works Department in its present form. He denied that the abolition of the Department would be a death blow to direct labour. Direct employment of labour existed before the Department was created, and he wanted to see it continued, but it should be direct employment of all the workmen in London.

Mr. Taylor, in opposing the amendment, declared that it was based on fallacy and misrepresentation. The Department had done two great things: it had improved the standard of workmanship, and it had compelled the contractors to do better work than they had been in the habit of doing. He pointed out that the tenders of contractors were nearly all in excess of the architect's estimate, and he complained that it was on the original estimates that the Works Department had been judged. They had never been treated by the present Council so well as contractors had been treated. In spite of all the difficulties that had been put in their way they had saved money for the ratepayers in more than one direction, they had given better work than contractors would have given, and they had broken down one of the worst monopolies that ever existed.

Mr. E. White contended that the Department had proved a failure, and that the loss on the year ending March next would be found to be more than 30,000*l.* It was said that the Depart-

ment's strong point was jobbing work, but he held that there had been a loss in the jobbing works. Although the last year would be found to be the most disastrous in the history of the Department, the loss would be nothing in comparison to what would be incurred in the current year.

Mr. Ward said he admitted that the loss shown by the various reports of the Works Committee amounted to nearly 17,000*l.*, but there was a bill for extras amounting to 4,000*l.*, which must be deducted. Then there ought to be a further deduction of 3,000*l.*, which had been paid off capital account. The loss, therefore, was only 10,000*l.* or about 1½ per cent. When, eighteen months ago, the Committee brought up a report showing a profit of 1½ per cent., they were told it was so trivial and that it was not worth thinking about, but when the profit was turned to a loss of 1½ per cent. it was termed a London County Council scandal. He thought the Council did not appreciate the difficult position in which the Works Committee were placed. During the last month from 30,000*l.* to 40,000*l.* worth of work had been given out to contract, and the result was the Department was left with only 3,500*l.* worth of building works in hand. The capital charges were 20,000*l.* a year, and it must be expected that a loss would be shown if this policy of starvation went on.

After some remarks from Mr. Elliott the Council, on a show of hands, rejected the amendment by 54 to 47, but the result of a division was a tie, 62 voting for the amendment and the same number against.

The Chairman declined to give a casting vote, and declared the amendment not carried.

Dr. Longstaff then moved as an amendment on the first Recommendation of the Special Committee, "That, in the opinion of the Council, some definite organisation for the direct employment of labour, and the direct execution of public works by the Council, under the superintendence of its own officers, is desirable and beneficial, that the following words be added:—"Provided that such organisation shall not be entrusted with the carrying out of any works of an architectural character." He contended that the evidence before the Committee showed that the Department could not, with advantage, undertake work of an architectural character.

Sir J. Lubbock, M.P., seconded the amendment.

Sir A. Arnold suggested that some arrangement, in view of the recent vote, should be come to, and he asked Dr. Longstaff to withdraw his amendment. The amendment was, in fact, unnecessary, because it was in the power of the Council always to decide what work should go to the Department. It was also difficult to decide what was and what was not engineering work as contrasted with architectural work. He hoped the amendment would not be pressed, in view of the fact that he would have to consider carefully what should be done with the report of the Special Committee.

Sir J. Blundell Maple, M.P., said he was opposed to the amendment, which would fetter the hands of the Department.

After further discussion, the amendment was withdrawn.

A division on the first Recommendation of the Special Committee was shortly afterwards taken, the result again being a tie, 56 voting for and 56 against the Recommendation.

The Chairman again declined to give a casting vote, and

Sir A. Arnold said he did not regard the loss of Recommendation A as effective, and he would consent to an adjournment over the recess of all the Recommendations from B to I.

Colonel Hughes moved to that effect, and this was agreed to. Recommendation J, which was formal, was accepted without discussion.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend the Greenwich District Board 2,400*l.* towards paying the cost of the Evelyn-street improvement; the Chelsea Vestry 7,000*l.* for wood and asphalt paving; the Fulham Vestry 5,700*l.* for wood paving; the Linehouse District Board 7,000*l.* for granite and York paving; and the St. Pancras Vestry 2,945*l.*, the balance required to complete an electric light installation.

A Coat of Arms for the Council.—On the recommendation of the General Purposes Committee, the following recommendation was agreed to:—"That it be referred to us to consider and report as to the desirability of steps

being taken for obtaining a coat of arms for the Council."

Dangerous Structure Proceedings in Arbitration Cases.—The Building Act Committee reported as follows:—

"On April 13 last the Council decided to obtain the decision of the High Court upon two most important points which had arisen, and appeared likely to constantly arise in legal proceedings in connexion with dangerous structures, namely (a) whether arbitration proceedings under Section 107 of the London Building Act are limited as regards the time within which the surveyors must report and the arbitrator make his award, and (b) whether the Arbitration Act, 1886, applies to such proceedings. The case came before the High Court on May 11, when, after hearing arguments of counsel, the Court expressed the opinion that the case would be best dealt with by an order that all proceedings should be dropped, and by the Court giving an opinion, for future guidance, upon the meaning of Section 107 of the London Building Act. The Court relieved the Council from paying the costs ordered by the magistrate in the case on which the question arose. The Court endorsed the view taken by the Council, that if an owner should require arbitration under the section he must give seven days' notice to the Council, and at the same time appoint an independent surveyor to report in conjunction with the district surveyor within seven days from the receipt by the Council of notice of appointment of the owner's surveyor, and that if the two surveyors appoint an arbitrator before they enter upon the matter and fail to agree all or any of the matters in dispute within such seven days, the matters not agreed thereupon fall within the jurisdiction of the arbitrator, who must make his award within fourteen days. Of course, a difficulty might arise if one of the surveyors or the arbitrator should be incapacitated within the times named; but this could be overcome by an order being obtained from the High Court under the Arbitration Act."

Westbourne-Park Railway Bridge.—The Improvements Committee recommended, and it was agreed,

"That the estimate of 4,500l., submitted by the Finance Committee, be approved, and that the Council do consent to be a party to a clause in the Great Western Railway Company's Bill now before Parliament, authorising the company to extend and improve the bridge carrying the road over the railway at Westbourne Park station, on the following conditions—(a) that the Council shall contribute one-fourth of the net cost of the work, such contribution not to exceed the sum of 4,500l.; (b) that the bridge shall be constructed in accordance with plans to be previously submitted to and approved by the Council; and (c) that room for one line of vehicles and a footway not less than 8 ft. wide shall be reserved for the use of the public during the progress of the works."

Temporary Structures for the Jubilee Celebrations.—The Building Act Committee reported that up to the present time 496 applications had been received for licences in respect of temporary structures for the accommodation of persons desiring to see the Jubilee Procession on June 22. Of these, 328 had been granted and 33 refused, while the remainder were under consideration. Applicants had in all cases been cautioned to prevent the overcrowding of the stands and to adopt proper precautions against risk of fire. The local authorities of the thoroughfares in the line of route of the procession outside the City of London had been requested not to license, except in urgent cases, the erection of hoardings or gantries between the present time and June 22, and in such cases to make it a condition of consent that unless the Council's licence be first obtained the structure shall not be used for the accommodation of persons to view the procession.

The Fire Brigade Committee reported that numerous questions having been asked as to the Fire Brigade arrangements on the occasion of her Majesty's Jubilee Procession on June 22, they thought it well to state, in order to allay public anxiety, that they had conferred on the subject with the chief officer, who had proposed a scheme which would ensure the prompt attendance of firemen with life-saving and fire-extinguishing appliances in the event of fire on the route of the Procession. As the thoroughfares along which the Procession would pass would probably be so thronged that it would be almost impracticable for vehicles to pass through the crowd, it was proposed to have engines and horse fire-escapes at various points with which the Brigade was in telephonic communication, and the chief officer was by their direction in consultation with the Commissioner of Police of the Metropolis with a view to determining the exact positions in which the appliances should stand.

The Council subsequently adjourned for the Whitsuntide holidays until Monday, June 28.

Illustrations.

THE illustrations this week are entirely devoted to the architecture of Leicester, which forms the subject of the leading article in this issue, as the seventh of our series of articles on "The Architecture of our large Provincial Towns."

The buildings illustrated in the plates are the Municipal Buildings (two illustrations); the Victoria Coffee-house, one of a class of buildings which form almost a feature in the town; and two sheets of miscellaneous smaller illustrations of Leicester buildings, including, on the one sheet, the Liberal Club, a Congregational Church, St. John's Church, Knighton (inferior), a dwelling house ("Knighton Spinneys") and a warehouse; and on the other sheet, the offices of the Alliance Assurance Company, the Wyggestone Hospital Girls' School, a Shoe Factory, the Wyeven Hotel, and two more of the Leicester coffee-houses. The names of the architects of each building are given on the plates.

THE ARCHITECTURAL ASSOCIATION: PLUMBING AND SANITARY WORK.*

I NOW come to soil-pipes. According to the by-laws of the London County Council, under seal dated June, 1893, all soil-pipes in buildings erected after that date are to be outside. Now, although I have done, perhaps, as much as anybody to encourage the fixing of soil-pipes outside, and still prefer such pipes to be outside, I have never slavishly chained myself down to such a restriction, and I think it is a pity the by-law should be so stringent, or that architects and plumbers should be so hampered: for it requires no great imaginative power to conceive of circumstances where the disadvantages would be greater than the advantages.

If it is a question of durability and sanitariness, in certain cases a soil-pipe fixed inside a house would be more durable and more sanitary than if fixed outside.

When they are situated on south fronts, where no shadow protects them, they often become so hot that the naked hand cannot be kept upon them; and their variation in temperature, from mid-day to midnight in the summer months, would be three times greater than upon pipes fixed inside or with a northerly aspect. The strain upon the joints of iron pipes and the unequal expansion and contraction of lead pipe would tell much upon their durability. And, of course, in such cases sewage matters would adhere and dry upon the soil-pipe in a different manner to that upon a pipe which did not become so heated, and it would, therefore, be less sanitary, unless, indeed, the water-closets upon it were well flushed at every usage by more than the Water Companies' restricted two-gallons.

Then, in certain cases, it is most difficult to find a good course for an outside pipe, free from a doorway or a pilaster, free from mouldings and enrichments; difficult to prevent it disfiguring the building. Of course I am sensibly alive to the fact that such pipes may often be made to improve the elevation, but that they are always so treated I will not attempt to prove to this Association. So ugly are they at times that one fancies they must lower the value of the property on which they are fixed. I have had some photographs taken of a few such, and will show some upon the screen. They are to be seen here, there, and everywhere in hideous fashions, being fixed neither vertically nor horizontally, nor in any pleasing line, crossing chimney breasts, coming over stringings, cornices, roof gutters, and parapets, going up to the roof over all the obstacles of their course victorious.

Then often no attempt is taken to disguise their purpose. Branches from water-closets are brought out, and carried along on the face of the wall to the main pipe; whereas, a little alteration of the water-closet apartment, or a little shifting of the water-closet, or a little graceful bending of the main pipe, or a dexterous treatment of the branches, and they could have been brought through the wall, and soldered to the back of the pipe, where they would never be seen. The poor arrangement now shown is a photograph of such a pipe,

* Being the second half of a paper read before the Architectural Association, on the 21st ult., by Mr. S. S. Hellyer. We printed the first part of the paper in our last issue, page 478.

showing its ugly advertising water-closet branch as recently fixed on the face of a house in one of the best streets in the medical world (fig. 4). I will now show you a stack, where the branches are brought in at the back of the pipe, and though it was fixed ten years ago you will see how well it stands and how well it looks—the photograph of this was only taken the other day.

Now as to the material of which soil-pipes should consist. For my own house, though I were as rich as Croesus, I should be content with lead pipe, and I should prefer it to any other kind of pipe that I know. I should be satisfied that the pipe was more wholesome than iron, being easier cleaned, and more durable, being less corrosive, and that its wiped soldered joints could be more relied upon than even the caulked lead joints of east-iron pipe, and remembering that they are much fewer in number, there being at least two more joints with iron pipe than with lead in every closet branch. In fact, when the main pipe is of iron and the branches of lead there would be four joints to every junction, as shown; for the London County Council rightly enough require such connexions to be made with a brass ferrule, as shown. But whether the branch be of lead or iron the joint with the iron junction should never be allowed to come into the wall as shown in the next photograph. Then, with iron pipe there would also be more joints on the main pipe; lead pipe being made in 6 ft. or 12 ft. lengths to suit circumstances, and the iron pipe as generally used in 6 ft. lengths (fig. 5).

Then the character of lead pipe compels the plumber to connect the ends neatly and nicely together, if he is to make a well-wiped soldered joint upon them, and with such yielding material as lead he has no difficulty in doing this, for he can bend or boss or alter either end at will, and rasp them to a great nicety; whereas, with a rigid spigot or socket end of a cast-iron pipe, what can he do when the two pipes do not come together in true correspondence in their interior surfaces, or when he has been a little out in his measurements? The pipe may be a little too long, or too short, but he cannot alter the socket, nor can he tamper with the spigot without destroying the bead or shoulder which is to keep the caulking material from getting into the interior of the pipe. Indeed, he may aggravate the case in caulking in the lead, by shifting the upper pipe away from its true bore with the lower pipe, and so leave a shoulder inside for matters to catch and collect upon. At any rate, such connexions often afford places for particles of filth to accumulate in, and though this may not mean much in one joint, in the aggregate—in the tens of thousands of joints—if all the soil-pipes of a large town or city were of iron, it would mean something. I mean that a stack of iron soil-pipe with several water-closets upon it would not be so free from smell as it would be if it were of lead with precisely similar closets and water flushing.

In my house in Newcastle-street there is a stack of 4 in. soldered seamless lead soil-pipe which was fixed more than a century ago, and I see no reason why it should not last as long again. It is made of cast sheet lead about $\frac{1}{2}$ in. thick, and for you to see its present condition I have had two pieces cut out of its lower part and photographed. The piece showing its exterior is splashed over with the many whitewashings given to the cellar during the century, but as you see, the pipe is quite sound and good, and fairly clean in its interior, as shown by the other piece. A Bramah closet, similar to the one shown earlier in the evening, discharged into it on the second floor, and was, I expect, in daily use for three-quarters of a century, when it was changed, together with its D-trap, for a "Vortex" closet, since when it has only been in use six days out of seven. It is interesting to know that the apartment, though well lighted has only a borrowed light, viz., through a glazed fan-light and semi-glazed door, both of which open into the staircase for access and ventilation, just under a well-ventilated lantern light.

But we all know how well lead pipe stands the London atmosphere. I will show you a photograph of a lead R. W. head and pipe which was fixed on the old Dining Hall of Staple Inn in 1653, and also of another head and stack which was fixed on the Chambers in the same Inn in 1720, both being in very good condition to-day. I will also show you a photograph of a stack of lead soil-pipe, fixed in 1881, and that of another fixed in 1888, both being





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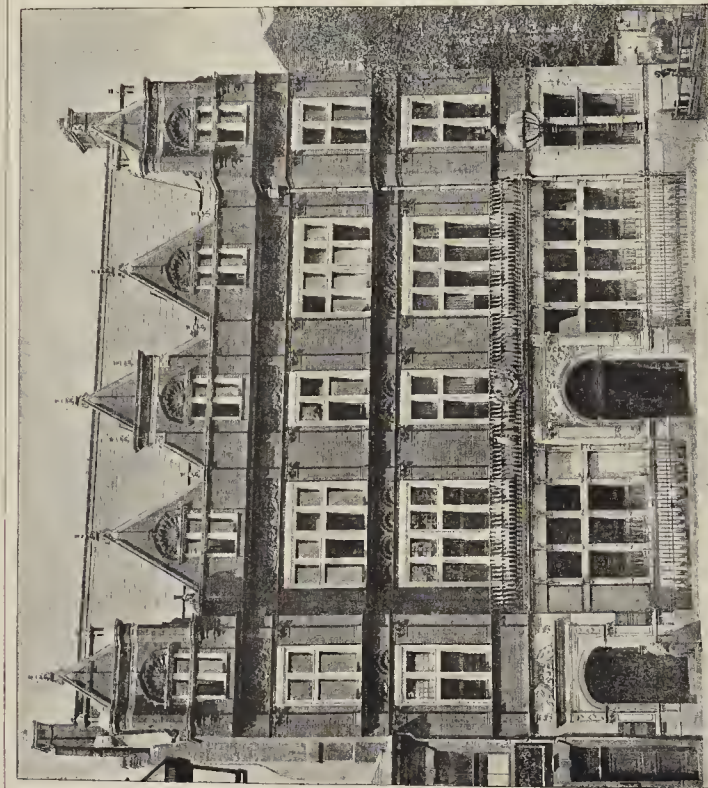


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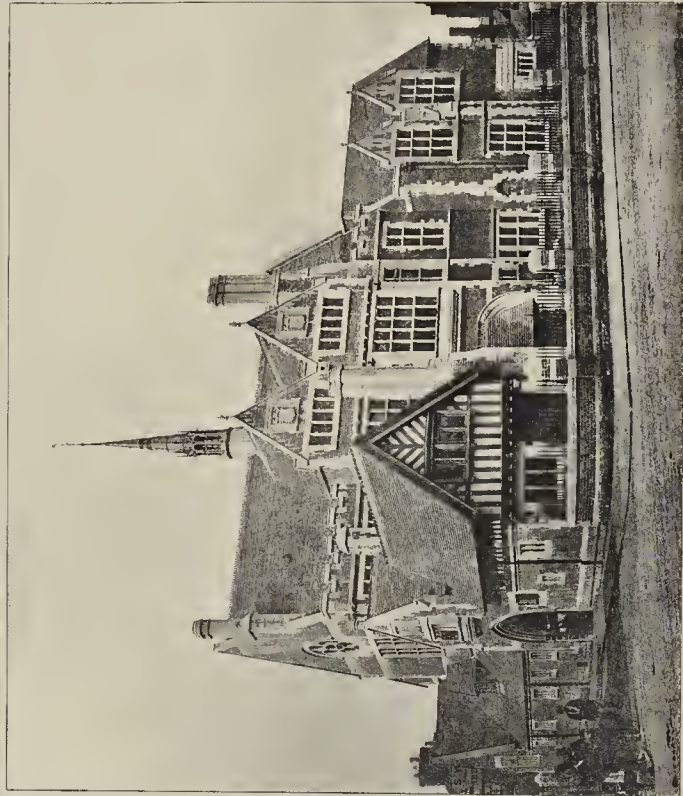
1896 PHOTO SPHAGNE & CO. 44 & 46 EAST HARDING STREET FETTER LANE E.C.







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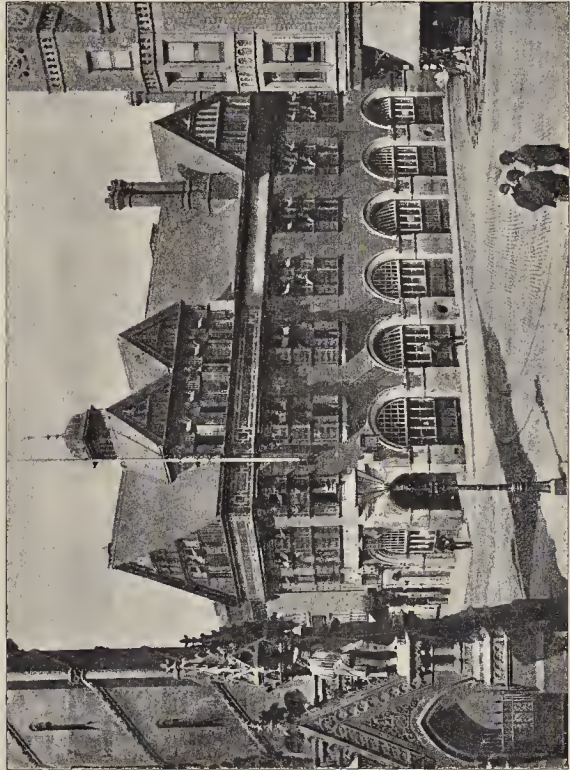
WYVERN HOTEL.—MR. ARTHUR WAKERLEY, ARCHITECT



THE RUTLAND COFFEE HOUSE.—MR. EDWARD BURGESS, ARCHITECT



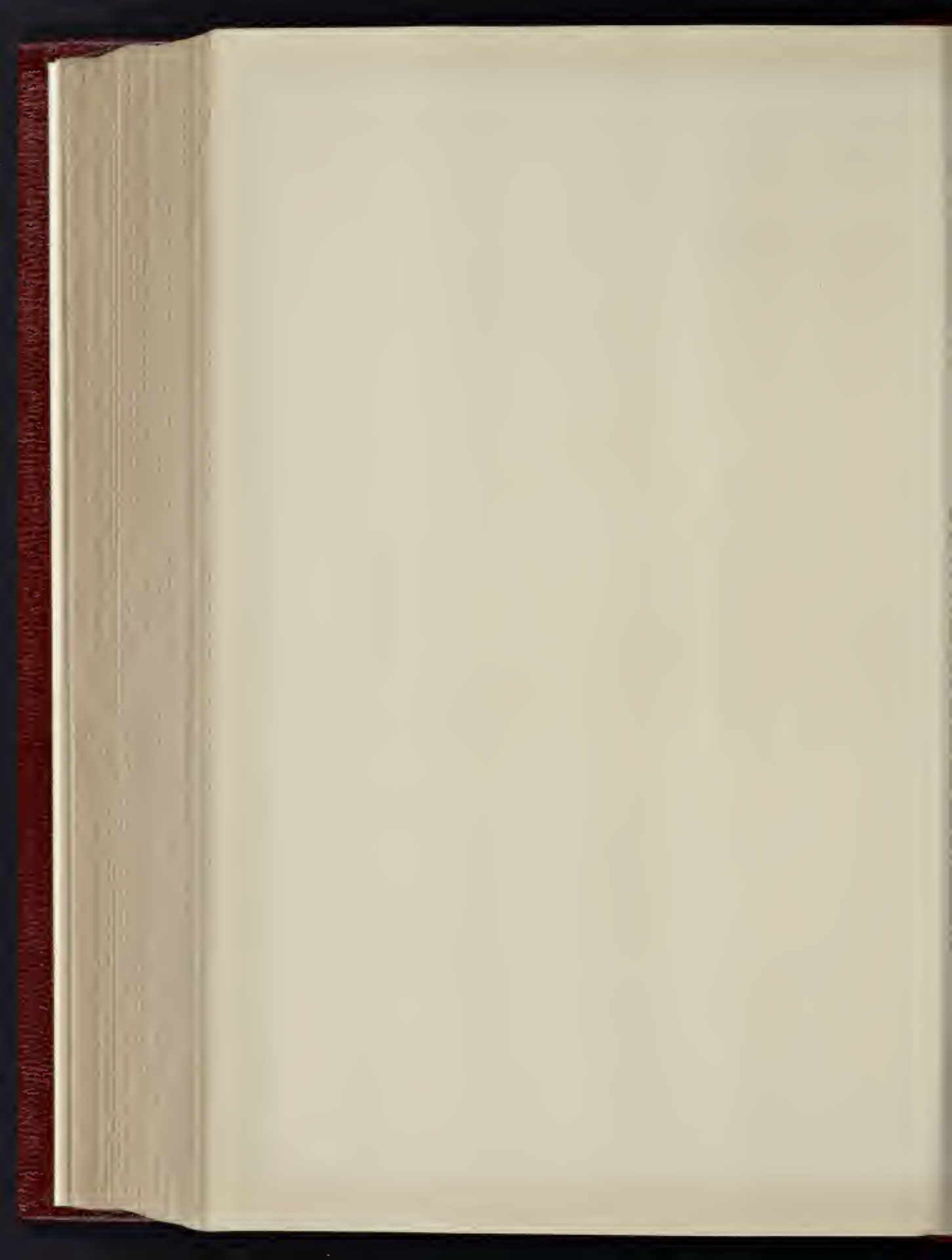
SHOE FACTORY.—MR. ARTHUR WAKERLEY, ARCHITECT



THE EAST GATES COFFEE HOUSE.—MR. EDWARD BURGESS, ARCHITECT

INK PHOTO SPRAQUE & CO. 145 EAST HANING STREET LONDON E.C.

LEICESTER ARCHITECTURE

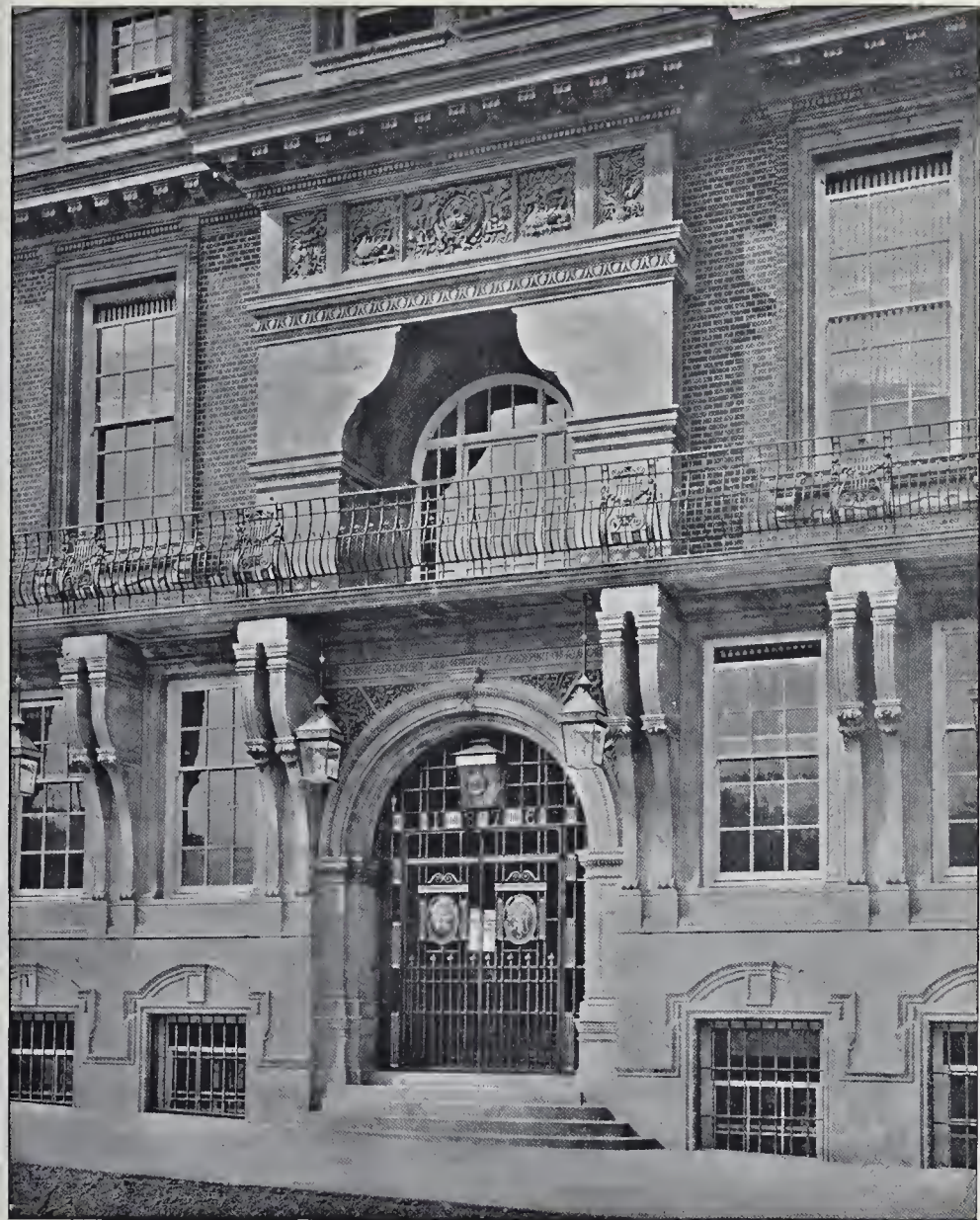




THE BUILDER, JUNE 5, 1897.

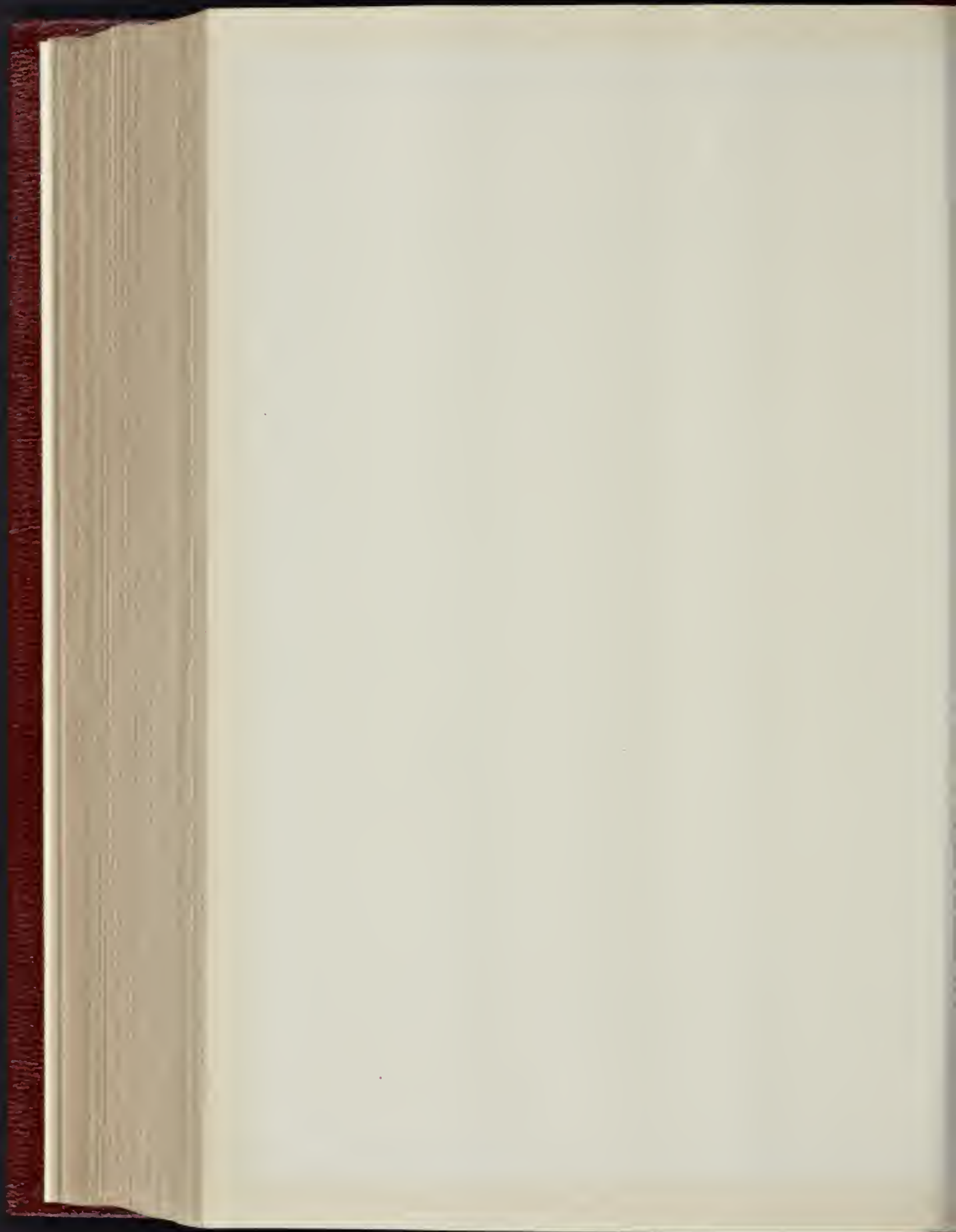


THE BUILDER, JUNE 5, 1897.



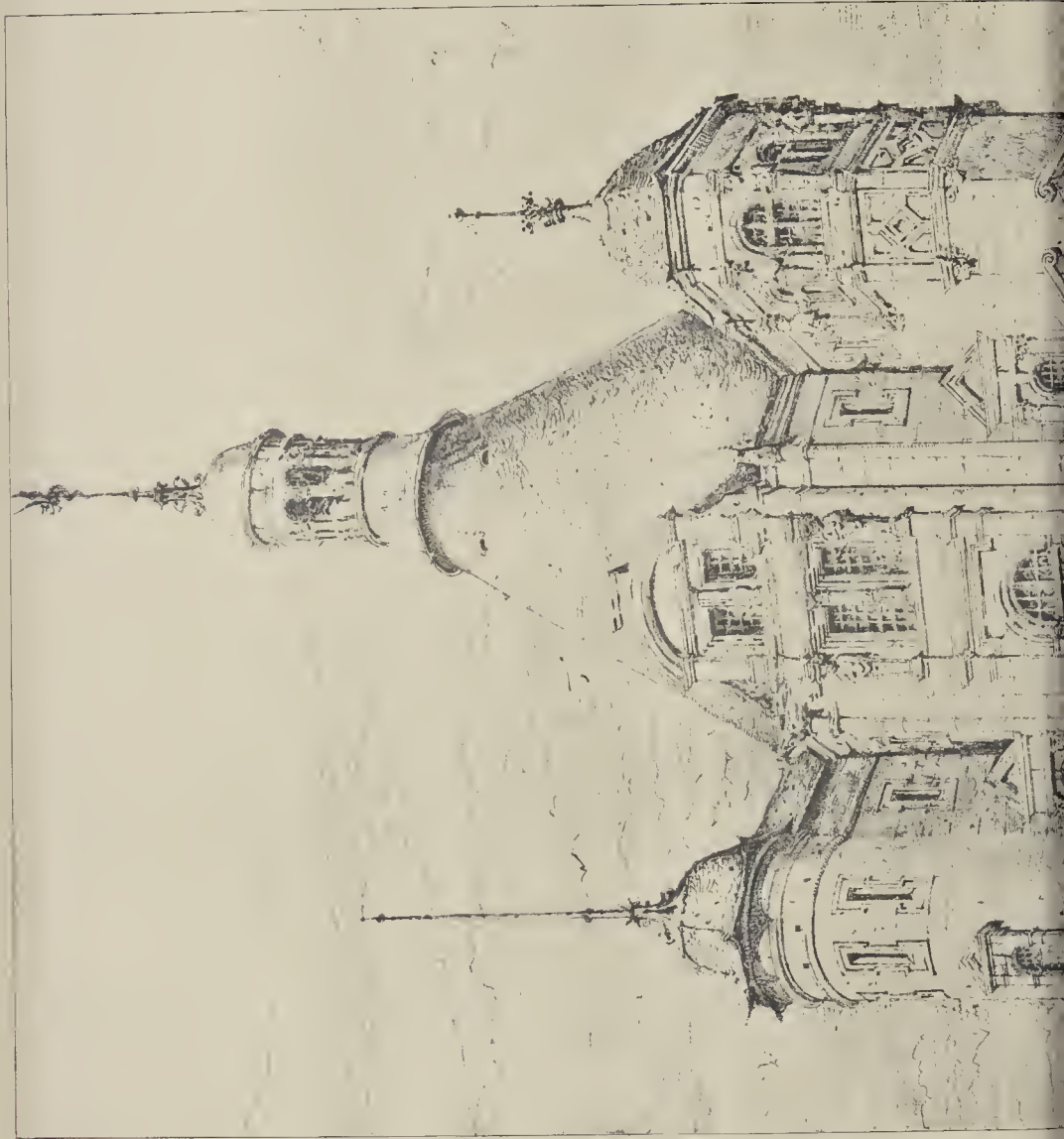
LEICESTER ARCHITECTURE: MUNICIPAL BUILDINGS.—Mr. F. J. HAMES, ARCHITECT.

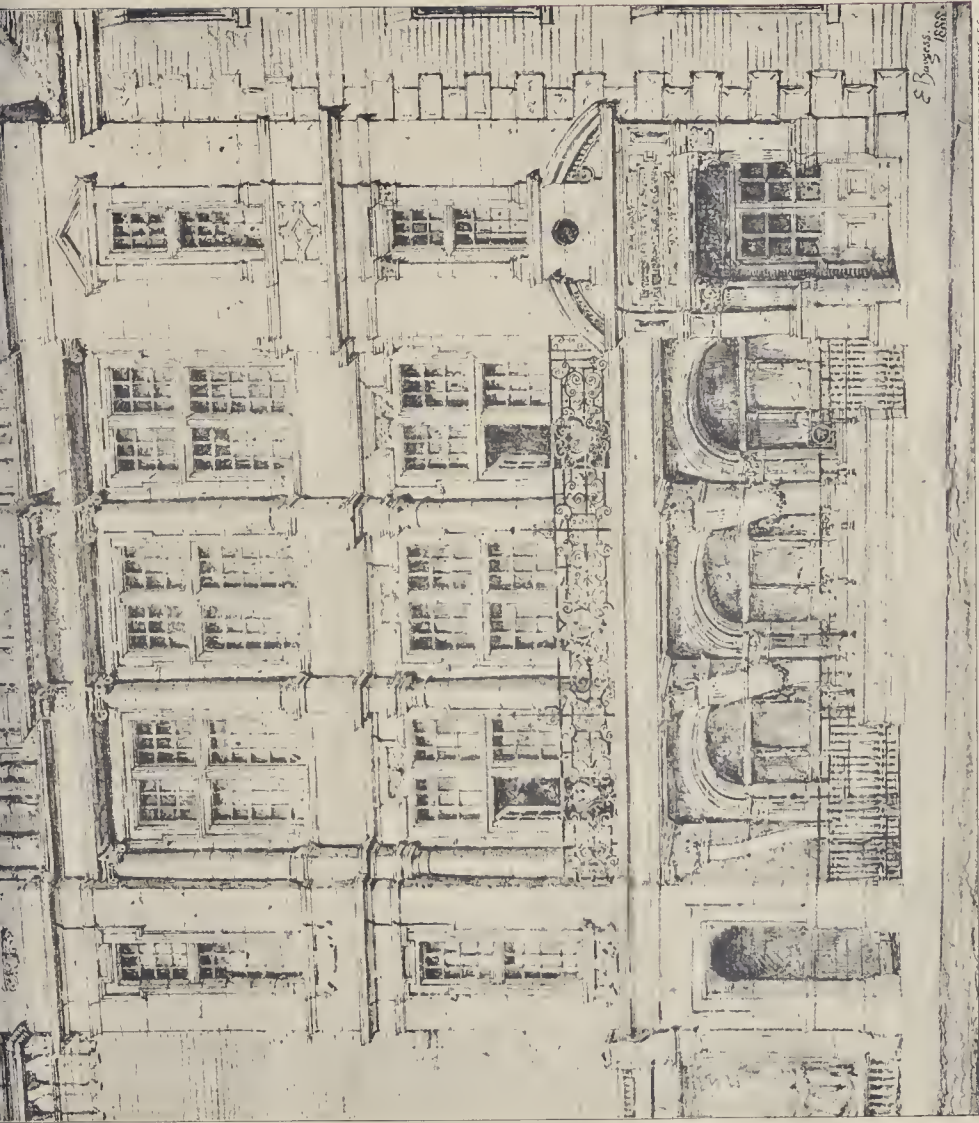
DETAIL OF CENTRAL PORTION.





THE BUILDER, JUNE 5, 1897.





120 PHOTO BY SPURDUE & CO. 44 & 46 EAST HANCOCK STREET, BOSTON, MASS., U.S.A.

LEICESTER ARCHITECTURE: THE VICTORIA COFFEE HOUSE.—MR. EDWARD BURGESS, ARCHITECT





Fig. 4.



Fig. 6.

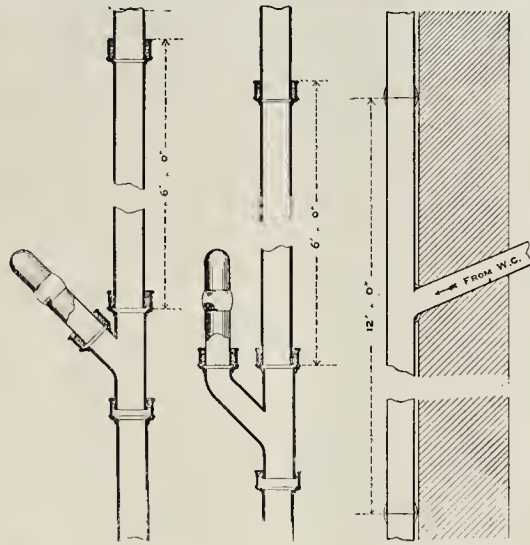


Fig. 5.

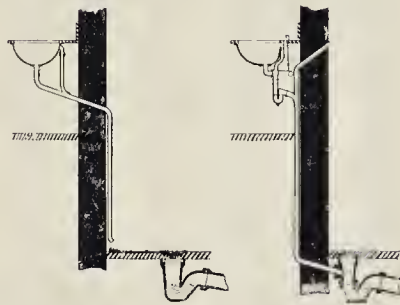


Fig. 7.

straight and good to-day, and showing no sign of deterioration.

To prevent sagging and "telescoping," lead soil-pipes should be well supported about every 5 ft. with a pair of tacks, and the strength of the pipe should be equal to sheet lead weighing 8 lbs. to the superficial foot.

For every unsoaked soldered joint on lead soil-pipe, I should expect to find a thousand unsoaked cement joints in cast-iron pipe, and even when a joint is made with great care in iron pipe, after a time it is liable to breakage by the expansion and contraction of the pipes as shown. The pipe generally used is of insufficient strength, and is liable to fracture like that shown, which shows a defective joint with its fellow pipe and also with that of the drain.

But I have no desire to unfairly decry iron soil-pipe, especially when such pipes are of good strength ($1\frac{1}{2}$ -in. metal for outside situations), and the joints are well and carefully made with blue lead or Spence's metal. In fact where hot water is discharged into a soil-pipe, lead pipe with soldered joints would not stand the continual strain of expansion and contraction; and, therefore, iron pipe would be much preferable in such cases. But, in my opinion, hot water ought never to be discharged into soil-pipes, their temperature should never be so raised. I know well enough that in America not only are the baths and lavatories discharged into soil-pipes, but also the sinks; but we can afford to treat plumbers' work more sanitarily; we can carry the waste-pipes from such fittings through the external walls to open air and discharge them into intercepting traps, for we are not subject to such severe frosts.

All soil-pipes, no matter of what material they are made, should be carried up at least full-bore to the highest parts of the roof, where the air coming out of them would have no chance of getting into the house, and where the wind from any point would blow over them to carry the bad air away. I think it is only right to say that this matter is now much more considered by the authorities than used to be the case, but I am going to show you directly a few instances of bad treatment where the pipes have been recently fixed, some even this year. The photographs will be sufficiently graphic to need no words of mine to point out the evils. It will readily be seen how the emanations of soil-pipes and drain ventilation pipes can contaminate the cistern water, or enter a house through its windows or chimneys; and how even though people may be friendly and neighbourly enough on the lower part of their houses, they are not really so in the upper part. The air from the soil-pipe of one house being allowed to enter the window of the other house and poisoning the air within, as shown in the illustration (fig. 6).

Now, as to the size of a soil-pipe. Before determining the size of the pipe, it is important to know what it has to do. If in addition to its work of carrying away the discharges of a tier of water-closets, it has also to act as a ventilator to the drain, it ought not to be less than 4 in. And if no syphonic action is to take place in it, that is if no anti-syphonage pipe is fixed to its trapped branches, it should be of larger bore still—5-in. or 6-in pipe. And even this size would not be large enough to prevent syphonage when the air had to come down a

long length of piping, as in the case of a very high building—was of a bore still larger, for the air to pass down the pipe free from friction, and in a body sufficiently large to prevent a vacuum.

When no anti-syphonage-pipe is fixed, and the main soil-pipe is only $3\frac{1}{2}$ in. or 4 in. bore, it is of paramount importance that only water-closets which have special traps should be fixed, which means a deeper seal and a larger body of water. Now, except in the case of valve-closets, as we have already seen, the water-seal of a closet is in open contact with the air in the soil-pipe and the drain; and where the closet is not in constant use the water held in its trap would become tainted and surcharged with gases. It is, therefore, important that the whole of this water should be changed every time the closet is used, and I confess that I do not see how this is to be done satisfactorily with a two-gallon flush, if the water-seal of the closet-trap is to be of a depth great enough to withstand the action of syphonage without the aid of an anti-syphonage-pipe, and the closet is to be left with its full water-seal.

Moreover, without anti-syphonage pipes there would be no ventilation of the closet branches, no matter how long they might be. In fact, such branches would be like inverted bottles, for there would be no escape for the gases in them, except by diffusion or by passing through the water-seals of the closet to the house.

To show the power of such pent up gases I have had a lantern slide made of a photograph

which I had taken the other day of the interior part of a piece of lead-pipe which was branched into a stack of soil-pipe about fifteen years ago. As you see the lower half, which carried off the matters sent into it, is practically intact; but the upper half, the part exposed to the gases and vapour, is eaten through in many places. The main soil-pipe on which it was fixed was open full bore to the air about 50 ft. above it, and for a few years it was trapped off from an old drain with which it was connected, when it was reconnected without a trap to a system of drains which had several other open soil-pipes upon it for ventilation. [The piece of lead water main shown in the photograph has nothing to do with it. It is, as you see, quite perfect, though it is supposed to have been in use at Hampton Court Palace over 350 years.] It will be found with an anti-syphonage pipe of 2-in. bore, that a 3½-in. or 4-in. soil-pipe will answer very well for a tier of many closets, except in the case of very high buildings. And, as the London County Council allow nothing smaller than 3½ in., and require 4 in. when it is connected with a 4-in. drain, I say nothing about smaller sizes.

I have no time to add much to what has already been said or implied on ventilation. The ocean of air surrounding every house ought not to make it too difficult to give full and free ventilation to every soil-pipe, waste-pipe, and drain; and in such a manner that no air coming out of either outlet or inlet of the system should enter the house or be breathed before it has been well broken up and purified.

When many stacks of soil-pipe are directly connected to one large system of drains, having only one low-level inlet upon it, viz., at its "disconnection chamber" with the sewer, the several stacks will not have such currents of air in them as they would if each drain into which each stack discharged had its own independent inlet, especially when all the stacks are of equal height, and the air in them is about equipoised, though there is generally some different influence acting on one pipe more than another, difference of temperature, wind, or weather. When no such influence exists the vapour will at times go up and down the pipes for hours together in a sort of see-saw movement. Backwards and forwards in the dark drains the injurious microbes may move, playing a sort of hide-and-seek; for I know little of their behaviour and less of their habits, except that I believe that light is not conducive of their longevity, and that fresh air annihilates them. But I must mind what I say, for are we all not made up of microbes? So I say no more on ventilation, except to remind you that, like money, there can rarely be too much of it where it is most needed. I have had some photographs taken of badly positioned ventilating terminals from soil-pipes and drains, and will show them upon the screen, pouring their emanations into windows, cisterns, chimneys, &c.

Knowing that our time to-night would be too short to cover the whole field of sanitary plumber's work, I thought it better to pretty closely survey the parts looked at rather than give a galloping glance over the whole area. I shall therefore only call your attention to but one or two matters more.

The by-laws of certain district councils require the "waste-pipe from every bath, sink or lavatory, the overflow-pipe from any cistern and from every safe under any bath or water-closet, and every pipe for carrying off waste water, shall be taken through an external wall, and discharge in the open air over a channel leading to a trapped gully grating at least 18 in. distant;" that is, such authorities prefer in sanitary methods to sanitary ones; for such treatment is sure to lead to a nuisance in some such way as shewn by the slides taken from two original photographs.

Soap-suds and bits of soap will generally be found decomposing and throwing off bad air, and often bits of paper, orange peel, hair, and the like, will also be there, blocking up the grating, offending the eye, and needing almost daily attention to keep clean. The ground, too, surrounding such gullies will often be found to be quite sodden with splashings and overflows. Whereas, with such waste-pipes made to discharge into self-cleansing intercepting traps just under the grating, no mess would be made, and no attention needed to keep the surroundings clean. And when such waste-pipes were properly trapped and ventilated their air disconnection would be all that could be desired. I will show the two methods (fig. 7).

No doubt some years ago there was a reason

for keeping the discharging ends of the waste-pipes well above a gully when the latter was generally a little cesspool in itself, and when waste-pipes were often fixed without traps, in which condition they acted as ventilators to the house. But no such reason exists now that self-cleansing intercepting traps are generally fixed, and that the waste-pipes are trapped. And yet only the other day a Board Surveyor, against his own judgment, caused some waste-pipes to be altered, because they delivered under the grating of a drain-interceptor, instead of over it; that, too, notwithstanding the fact that each waste-pipe was trapped. A soil-pipe may discharge directly into a drain, which may have no air disconnection within several hundred feet of the soil-pipe, although there be but the water-seal of the closet trap between the drain and the house; but for a waste-pipe to have its air-disconnection under a grating—oh, blissful ignorance!

No sink, bath, lavatory, or other fixture through which dirty water may be emptied, should be fixed without a trap of a self-cleansing kind, and one that will, when properly ventilated, retain an efficient seal no matter how large the body of water may be which is sent through it. And to prevent the discharges of one fixture backwashing up into the waste-pipe of another and fouling it, each fixture should have its own separate trap, which should be situated as close to it as practicable, so that the piece of outlet pipe—standing between the house and the seal of the trap—may be as short as possible. I have so good an example of the very reverse of this that I have had it photographed for you to see. It is a 9 in. D, with no less than seven waste-pipes connected with it. Less than a year ago it was doing duty in one of the greatest University Colleges of the country, receiving as it did the waste-pipe from a cistern, a bath, a drip-sink, a lavatory, a bath safe, and other pipes.

As only a very short length of unventilated waste-pipe is sufficient to cause syphonage, the upper ends of such pipes as well as their discharging ends should be carried through the external walls to the open air. To show how small a fall suffices for this, I have here a little lavatory with a 1½ in. syphon trap and a short length of 1½ in. waste-pipe, with its discharging end standing only a little below the bottom of the lavatory trap, and yet the drop is sufficient to set up syphonage and to leave the trap practically unsealed with but a small discharge from the basin.

I was staying at an hotel in Germany last year, and noticing a horrible smell in a lavatory more than once, I searched out its cause and found that the lavatory trap was most easily syphoned, in a similar manner to that just demonstrated; for although it was connected with a soil-pipe, the latter was about 7 in. bore and could not, therefore, have caused the syphonage. It arose from its own unventilated waste-pipe.

Opening up the upper end of a waste-pipe to the air not only prevents syphonage, it also ventilates the pipe and keeps it wholesome. Where more than one trap is connected to a waste-pipe through which quick discharges may pass, it is not sufficient for the upper end of the main pipe to be carried through full bore to the open air to prevent syphonage; each individual trap must be ventilated—must have an anti-syphonage pipe, in fact.

I think most authorities are now alive to the value of providing quick discharging arrangements to baths, sinks, and lavatories, though only the other day I came across a small wash-hand basin which took nearly one minute to empty. A 5 ft. 6 in. bath ought to empty under two minutes, and where it would be in daily use, and was situated near the head of the drain, as the chief means of flushing it, it might be made to empty in one minute, a 3-in. waste-valve being fixed to the bath for the purpose, and the trap and waste-pipe of equal bore.

I have no time to say more than a word or two on drains. When circumstances require a soil drain to be fixed inside a house, or outside it, where a leakage from it would find its way into the house or under the footings, I should strongly prefer it to be of cast-iron, with caulked lead joints, rather than of stoneware—whatever kind of joint might be adopted—the thickness of the cast-iron pipe being not less than ¾ in. in its thinnest part for 4 in. or 5 in. drains, and greater still for drains of larger size.

I know that some authorities still prefer stoneware drains to iron, even for fixing inside a house. I had an argument with one only last year, but "a man convinced against his will is

of the same opinion still." I think it would be almost impossible to find anywhere a stoneware drain of any great length inside a house absolutely water-tight from end to end, which has been in use for, say, fifteen years. Even when every precaution has been taken, and a stoneware drain has been very carefully laid, and its joints specially made, one could not be certain how long it would remain perfect. After many years of existence there may only be a slight leakage in it, but if that occurs inside a house it will be sufficient to create great unrest in the minds of sensitive inhabitants, even if no illnesses arise from it. And the misfortune in such cases is that such leakage or leakages are generally difficult to repair, and are practically impossible of repair without danger of doing further injury to the drain.

I have just had a cast-iron soil drain examined which was fixed inside a house in the City twenty-six or twenty-seven years ago by my firm. The pipe is of water-main strength, and is suspended from the ceiling joists in the basement. Both the pipe and the caulked lead joints were found in excellent condition, nothing having been done to them from the time they were executed, except that in white-washing the basement the drain had also been white-washed from time to time.

In 1881 I had some manholes built in brick and cement on the first floor of my offices as examples, together with some sanitary fittings, and a specimen length of iron drain. I had a photograph taken of certain parts before their removal last year, and you will see that the iron pipe and the caulked lead joints are quite good, and show no sign of wear, though they were experimented with for fifteen years. Also you will see from the same photograph, that though apparently no action has taken place between the lead and the Portland cement, which connected a piece of lead soil-pipe to the stoneware drain, the cement joint shows that there was no real adhesion of the cement to the glaze of the stoneware socket, and this accounts for the leakage which quickly showed itself when tested with water.

Notwithstanding that many authorities require that even cast-iron drains should be embedded in concrete, I consider such treatment a wicked waste of money, for with a pipe of proper strength all the support it needs is from its under-side, except in very exceptional cases, and this is best done by brick piers built on concrete bases, with a stone or concrete resting slab for the pipe to nicely fit in, or by making a continuous bed for the drain in Portland cement concrete. This arrangement readily admits of the removal of the earth surrounding the drains and the joints, for any future examination of the pipe, and for recaulking of the joints when necessary. When such drains are encased in concrete the cost of cutting away the concrete to find out a leakage or to get at the joints would lead to great expense and do damage to the drain.

Where practicable, instead of laying an iron drain in the ground, where it is inside a house, it is better that it should be carried on the face of some wall, or be suspended from a floor, or be carried in a subway, or have a tunnel or creeping trench specially built for it, in brick and cement, with openings into it only from the external air, so that the drain may be readily examined, and in the latter case be completely isolated from the house.

The many improvements in sanitary plumbers' work which I have brought before you to-night, or to which I have alluded, as well as many others which I have had no time even to mention, have almost entirely been made during the latter half of the long and magnificent reign of her Majesty, whose Diamond Jubilee we are going to so gloriously celebrate next month. And when dipping my pen into the ink-bottle to write the finishing words of this paper, it occurred to me that instead of attempting any kind of peroration, the better thing to do would be to drop the pen for the pencil, and portray in a sort of transformation piece the progress of plumbers' work between 1837 and 1897.

Before showing this set-piece, which my draughtsman has so well got out, I should like to remind you of the great power you possess for raising and maintaining the standard of plumbers' work. Other authorities may desire it, may even expect it; but architects, from their privileged position as advisers, and as the designers and directors of building works, can demand it, can to a large extent secure it, by providing for it in their specifications, and by being prepared to properly pay for it.

And though plumbers may not everywhere throughout the country be equal to the demand for very high-class work, they will be much stimulated by the desire of architects for such work. At any rate, more than any other class, more even than medical men—who have so nobly and so disinterestedly done so much for the craft, for sanitation—can the architect aid the plumber in making our homes healthy to live in.

When the hand-worker—greatly interested in his work—produces with skill and intelligence what was required of him, what was portrayed to him by the head-worker, he is ever-so-much helped by some appreciative acknowledgment, however slight, and a word of praise to the deserving—how good it is! Like mercy it is twice blessed. Gentlemen, in your works may it be your privilege to make the workers happy in their work.

HOUSE SANITATION.

THIS was the title of a short paper read on the 26th ult. by Mr. Rogers Field, B.A., at the Engineering Conference of the Institution of Civil Engineers. The paper was read before the "Waterworks, Sewerage, and Gasworks" section, and was as follows:—

"In these days, when so many small tradesmen call themselves Sanitary Engineers, to say nothing of large firms of the most different kinds, such as builders, house agents, house furnishers, general purveyors, &c., an educated civil engineer is half inclined to think that it will be best to fight shy of house-sanitation. This would, however, be quite a wrong view to take of the matter, as numerous points connected with it are pre-eminently ones for a civil engineer to deal with, besides which, in the increasingly important subject of municipal work, it is absolutely essential that the engineer should have a complete grasp of house sanitation. The question is, therefore, clearly a proper one for Members of the Institution to discuss, but all that can be done in these brief notes is to refer to the principles which govern it, and to a few of the features most interesting to engineers.

In the twenty-one years which have elapsed since the writer drew up the Uppingham Regulations for House Drainage (which were about the first ones of the kind embodied in by-laws allowed by the Local Government Board), great advances have taken place in house-sanitation. The principles which govern the question, however, remain much the same, and the advances are chiefly in the appreciation of the necessity of greater thoroughness about carrying out these principles, and in improvements as to the structural details necessary for this purpose.

The first question which suggests itself is water-supply. The guiding principle is evidently that there should be an ample supply of pure water to the house, and that the appliances for distribution should be so arranged that the water cannot be contaminated before it is used. In ordinary town houses the water is delivered to the house from the public water-supply, so that the question is chiefly one of detail as to the distribution inside the house; but many of the details involved are of the greatest importance, though there is not time to refer to them here. In houses in the country and in large institutions other considerations arise. Frequently an independent supply has to be obtained, and the possible sources of contamination are more numerous and insidious. For instance, if the water is obtained from a well, this may furnish a supply of good quality as long as only a small quantity of water is pumped, whereas if the pumping is largely increased the water may be drawn from a greater distance where sources of contamination exist. This introduces the whole question of hydrogeology, and the cone of depression in the underground water caused by pumping under various conditions. Again, if any of the water-mains or pipes are leaky and pass through contaminated ground, they may when partially or wholly emptied for any purpose sink in contamination, and thus cause a local pollution of the water-supply. This introduces the question of the various ways of ascertaining whether leakages exist in water-mains.

The next question which suggests itself is drainage. The two chief guiding principles briefly stated are:—

(1) That all foul matter directly it is produced must be rapidly and completely removed from the house.

(2) That there must never be any passage of air from the drains or waste pipes into the house.

The first principle is most important and far reaching, and goes to the root of sanitation. If carefully thought over, it will be seen that absolute compliance with this principle would involve there being no leaky drains, no polluted subsoil and no production of foul gases in the drains from decomposing organic matter. In order, however, to effect this result even approximately, the compliance with the principle must extend to every detail of the drainage and sanitary arrangements, and this involves attention to an immense number of points of which it is only possible to mention one or two.

The drainage must be carefully designed so as to be self-cleansing and readily accessible. In the case of large mansions and institutions the engineer's skill will be specially valuable about this, and will frequently produce results which would otherwise not be obtained. For instance, where there is difficulty about fall, it is quite remarkable what can be done by careful design by a hydraulic engineer, now that he has the help of self-acting flushing appliances. Moreover, it is impossible to be too particular about the construction and the testing of the drains to ensure not only that they are true and water-tight when completed, but that they will remain so. This permanence of the work is a very important question. It is now becoming more and more the practice to subject drainage to periodical examination and testing, and the experience thus gained has shown that stoneware drains, which were thoroughly sound when laid, frequently do not remain so for many years. To get over this drawback, the writer has found it advantageous to use heavy cast-iron pipes for drains instead of stoneware pipes.

All the sanitary apparatus, traps, &c., must also be self-cleansing. Formerly this was very far from being the case, and although there has been a great improvement lately, there is still not infrequently retention of foul matter in hidden parts of the apparatus requiring a minute examination and testing to detect. Many traps are also not of a self-cleansing form. Another most important point is that all pipes and apparatus should be readily accessible.

Proceeding to the second principle—that there should never be any passage of air from the drains or waste pipes into the house—this is also very far-reaching. First, there is the question of isolating the house-drains from the public sewer or outfall drain by means of a "disconnecting chamber." If careful attention is paid to various details, such as the design of the manhole, the form of trap, the rapid discharge of water from the house-fittings, &c., it will be found that, practically speaking, no retention of foul matter takes place in the trap. Next there is the question of the position of the drains, soil-pipes, and waste-pipes, which should clearly be kept outside the house wherever possible. Then there are the questions of the "disconnection" of the waste-pipes from the drains, and of the ventilation of the drains, &c., involving a number of subsidiary questions, which it is impossible even to name.

The last matter which will be referred to is the condition of the gas-pipes and fittings. This appears at first sight comparatively unimportant, but it is not so. Gas-pipes and fittings are, as a rule, more or less leaky, and allow a constant escape of gas to take place into the house. Professor Corfield has shown how slight escapes of coal-gas may cause serious outbreaks of sore throat, and the writer and other people have had similar experience. It is also not at all unusual for offensive smells to be attributed to defective drainage, which are really due to escapes of gas. The pipes and fitting should always be tested by pumping air into them, and watching the result on a pressure gauge.

In conclusion, the writer would say that on a review of the various advances which have taken place in house sanitation during the last twenty-one years, one of the most important in his opinion is the general practice which has grown up of applying searching tests to every detail of the work, and in this connexion he would specially refer to the method of testing by air under pressure, which was brought forward by Mr. Charles Hawksley at the International Health Exhibition, 1884. For soil pipes this method of testing is particularly useful."

APPLICATIONS UNDER THE 1894 LONDON BUILDING ACT.

At a recent meeting of the London County Council, the Building Act Committee reported that they had considered the undermentioned applications under the London Building Act, 1894, and had arrived at the following decisions. Those applications which have been agreed to are granted on certain conditions:—

Lines of Frontage.

Hammersmith.—That consent be given to the erection of a one-story addition to Eaton Laundry, to abut upon Hadyn Park-road, Starch Green, on the application of Messrs. Johnstone Brothers on behalf of the London and Brighton Laundries, Limited.

Bethnal Green, North-east.—That consent be given to the erection of a building over the gateway between Nos. 33 and 35, Bonner-road, on the application of Messrs. Holman and Goddham on behalf of the Rev. T. B. Stephenson.

Clapham.—That consent be given to the erection of St. Barnabas Church, North Side, Clapham Common, at the corner of Lavender Gardens, Battersea, on the further application of Messrs. W. & C. A. Basset Smith.

Deptford.—That consent be given to the erection of a projecting shop-front at No. 112, Woodpecker-road, New Cross, on the application of Mr. E. Crosse on behalf of Mr. A. Hyde.

Fulham.—That consent be given to the erection of seven houses with shops on the south side of New King's-road between Eagle's-lane and Eelbrook Pavement, on a portion of the garden of the rear of Nos. 1, 2, 5, and 6, Peterborough Villas, on the application of Mr. R. Groom on behalf of Mr. J. Nichols.

Hammersmith.—That consent be given to the erection of a one-story bar addition in front of the "British Queen" public-house, No. 77, Goldhawk-road, at the corner of Richard-street, on the application of Mr. J. H. Richardson on behalf of Mr. A. Keene.

Hampstead.—That consent be given to the erection of a two-story oriel window, at the first-floor level, in front of the Hampstead Public Baths, Finchley-road, on the application of Messrs. Spalding & Cross, on behalf of the Vestry of Hampstead.

Islington, North.—That consent be given to the erection of a one-story shop upon part of the forecourt of No. 159, Stroud Green-road, on the application of Mr. L. Pither on behalf of Mr. W. G. Swan.

Islington, North.—That consent be given to the erection of a temporary wooden show-case in the grounds of Tufnel Park Cycle School, Tufnel Park-road, on the application of Mr. H. J. Grimwade.

Islington, North.—That consent be given to the erection of a projecting shop-front at No. 96, St. John's-road, Upper Holloway, on the application of Mr. G. K. Deakin on behalf of Mr. G. Soole and Miss E. Soole.

Kensington, North.—That consent be given to the erection of a glass and iron covered way over part of the forecourt of No. 22, Pembroke-villas, on the application of Mr. M. E. Collins.

Levisham.—That consent be given to the erection of a dwelling-house on the west side of Silvermere (formerly Schieckburgh) road, at the corner of Bradgate-road, on the application of Mr. F. Witt on behalf of Messrs. Johnson & Aldridge.

Levisham.—That consent be given to the erection of eleven houses on the south side of The Retreat, Catford-road, with the flanks of the eastern and westernmost buildings in advance of the houses in Nelgarde-road and Doggett-road respectively, on the application of Mr. F. Witt on behalf of Messrs. Johnson & Aldridge.

Linehouse.—That consent be given to a glass and iron porch erected in front of the Eastern Hotel, East India-dock-road, on the application of Mr. Bruce J. Capell, on behalf of Messrs. Truman, Hanbury, Buxton & Co.

Pertham.—That consent be given to the erection of nine houses, with projecting bay windows, on the west side of Lower Park-road, of eight houses with similar bays on the south side of Commercial-road, on the site of Nos. 72, 74, 76, 78, 80, 82, 84, 86, 88, and 90, Lower Park-road, and the widening of portions of Commercial-road, Lower Park-road, and Park-row, on the further application of Messrs. Benson & Bagman on behalf of Mr. Pennack.

Strand.—That consent be given to the erection of a glass and iron pent roof over the entrance doorway to No. 3, Cleveland-row, St. James's, on the application of Mr. R. S. Wornum on behalf of Colonel F. A. Lucas.

Strand.—That consent be given to the erection of two oriel windows in front of the "Catherine Wheel" public-house, Nos. 41 and 45, Great Windmill-street, St. James's, on the application of Mr. W. M. Bruton.

Westminster.—That consent be given to the erection of a building with projecting porches and bay windows on the site of No. 54, Parliament-street, and to abut at the rear upon Cannon-row, on the further application of Mr. A. Williams on behalf of Messrs. Grundy & Co.

Woodwich.—That consent be given to the erection of fourteen new houses, and also to the proposed

frontage line of other cottages to be erected northward of those houses, on the west side of Chislehurst-lane, Eltham, on the further application of Mr. A. G. Wright on behalf of Mr. J. Bass.

Lambeth, North.—That consent be not given to the erection of a one-story addition in front of the Ship public-house, No. 171, Kennington-road, on the further application of Mr. J. C. Jackson, on behalf of Mr. W. Chicken.

Bermondsey.—That consent be not given to the erection of a building on the east side of Route-road, between Nos. 54 and 58, on the application of Messrs. Mark W. King & Sons on behalf of Mr. T. J. Lipton.

Bow and Bromley.—That consent be not given to the construction and erection of a temporary wood and iron mission-hall, with projecting porch, on a plot of ground adjoining No. 148, Usher-road, Old Ford-road, on the application of Messrs. Holman and Goodham, on behalf of the "Out and Out" mission.

Brixton.—That consent be not given to the erection of a new building on the site of a house with yard at rear on the west side of Carlton-grove, Brixton-road, to abut upon Brighton-terrace, on the application of Messrs. Wyllson & Long, on behalf of Mr. Burney.

Clapham.—That consent be not given to the erection of three houses with bay windows in North-side, Clapham-common, at the corner of Judburgh-road, Battersea, on the further application of Mr. J. Stanbury.

Dulwich.—That consent be not given to the erection of a one-story addition to the office at Westwood House, No. 47, East Dulwich-road, Goose-green, on the application of Mr. F. A. Powell, on behalf of Messrs. Buxley & Co., Limited.

Dulwich.—That consent be not given to the erection of a building, with a one-story projection on the ground floor, on the north side of Lordship-lane, at the corner of Bassano-street, East Dulwich, on the application of Mr. E. J. Stevens on behalf of Messrs. Golden.

Greenwich.—That consent be not given to the erection of three houses with shops on the north-east side of Blackwall-lane, at the corner of Grenfell-street, East Greenwich, on the application of Mr. C. J. Heryet.

Greenwich.—That consent be not given to the erection of dwelling-houses on the north side of Ashburnham-road, on the further application of Mr. W. T. Sawyer on behalf of the President and Governors of Queen Elizabeth's College, Greenwich.

Hackney, Central.—That consent be not given to the erection of a house with shop on the north side of Blackstone-road, London-fields, to flank upon Lansdowne-road, on the further application of Mr. W. H. Adams.

Hackney, North.—That consent be not given to the erection of two two-story bay windows in front of No. 250, Green-lanes, Stoke Newington, on the application of Mr. F. W. Pearce on behalf of Mr. G. Hand.

Holborn.—That consent be not given to the erection of porches, bay windows, turrets, balconies and other projections, at the Hotel Russell, on the east side of Russell-square, St. Giles-in-the-Fields, between Bernard-street and Guildford-street, abutting at the rear upon The Colonnade, on the application of Mr. C. Fitzroy Doll on behalf of Messrs. H. Frederick and Co.

Horton.—That consent be not given to the erection of a building on the site of five houses, with forecourts, on the east side of Clifton-street, between Worship-street, and No. 9, Holywell-row, Shoreditch, on the application of Mr. J. Grove Johnson.

Kensington, South.—That consent be not given to the erection of residential flats to be known as Addison-gardens-mansions, on the east side of Addison-road, on the site of No. 1, on the joint application of Messrs. J. N. Mason & Co., on behalf of Mr. E. Collins, and Messrs. Garrard, James & Wolfe, on behalf of Mr. F. Radford.

Lewisham.—That consent be not given to the erection of two houses on the north side of Bradgate-road, Catford-road, and of two other houses on the south side of a road skirting Ladywell recreation-ground, such four houses to flank upon Doggett-road and Silvermere-road respectively, on the application of Mr. F. Witt on behalf of Messrs. Johnson & Aldridge.

Norwood.—That consent be not given to the erection of houses with shops on the west side of Norwood-road, between Ullswater-street and Harpenden-street, on the further application of Mr. H. G. Bruce on behalf of Mr. H. Fryor.

Paddington, South.—That consent be not given to the erection of an oriel window on the north side of a house on the east side of Bark-place, at the corner of Caroline-place, on the application of Mr. W. Rolfe on behalf of Mr. C. F. Kealey.

Paddington, South.—That consent be not given to the erection of a glass and iron covered way over part of the footway in front of the Norfolk-square Hotel, London-street, on the application of Messrs. Treadwell & Martin, on behalf of Mr. R. Baker.

St. George, Hanover-square.—That consent be not given to the enclosure of the sides of the open portico at No. 21, Chester-square, on the application of Messrs. Hailey & Co. on behalf of Mr. T. Frampton.

Wandsworth.—That consent be not given to the

erection of shop-fronts to Nos. 206 and 208, Upper Richmond-road, Putney, on the application of Mr. T. Jones.

Strand.—That no order be made with respect to the application of Mr. W. G. R. Sprague, on behalf of Mrs. C. Wilmot, for the consent of the Council to the retention of two glass and iron shelters erected over the public way in front of the Olympic Theatre, Wych-street, Strand.

Width of Way.

Brixton.—That consent be given to the erection of a two-story building on part of the yard at the rear of the "Plough" public-house, No. 66, Coldharbour-lane, at less than the prescribed distance from the centre of Denmark-road, on the application of Messrs. Eedle & Meyers on behalf of Mr. C. M. Harris.

Hinbury, Central.—That consent be given to the erection of No. 3, Jerusalem-court, St. John-street, Clerkenwell, on the application of Mr. A. Walke.

Hackney, Central.—That consent be given to the erection of a three-story workshop at the rear of No. 383, Kingsland-road, to abut upon the east side of Derby-road, on the application (further considered) of Mr. R. Wakely.

Lambeth, North.—That consent be given to the erection of buildings at the rear of the "Ship" public-house (No. 171) and No. 169, Kennington-road, to abut upon Ship-lane, on the application of Mr. J. C. Jackson on behalf of Mr. W. Chicken.

Newington, West.—That consent be given to the erection of an addition at the rear of the "Artichoke" public-house, No. 55, Newington-caneway, to abut upon Devonshire-street at less than the prescribed distance from the centre of the road, on the application of Mr. W. J. Ryland on behalf of Mr. E. Colvin.

St. George-in-the-East.—That consent be given to the erection of the Passmore Edwards Public Library on the site of Nos. 234, 236, and 238, Cable-street, with the flank of the new building abutting upon Prospect-place and the forecourt boundary next Cable-street, at less than the prescribed distance from the centre of those streets respectively, on the application of Mr. Maurice B. Adams on behalf of the Library Commissioners for St. George-in-the-East.

Strand.—That consent be given to the erection of a theatre on the east side of Charing Cross-road, St. Martin-in-the-Fields, between the two western entrances to St. Martin's-court, and the widening of portions of that court, on the application of Mr. W. G. R. Sprague on behalf of Mr. Charles Wyndham.

Bermondsey.—That consent be not given to the rebuilding of the "Samson Castle" public-house, No. 211, Grange-road, to abut upon Grigg's-place, on the application of Mr. T. H. Smith, on behalf of Mr. Alderman J. C. Bell.

Open Space about Buildings.

Hampstead.—That consent be given to the erection of a four-story turret at the south-east angle of a block of residential flats on the north side of Finchley-road, at the corner of Langland-gardens, on the further application of Messrs. Bochmer & Gibbs, on behalf of Mr. E. A. Cave.

Deviation from Certified Plan.

Marylebone, East.—That sanction be given to certain deviations from the plan certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed erection of a four-story dwelling-house on the site of a stable and portion of a garden at the rear of No. 147, Harley-street, at the corner of Marylebone-road, on the further application of Messrs. Davis & Emanuel, on behalf of Mr. Barrow Emanuel.

Line of Fronts and Width of Way.

Fulham.—That consent be given to the rebuilding of the "Hand and Flower" public-house, No. 67, King's-road, with the flank abutting upon Edith-row, on the further application of Messrs. Gardiner & Theobald on behalf of Mr. A. W. Rice.

Hammersmith.—That consent be given to the erection of buildings with projecting fifth pilasters, bay window, balcony and porch, at No. 12, Great George-street, at the corner of Little George-street, the second application (further considered) of Messrs. A. Waterhouse & Son on behalf of the Surveyors' Institution.

Brixton.—That consent be not given to the erection of shops upon the forecourts of Nos. 18, 20, 22, 24, 26, and 28, Coldharbour-lane, on the application of Mr. J. T. Holmes on behalf of Mr. H. Wood and Mr. J. L. Purdy.

Clapham.—That consent be not given to the erection of a two-story addition to St. George's Schools, New-road, Battersea, on the application of Messrs. Chambers & Deves on behalf of the trustees of the schools.

Norwood.—That consent be not given to the erection of a house with shop on the north side of Durham-road, at the corner of Woodcote-place, West Norwood, on the application of Messrs. Wallis & Smith on behalf of Mr. T. J. Wallis. That Messrs. Wallis & Smith be informed, however, that the Council will be prepared to consider an application for consent to the erection of the proposed building if accompanied by an amended plan, showing the ground in front of the main portion of the building,

in each of the streets referred to as to be dedicated to the use of the public.

Wandsworth.—That consent be not given to the frontage of a two-story addition, in course of erection at a laundry building on the south side of Putney Bridge-road, and at less than the prescribed distance from the centre of Oxford-road, on the application of Mr. R. Avis.

Formation of Streets.

Clapham.—That an order be sealed and issued to Mr. C. J. Bentley, sanctioning the formation or laying out of a street, 40 ft. wide, for carriage traffic to lead out of the south side of Nightingale-lane into Temperley-road, Wandsworth, on his further application to the Council on behalf of himself and Mr. J. C. Hill. That the name Blandfields-street be approved for the new street.

Lewisham.—That an order be sealed and issued to Mr. W. Hunt, refusing to sanction the formation or laying out for carriage traffic of a street, varying in width from 10 to 38 ft., to lead out of the north side of Beacon-road, Hither Green, on his application to the Council on behalf of Mr. J. Brown.

Lewisham.—That an order be sealed and issued to Mr. H. Woodham, refusing to sanction the formation or laying out for carriage traffic of a street, 40 ft. wide, to lead out of the south-west side of Brownhill-road, Catford, on his application to the Council.

Wandsworth.—That an order be sealed and issued to Mr. A. Wellings, refusing to sanction the formation or laying out for carriage traffic of new streets, each 40 ft. wide, on the Furzedown Park estate, Mitcham-lane, Streatham, on his application to the Council.

Height of Buildings.

Southwark, East.—That consent be not given to the erection of a block of buildings on the south side of Lavington-street, to exceed in height the width of the street, on the application of Mr. Herbert O. Ellis, on behalf of Messrs. Harmsworth Brothers, Limited, as no reason is seen why the rules of the London Building Act, 1894, restricting the height of certain buildings, should not in this case be strictly observed.

Lines of Frontage.

Chelsea.—That consent be given to the erection of a porch in front of a block of buildings to be known as Chelsea-court, Chelsea Embankment, on the application of Mr. Delissa Joseph on behalf of Mr. H. Lovatt.

Lewisham.—That consent be given to the erection of six houses, with projecting bay windows, on the south side of Lewisham High-road, between Sandrock-road and a footpath leading to Hilly Fields, on the application of Mr. W. A. Finch on behalf of Mr. E. T. Bagnall.

Islington, East.—That consent be not given to the erection of a block of residential flats on the north side of Ronald's-road, Highbury, on part of the garden at the rear of No. 1, Highbury-terrace, on the application of Mr. G. D. Martin on behalf of Mr. T. H. Martin.

Hackney, North.—That consent be given to the erection of an addition to the present one-story building at the rear of No. 108, Evering-road, Stoke Newington, abutting upon Mauv-road, on the application (further considered) of Mr. T. F. Dobell on behalf of Mr. T. Young.

Hackney, South.—That consent be given to the erection of houses on the east side of High-road, Upper Clapton, on the application of Mr. G. R. Woodruff.

Hackney, North.—That consent be given to the erection of one-story additions at the rear of No. 64, Church-street, Stoke Newington, to abut upon Fleetwood-street, on the application of Mr. S. Goodall on behalf of Mr. A. Woodgate.

Peckham.—That consent be given to the erection of a covered sideway at No. 217, Peckham Rye, to abut upon Rye Hill Park, on the application of Mr. B. W. Sheffield on behalf of Captain W. T. C. Brewer, R.N.

St. George, Hanover-square.—That consent be given to the erection of an oriel window over the gateway to a stable-yard on the south side of Lambeth-mews, Mayfair, on the application of Mr. W. E. MacCarthy on behalf of the Marquess of Lansdowne.

Hampstead.—That consent be given to the erection of two one-story coal-offices on the west side of Finchley-road, adjoining the Finchley-road Station of the London and North-Western Railway Company, on the application (further considered) of Mr. A. Whitehaw, on behalf of the Company.

Hendon.—That consent be not given to the erection of a one-story addition in front of the "North Briton" public-house, No. 10, New North-road, Shoreditch, on the application (further considered) of Messrs. Newton & Keene on behalf of Mr. W. Edwards.

Dulwich.—That consent be not given to the erection of a pair of villa residences on the east side of Herne Hill, and the erection of houses with shops on the north side of Half Moon-lane, and on the east side of Herne Hill, on the application of Mr. C. Barry on behalf of Mr. G. A. Young.

Holborn.—That consent be not given to the erection of a bay window with projecting balcony at the first floor level, in front of No. 27, Russell-square, Bloomsbury, on the application of Mr. J. Macvicar Anderson; as having regard to the

objections raised by the tenant of the adjoining house southward, it is considered that the bay window should not exceed in extent the limit specified in Section 73, Rule 5, of the London Building Act, 1894.

Paddington, South.—That consent be given to the rebuilding of Nos. 123, 125, and 127, Queen's-road, Bayswater, with bay windows in front of the new buildings, on the further application of Mr. C. G. Maylard on behalf of Mr. H. Gibbon.

Width of Way and Height of Building.
Strand.—That consent be given to the erection of a building on the south side of Bream's-buildings, Chancery-lane, Holborn, exceeding in height the width of the street, on the application of Mr. R. M. Roe on behalf of the Bishopric of Chichester estate and Mr. C. F. Crowder.

Lines of Fronts and Width of Way.
Hackney, South.—That consent be given to the erection of an additional story upon the present one-story shops at Nos. 120 and 122, Morning-lane, to flank upon Back-lane, on the further application of Mr. J. Hamilton on behalf of Mr. E. Stevens.

Hickney, North.—That consent be given to the frontage of nine houses with bay-windows on the west side of Park-lane, Stoke Newington, and the widening of a portion of Aden-terrace, on the further application of Mr. T. Pryor.

Kennington.—That consent be given to the erection of a block of residential chambers on the site of No. 50, Drayton-gardens, on the further application of Mr. J. Norton on behalf of Mr. T. Boyce.

Line of Fronts and Conversion of Buildings.
Southwark, West.—(a) That consent be given to the erection of a residential addition upon the forecourt of No. 42, St. George's-road, St. George-the-Martyr, on the application of Mr. J. Stone.
(b) That so much of the application as relates to the other alterations proposed to be carried out at No. 42, St. George's-road, and the conversion of a portion of the building into a stable be not acceded to, as upon sanitary grounds there is grave objection to the proposed stable.

Means of Escape from Top of High Buildings.
Chelsea.—That the Council, in the exercise of its powers under Section 63 of the London Building Act, 1894, do grant a certificate in respect of the means of escape, in a case of fire, proposed to be provided for the persons dwelling or employed in the fifth floor of a block of residential flats with shops on the ground floor, on the North side of Basil-street, Hans-road, Brompton-road, on the application of Mr. C. W. Stephens on behalf of Harrod's Stores, Limited.

Width of Way.
Hampstead.—That consent be given to the erection of a house on the south-west side of Rosslyn Hill, flanking upon Shepherd's-walk, on the application of Mr. J. Gibbons Sankey on behalf of Mr. S. Wales.

Open Space about Buildings.
Dulwich.—That the Council, in the exercise of its powers under Part V. of the London Building Act, 1894, do not permit the erection of a sawmill with workshop over, and of a nine-stall stable with forage store above, in a yard at the rear of Nos. 9, 10, and 11, Provincial-terrace, Green-lanes, Penge, without an open space at the rear of the new buildings, on the application of Mr. Horace E. Davey on behalf of Mr. F. H. Leader.

Formation of Streets.
Fulham.—That an order be sealed and issued to Mr. W. C. Poole, refusing to sanction the formation or laying out for carriage traffic of new streets, each 40 ft. wide, on the Sands-end estate, Townmead-road, on his further application to the Council on behalf of Mr. J. Wilson.

Dulwich.—That an order be sealed and issued to Mr. A. Keen, refusing to sanction the formation or laying out for carriage traffic of a new street, 40 ft. wide, to lead out of the east side of Oakhurst-grove into East Dulwich-road, on his application to the Council on behalf of Mr. W. B. Chamberlin and Miss S. E. Chamberlin.

Wandsworth.—That an order be sealed and issued to Mr. S. G. Warner, refusing to sanction the formation or laying out for carriage traffic of new streets, each 40 ft. wide, on the Spencer Lodge Estate, between Roehampton-lane and High-street, Roehampton, on his further application to the Council.

Wandsworth.—That consent be given to the erection of sixteen semi-detached houses on the north side of Waverree-road, Streatham Hill, on the application of Mr. F. Nesbitt Kemp on behalf of Mrs. Wyatt Coffey.

Recommendations marked † are contrary to the views of the Local Authority.

SHEFFIELD TOWN HALL.—In connexion with this building, which, as we have already stated, was formally opened on the 21st ult., we should mention that the successful carrying out of the work has been very much assisted by the ability and attention of the clerk of works, Mr. T. R. Scales, of Liverpool, who has acted in that capacity during the entire progress of the building. Mr. Brightmore, the mason's foreman, also deserves mention.

Correspondence.

To the Editor of THE BUILDER.

FORM OF BUILDING AGREEMENT.

SIR,—The attention of the Council of the Institute of Builders has been called to a letter from the Royal Institute of British Architects in your issue of the 22nd ult., under the above heading, and I am instructed to request that you will be good enough to allow this letter, giving the views of the Institute of Builders, to appear in your next issue.

In the year 1890, the Royal Institute of British Architects desired to arrange with this Institute a new form of contract to supersede the form settled between the architects and builders in 1871, and which has since that time been in constant use.

The builders were not anxious for any alteration in the old form, as it was well understood by both architects and builders; but, at the instance of the architects, they discussed the form of contract submitted to them, and the negotiations extended over a period of some four or five years.

This Institute, with a desire to meet the views of the architects, reluctantly assented to adopt the phraseology upon which the architects laid great stress in various portions of the contract, expressly on the condition that the Arbitration Clause should obtain conditions favourable to builders and unfavourable to the employers. Their desire throughout was to secure a fair and equitable contract as between the parties, leaving the architect to take his proper responsibility, and in such a form as to minimise the chance of litigation and to protect themselves when necessary against arbitrary and unreasonable conduct, possibly on the part of an architect or his client, the employer, or the work.

When the time came for settling the Arbitration Clause this Institute were advised by Sir Richard Webster and Mr. A. A. Hudson that the form of Arbitration Clause which the architects, after long discussion, required the builders to accept would not give the builders the protection they required, and that they should, therefore, decline to adopt it. The architects, however, were equally determined not to adopt the Arbitration Clause in the form the builders were advised was necessary for their protection, and thereupon the negotiations were broken off.

The 1871 conditions of contracts having been agreed between the Royal Institute of British Architects and the Builders Society, the Council of this Institute consider that they are entitled to refer to them as the only set of conditions upon which an agreement has ever been come to. It is not quite fair to suggest that the objections made on behalf of this Institute were prompted solely by their desire to obtain conditions favourable to builders and unfavourable to the employers. Their desire throughout was to secure a fair and equitable contract as between the parties, leaving the architect to take his proper responsibility, and in such a form as to minimise the chance of litigation and to protect themselves when necessary against arbitrary and unreasonable conduct, possibly on the part of an architect or his client, the employer, or the work.

Seeing that the Judges of the High Court have so frequently commented on the stringency and unfairness of building contracts, and that a builder's capital and reputation are often at stake, it is only right that the builder should endeavour to insist upon a form of contract which will safeguard his interests.

When the new form of contract was issued by the Royal Institute of British Architects the Council of this Institute received many inquiries on the subject; and a circular was issued explaining the position and advising members to continue to use the 1871 conditions, which have since been reprinted with slight verbal amendments rendered necessary by recent legislation.

A short form of agreement similar in terms to that adopted by the Royal Institute of British Architects has, in order to insure uniformity been printed and prefixed to the old 1871 conditions, so as to make it a complete document, and, in this form, it is now being extensively used.

R. S. HENSHAW,
Secretary, Institute of Builders.

WATER-CLOSET PLUMBING.

SIR,—I keenly appreciate the contributions of Mr. Hellyer to sanitary science, but think that either certain facts have escaped his notice, or his advocacy of the valve closet blinds him to their existence. To begin with, every valve closet must have an overflow, and in the face of this fact it is futile to insist on the point that the water in the basin is disconnected from the air in the soil pipe, for the water in the overflow is no better off than the water in the basin of a "wash down." Whatever make of closet we discuss, we must come back to the fact that one part or another depends purely and simply on the water seal of a trap.

Though small in size, the overflow and its trap are particularly objectionable from the fact that there is no means of cleaning them. Where there is illness in a house the consequences of this may be serious; as, for instance, when a nurse empties the contents of a sputum into the basin and the overflow becomes fouled with tubercular sputum before she has time to flush the apparatus. Sputum is not easily disinfected and, once it adheres, requires force to remove it.

It has occasionally been my lot to visit a number of occupied houses consecutively, and I generally find that where the valve closet prevails about half

the basins have no water in them, whereas in old districts where the pan closet still survives, the latter is almost invariably "doing its best"; and this has led me to think that when the bad old pan closet was abolished for new work, it was dropped rather on account of the deficiencies of the badly designed container and filthy D trap than for any fault of the pan *per se*. Furthermore, I am of opinion that if a specialist like Mr. Hellyer would set himself to design a closet with a pan valve instead of a hermetically sealing valve, and with the advantages of a modern trap and new form of container of the valve chamber pattern, he would produce something better than any closet now on the market; for, as we cannot avoid the water seal altogether, it would be much better to have the latter open to view, while at the same time we should gain immensely by the abolition of the overflow, and by having a valve which would not be liable to fail through the adhesion of a particle of paper.

With the window closed, or nearly closed, and a rapid movement of the water-closet door, I have succeeded in partially untrapping a valve closet overflow, and in some cases, I have no doubt, it may be absolutely untrapped through the air of the water-closet becoming for a moment under high pressure. This may apply to other traps, but is an additional reason for having the water seal in sight.

I am aware that the objections I urge may be largely overcome by special instructions as to usage, but what is wanted is a design of closet which, in the hands of average workmanship, can be relied on to give good results when used by inexperienced and careless people.

NORMAN WRIGHT.

Boscombe, May 31, 1897.

The Student's Column.

SPECIFICATIONS.—XXIII.

CONDITIONS OF CONTRACT (continued).

Art. 16.—The building from the commencement of the works to the completion of the same is to be under the contractors' charge, and they are to be responsible for and make good all injuries or damages which may occur to the works or to any person or things occasioned by fire, or by causes over which the contractors shall have control. And they are to hold the employer indemnified against any claims for injuries to persons or property which may happen from any neglect, default, want of proper care, or misconduct on the part of the contractors, or of any one in their employ. The contractors shall also be responsible for all injuries caused to the works by lightning, frost, or other interference of weather, and shall make good and re-instate all damage caused by the same.

Art. 17.—The contractors are to insure, in an office approved by the architect, the buildings and works against loss by fire, in the joint names of the employer and contractors, for the full value of the works executed. And they shall, upon request, deposit with the architect the policy and receipts for the premiums paid for such insurance. In case of neglect of the contractors to insure or to deposit with the architect the policy and receipts for the premiums, the employer shall have power to insure and deduct the amount of premiums from the amount payable to the contractors. All moneys received under any such policies shall be applied in or towards rebuilding or repairation of the building destroyed or injured, and shall be paid to the contractors by instalments on the certificates of the architect when such rebuilding or repairation of the buildings shall have been carried out. In the event of any damage by fire the architect shall determine and set out in writing the extension of time which the contractors shall be allowed for carrying out the rebuilding or repairation of the premises.

Art. 18.—The employer shall at all times have free access to the works and shall have full power to send upon the premises any other person or persons to execute any works not included in this contract, and the architect shall have power to send upon the premises any other person or persons he may select to carry out any works for which provisional sums are included in the specification. And the contractors are to afford every reasonable facility during working hours to such person or persons. And the contractors are to be responsible for any damage that may happen or to any work executed by such person or persons in the absence of such person or persons when such works may have been completed.

Art. 19.—If the contractors shall make default in completing the works within the time allowed by clause No. 2, or within any extension of time allowed by the architect for the completion of

the works, then the contractors shall pay or allow to the employer, as and by way of liquidated and agreed damages, the sum of £ per week for each and every week during which they shall be so in default until the whole works shall be so completed, provided that the architect shall certify, in writing, that the works could have been completed by the said date, or within the said extended time.

No. 20.—When the value of the works executed and fixed, and not included in any former certificate, shall from time to time amount to the sum of £ , the contractors shall be entitled, upon the certificate of the architect, to receive payment at the rate of 75 per cent. upon such value, until the difference between such percentage and such value shall amount to a sum equal to per cent. upon the amount of the contract, after which time the contractors shall be entitled, on the certificate of the architect, to receive payment in full for all works executed and fixed, and not included in any former payment. And when the works shall be completed, or possession of the building shall have been given to the employer, the contractors shall be entitled to receive one-half of the amount remaining due in the opinion of the architect, and the contractors shall be entitled to receive the balance of any moneys due and payable to them under the contract, within months from the completion of the works, or from the date of giving up possession to the employer. A certificate of the architect, or award of a referee or referees or umpire, showing the amount of the final balance due to the contractors, is to be conclusive evidence of the completion of the works. But no certificate is to relieve the contractors from their liability to amend and make good any defects or other faults as provided in these conditions.

No. 21.—If the employer shall make default in paying any moneys to which the contractors may become entitled for days after the amount thereof shall have been certified by the architect or determined by arbitration, or if the works be delayed for months by or under any proceedings by any other parties against the employer, the contractors are to be at liberty to suspend the works and to determine the contract by notice in writing to the architect, and to recover from the employer payment for all works executed, and for any loss upon goods or materials supplied, purchased, or prepared for the works, whether they are delivered on the ground or not.

No. 22.—The amounts included in the specification as prime cost amounts are to mean the sums paid after deduction of all trade discounts, but not deducting bona-fide cash discount. In the event of such provisional sums not being expended, or being only partially expended, the contractors shall only be entitled to receive a proportionate amount of their profit on such provisional sums based upon the profits shown in the prices included in the original and deposited bills of quantities. The contractors shall provide and erect all necessary scaffolding and the attendance of labourers and craftsmen, as may be necessary for the purposes of preparation or cutting away for or making good after the persons employed by the architect in the expenditure of such provisional sums.

No. 23.—In the event of any dispute or difference arising between the employer or the architect on his behalf and the contractors as to the amount that ought to be added to or deducted from the contract sum by reason of any additions, omissions, or variations, or in respect of the amounts of any certificate, or of an allowance of extra time for non-completion of the contract; or as to any other matter or thing arising under or out of this contract, except as to matters left to the sole decision or requisition of the architect by the specification or these conditions, then such dispute or difference shall be referred from time to time without any suit-at-law or equity to the arbitration and final decision of architect. Or in the event of his death, or unwillingness or inability to act, then of an architect, being a Fellow of the Royal Institute of British Architects, to be appointed on request of either party by the President, at the time being, of the Royal Institute of British Architects, and the award of such arbitrator shall be final and binding on all parties. And the award of such arbitrator shall be equivalent to a certificate of the architect, and the contractor shall be paid accordingly.

No. 24.—The costs of and incidental to any such reference shall be in the discretion of the

arbitrator, whose decision shall be final and binding upon all parties without any power of appeal, and this submission may be made a rule of any division of the High Court of Justice upon the application of either party.

To complete the documents forming the contract, and in addition to the drawings, specification, and conditions, there should also be a short agreement, a form for which has been prepared by the Institute, or it may be in some such form as follows:—

This Agreement, made and entered into this day of , between , of , hereinafter called the employer, of the one part, and , of , hereinafter called the contractors, of the other part; *Witnesseth* that for and in consideration of the sum of £ being paid by the said employer to the said contractors the said contractors hereby agree to carry out and perform all the necessary works required in the erection of on a site situate , and more particularly and fully shown and described in the drawings numbered to , and in the specification prepared by , the architect referred to in such specification. And the said contractors further agree to abide by and be satisfied with the conditions of contract appended to such specification, and to carry out the whole of such works in accordance with such conditions, and to the satisfaction of the said architect. And the said employer agrees to pay to the said contractors the sum of money hereinbefore mentioned, when such works shall have been carried out, and shall have been certified by the said architect to have been completed in accordance with such conditions of contract, and to his satisfaction. *As witness* the hands of the said parties this day of Signed in the presence of

OBITUARY.

M. FRANCAIS.—This well-known French landscape-painter, one of the most eminent of modern artists, has just died at the age of eighty-three. Francais was born at Plombières in 1814, in very humble circumstances, and began life as a shop-boy, but subsequently found his way to the atelier of Gigoux, and afterwards studied under Corot. He began his career as a portrait painter, but subsequently devoted himself almost entirely to landscape combined with groups of figures. He received medals in various exhibitions even before he reached the height of his reputation, which may be said to have culminated with the exhibition of "Daphnis et Chloe" in 1872; the picture is now in the Luxembourg Museum. In 1890 he received the "Médaille d'Honneur" at the Salon, the first time it had ever been given to a landscape painter. Among his principal works may be named "Macbeth" (1838), "Jardin Antique" (1841), "Saint-Cloud," in collaboration with Meissonier (1846); "Le Baptême du Christ," and "Adam et Eve chassés de Paradis" (in the church of La Trinité); and numerous illustrations for Tasso, the Marianne, and other poets. He continued the practice of his art almost to the last moment, having this year exhibited two works at the Salon, "Les Etangs de Cernay" and a scene in the Vosges. He was the last representative of the old school of French painting of the earlier half of the century, and his name fills an important place in the history of modern French art.

MR. CLEMENT MUNDAY.—The death of Mr. Clement Munday, eldest son of the senior partner in the firm of G. Munday & Sons, Trinity-square, E.C., took place on the 29th ult., at his residence at Beckenham. The deceased was a partner in the firm, with which he had been actively connected for twenty-seven years.

GENERAL BUILDING NEWS.

THE ROYAL LONDON OPHTHALMIC HOSPITAL.—The new buildings now being erected for the work of this hospital, so long carried on at Moorfields, occupy a site more than twice the extent of the present one, having frontages to City-road, Caynton-street and Peckers-street. The new hospital will provide accommodation for 154 beds, with a very spacious and complete out-patient department. The whole of the latter department is on the ground floor, and is so arranged that patients in no case cross each other, and the access from one part to the other is made as simple as possible, a point of the utmost importance where the majority of the patients are more or less blind. The out-patient department is, as far as possible, separated from the rest of the hospital. A separate system of warming and ventilation has been devised for the out-patient department, and is being carried out by Messrs. Ashwell & Nesbitt. It is a combination of propulsion and extraction, the motive power in each case being provided by water motors supplied by the

Hydraulic Power Company mains. The building is being erected by Messrs. Grover & Sons, the fire-proof floors being supplied by Messrs. Fawcett & Co., the plumbing work by Messrs. Dent & Hellyer, and the lifts by the Otis Elevator Company. The plans have been prepared by Messrs. Young & Hall, and Mr. C. K. Bedells, Surveyor to the hospital, is associated with Mr. Keith Young as joint architect.

WESTMINSTER THEOLOGICAL COLLEGE, CAMBRIDGE.—The foundation-stone of the Westminster Theological College, Cambridge, was laid on the 25th ult. The architect is Mr. H. T. Hare. An illustration and a short description of the building appeared in our issue for May 15.

NEW CHAPEL, BRIERLEY HILL, STAFFS.—The foundation stone for the New Primitive Methodist Chapel to be erected here was laid on Monday, the 24th ult. The building is planned all on one floor, with the nave floor on a sloping plane and the choir elevated at the rear of the rostrum and communion. At the side of the choir is the minister's vestry, and a covered way therefrom leads to the existing church, which will be used hereafter as a Sunday School. The interior of the church will be finished in plaster work with a wood dado, the seating to be executed in pitch pine slightly stained, the roof work left clean from the plane and varnished, and the principals to be stained green. The exterior is to be executed in Ruabon bricks and terra-cotta. The architects are Messrs. Hickton & Farmer, of Walsall.

THEATRE OF VARIETIES, DALSTON.—A theatre of varieties is to be erected at Dalston, the architects being Messrs. Wylson & Long. The builders will be Messrs. Kirk & Kirk, whose tender of 14,500*l.* has been accepted.

CHURCH SCHOOLS, ST. JOHN THE DIVINE, CLAPHAM RISE.—At a recent meeting of the Building Committee for the schools, it was decided to rebuild the boys' and girls' school on a new corner site in Union-road and Baskett-street as a Jubilee commemoration. Mr. Philip A. Robson, of Westminster, was instructed to prepare plans of a simple character at the earliest date possible.

NEW PROMENADE, PENZANCE.—The new promenade will be completed and opened in July. It consists of a 3½ in. *in situ* paving, and is of Penlee Elvan stone. The contractor is Mr. James Runnells, of Penzance, and Mr. White, of Plymouth, is the clerk of works. Mr. S. Smith is the general foreman. The engineer is Mr. G. H. Small, of Penzance.

BUSINESS PREMISES, ABERDEEN.—New premises are to be erected in Union-street, on the west side of St. Catherine's Wynd, Aberdeen, for Messrs. Sangster & Henderson, drapers. The block will be five stories high, in addition to basement and attics, and communication between all the floors will be afforded by a lift, in addition to staircases. The building was designed by Mr. R. G. Wilson, architect, and the contractors are—messrs. Messrs. Pringle & Slessor; carpenters, Messrs. Watt & Clark; slater, Mr. James Wilson; plasterer, Mr. George Gibb; painter and glazier work, Messrs. J. Garvie & Sons; ironwork, Messrs. McKinnon & Co.

OFFICES, SOUTH MARKET-STREET, ABERDEEN.—New offices have been erected in South Market-street, Aberdeen, for the Seaton Brick and Tile Company. The architects are Messrs. Ellis & Wilson, Aberdeen, and Messrs. J. & J. Ross, Aberdeen, are contractors for the mason work.

PROPOSED ALHAMBRA THEATRE, BLACKPOOL.—It is proposed to erect at Blackpool a new Alhambra, the architect being Messrs. Wylson & Long, London. The theatre is to accommodate 3,000 persons. The circus is to hold 2,000 persons, and the ballroom will be 136 ft. by 69 ft. The cost of the new buildings, furnishing, &c., is expected to amount to 100,000*l.*

HOTEL, BELLE-VUE, DUNBAR.—This building has just been erected at Dunbar. The hotel stands in about 2½ acres of ground. Designed by Messrs. Dunn & Findlay, architects, Edinburgh, the building, which has a frontage of 120 ft., is Scottish Baronial in style, the front being harled and faced with Dumfries stone. The main dining-room, furnished in old oak, will be capable of accommodating about 100 persons, apart from a smaller dining-room intended for day visitors particularly. A feature has also been made of the ladies' drawing-rooms, which is furnished in Chipendale. Apart from five or six separate suites of rooms, some of them on the ground floor, the house will contain fifty bedrooms.

WESLEYAN CHAPEL, MADRON, CORNWALL.—A new Wesleyan Chapel is being erected at Madron. The new chapel will occupy the old site at Wesley Rock. At a cost of £1,800, and according to plans drawn by Mr. J. Wills, of Derby, a building to hold 380 on the ground floor will be raised, 70 ft. long by 54 ft. There will be four entrances.

BOARD SCHOOL, SUMMIT, LANCASHIRE.—This school has just been opened. It takes the place of the old Wesleyan School. Messrs. Preston and Dryland were the contractors, and Messrs. Butterworth and Duncan the architects. The school has been planned as a central day school, to accommodate 425 scholars; but at present provision has been made for only 245 scholars. These will be accommodated as follow:—90 in what will become the central hall, but is now the principal school-room; two classrooms for 48 scholars each, and an infants' room for 60 scholars.

BAPTIST CHAPEL, WIMBLEDON.—The memorial stone has just been laid of a new Baptist chapel, in the Queen's-road, Wimbledon. The chapel has been erected from designs by Mr. John Willis, of Derby, and is being built by Mr. D. Stewart, of Wallington. It will be 78 ft. long by 41 ft. 6 in. wide, with 12 ft. additional space for organ chamber and orchestra. Light galleries are to be constructed at one end and on either side, and accommodation will be provided for 770 adults, or a mixed congregation of 1,020 persons. Two vestries will be built at the rear with lavatories, &c., and heating chamber under. The glazing throughout is to be in clamber glass. The baptistry will be lined with marble. The church will be connected with the present building both in the front and rear, so that children can pass from the school-room to their place in the church under cover. The heating will be effected by means of hot water pipes. The total cost of the work is 4,750l.

MEDICAL SCHOOL BUILDINGS, GUY'S HOSPITAL, LONDON.—The Prince of Wales visiting Guy's Hospital on the 26th ult. for the purpose of opening the new medical school buildings. The entire building is designed to provide under one roof all the accommodation required by the medical school, with the exception of the chemical and physical, public health, and bacteriological laboratories recently erected in the building designed for the buildings. The part of the building opened on the 26th forms about one-third of the whole structure, and consists of the three lower floors of the south or left wing. The lowest floor is really a half-basement. Descending a short flight of steps, one reaches a corridor running the length of the building. On the left is the lecture room, and opposite to it the lecturers' entrance to the theatre. In the rear is the theatre, the task set before the architect, Mr. J. H. T. Woodd, was to provide a theatre in which an ordinary lecture audience of 100 should be compactly arranged, and in which, on rare occasions, 400 or 500 persons could be comfortably accommodated. This has been practically accomplished by the provision of a gallery, the seating accommodation of which falls not far short of that afforded by the main auditorium, and which, being supported without pillars, does not interfere in any way with the comfort and view of those sitting beneath it. The space beneath the upper tiers of seats has been utilised to provide three dark lecture rooms. The first of these is designed for the reception of the spectrophotometer, polarimeter, and spectroscopy, for the use of those engaged in chemical work. The other two rooms are intended for galvanometric and photographic work. In the basement are two class rooms, each of which will accommodate about 40 students in tutorial classes or for physiological and pathological chemistry. The students' rest-rooms of this floor is occupied by store rooms and by the heating chamber. Ascending the staircase at the north end of the building, one reaches a landing from which open two entrances to the main body of the building on this floor is occupied by the laboratories and preparation rooms for physiological and pathological chemistry. The students' rest-rooms are 70 ft. long by 30 ft. wide, and is fitted with transverse chemical benches with sinks and stands for reagents. On the same floor are three small rooms, specially fitted up as a balance room, a calorimeter room, and a gas room. On the top floor the whole of the north end of the building is occupied by the laboratory and preparation room for normal and abnormal histology. Here the preparation room is smaller than is the case in the chemical department, and the students' laboratory is 80 ft. long. On this floor there is also a small workshop, to be fitted with lathe and carpenter's bench, adjoining the histology room. These buildings have been erected at the cost of the staff of the medical school, and have entailed an expense of about 12,000l. It is estimated that a further sum of 35,000l. will be required for the completion of the scheme.—*Times*.

WESLEYAN CHAPEL, WHITTLE-LE-WOODS, LANCASHIRE.—This building has just been erected, from plans prepared by Mr. W. H. Disney, Messrs. Buxendale & Sons, of Chorley, are the contractors. There will be sitting accommodation for 280 persons. All the benches or pews are of pitch pine. The chapel was built of Accrington brick, with Yorkshire stone dressings, at a cost of 1,800l. Underneath the chapel there is erected a parochial room which will serve as a school-room.

FREE LIBRARY, BODMIN.—A new free library was opened at Bodmin by the Right Hon. Leonard Courtney, M.P., on the 24th ult. The building is built of local stone, with Bath stone dressings. The contractor was Mr. Trehane, and the architect Mr. Sillins Treval.

BANK BUILDINGS, LLANDUDNO.—The Metropolitan Bank of England and Wales, Limited, has just opened the new offices which have been erected at Mostyn-street, Llandudno, on the site of the old premises. The reconstruction has been carried out from the design of Mr. Humphreys, Mr. T. Jones being the contractor.

ICE-MAKING FACTORY, NORTH SHELDON.—The Corporation of North Shields have recently built, on the western boundary of the Fish Quay, a block of premises, which have been leased by the Northern Counties' Ice-Making and Cold Stores Company, Limited. The new building has a river frontage of 120 ft., and is 36 ft. in breadth. The building has been erected under the supervision of the Borough

Surveyor (Mr. J. F. Smiffle) by Messrs. W. Johnson & Sons. Mr. J. T. Cackett, architect, Newcastle, has represented the Ice Company, and Mr. T. B. Johns has been clerk of works.

PRESBYTERIAN CHURCH, SALTNEY FERRY.—The English Presbyterian Church at Saltney Ferry was opened recently. It provides accommodation for 200, and comprises porch, church, vestry, out-offices, &c. The whole has been carried out by Messrs. George Wright & Sons, contractors, of Kelsall, under the superintendence of the architects, Messrs. John H. Davies & Sons, Chester.

FIRE STATION, QUEEN'S PARK, GLASGOW.—The new Queen's Park Fire Station is now practically completed. It is now some eighteen months since the erection was begun of the block of buildings bounded on the north by Allison-street, on the east by Craigie-street, on the south by Prince Edward-street, and on the west by an unnamed lane—a block which accommodates the police, the fire-extinction, and the lighting departments for the district. The total cost of the buildings for the three departments will be about 18,000l. Mr. A. B. Macdonald, the City Engineer, was the architect. The buildings are in the Scotch Baronial style. The principal building, constructed of freestone, has a frontage to Allison-street of 54 ft. in length, while it extends back a distance of 40 ft. in the basement floor is an apartment for the accommodation of a steam fire-engine and a hose and ladder carriage. Adjoining this, on the east, is the watching-room. Alongside the watching-room is a broad path giving access to the court behind, and from which there is also a stair to the upper floors of the building. In the rear of the basement is a ball-room and lavatory, as well as a store. On the first floor are two dwelling-houses. On the second floor, and again on the third or upper floor, are three houses. Behind the front building are two-story buildings of white-facaded brick. These comprise two houses, a stable to accommodate three horses, a workshop, a recreation room, and a couple of washing-houses. A tower, 40 ft. in height, has been built to carry a fire hose after a fire. The contractor for the masonry was Mr. Robert Murdoch, while the late Mr. Archibald Hood, jun., and his executors, have been responsible for the joinery.

DISPENSARY, YORK.—The foundation-stone of the new York Dispensary was laid by the Lord Mayor of York on the 1st inst. The building will be in the Classic style, similar in design to adjoining offices. The main entrance will be in the centre, and the patients' entrance is at the side. It will be a three-story building, 48 ft. in height, with a frontage of 73 ft. On the ground floor there will be three consulting rooms, the dispensary, and the waiting-room. On the first floor will be the apartments of the resident medical staff, and three parts of the upper floor will consist of rooms for the maternity cases, the remainder being the servants' apartments. Mr. Thomas Rawling is the contractor for the brick and stone work, and Mr. W. Bellerby for the carpentry. The architect is Mr. E. Kirby, of Liverpool.

NEW U.P. CHURCH, LANGSIDE, GLASGOW.—The new U.P. church in Langside was opened on the 21st ult. The new church is situate on the site of the old, at the corner of Langside-road and Stevenson Drive, the principal front being to Langside-road. The main entrance is by a projected porch at the base of a tower which is placed at the north-east corner, and the church internally is divided into nave and side aisles, with galleries at sides and end. The side galleries and main roof are supported on moulded iron columns, which rise the full height from the floor. The roof is entirely of timber, with dressed main couples, partly filled in with moulded tracery. The session-house and vestry buildings form an attached group at the end of the Stevenson Drive front, and the hall buildings are at the south-west corner of the site. The church has been seated to accommodate 780 worshippers, the hall 300, and two class-rooms forty each. The buildings have been designed by Mr. John B. Wilson, Glasgow.

CO-OPERATIVE STORES, DONCASTER.—New buildings, erected by the Doncaster Co-operative Society, on Station-road, at a cost of 18,000l., were opened on the 27th ult. The premises were designed by Messrs. Athron and Beck, architects, Doncaster, the contractors, whose contract amounted to 10,400l., being Messrs. Arnold & Son, Doncaster.

CHURCH, TARMONBARRY, CO. ROSCOMMON.—A new church has just been erected at Tarmonbarry from the design of Mr. Kilgallon, of Sligo, by Mr. Fee, of Longford. The high altar is of white Carrara marble, with green pillars. The side altars and font are of Caen stone and marble, from the establishment of Mr. O'Neill. There are several stained glass windows, supplied by Mr. Richardson, of Messrs. Carlisle & Wilson, Belfast.

PEOPLE'S HOMES, LIVERPOOL.—A company has been formed at Liverpool for the purpose of erecting a "home" similar to the Rowton Home at King's Cross. A site, having frontages to three streets, has been secured in Bevington Bush. At present the ground is occupied by a disused brewery and five courts of squatted property. These will be removed and replaced by a brick and terra-cotta building six stories in height, designed to accommodate 580 lodgers: 454 men and 132 women. The home, which will have a frontage of upwards of 100 ft. to Bevington Bush, and still larger frontages to the side streets, is to occupy an area of 2,200

square yards. It has been designed by Messrs. C. O. Ellison & Co., architects.

PROPOSED THEATRE OF VARIETIES, PLYMOUTH.—This building is to be erected from the designs of Mr. W. H. Arber (Messrs. Wimperis & Arber), of London, and will have a frontage of 140 ft. to the London-street, and a frontage of similar length in Phoenix-street.

NEW CO-OPERATIVE STORES, CHURCH-STREET, WARRINGTON.—New premises for the Warrington Co-operative Society have been erected at the junction of Church-street and Fennel-street. Plans were prepared by Mr. William Owen, architect, and the building contract was let to Messrs. Collin & Son. The basement of the building will be 60 ft. by 43 ft. On the ground floor there will be two large shops for groceries and provisions, and a warehouse in Fennel-street, with a hoist at back and front. Over the shops there will be a warehouse the size of the basement.

TOWER, NOLTON CHURCH, BRIDGEND.—The tower of Nolton Church, Bridgend, is to be started to be finished and surmounted by a stone spire. The architect who will superintend the work is Mr. F. R. Kempson.

BOARD SCHOOL, MARDEN, KENT.—Schools, to provide accommodation for 400 children, have been erected at Marden. There are three departments—boys, girls, and infants—which are under one roof, but each has a separate entrance. A large central hall for the girls' and infants' schools has been provided. The architect is Mr. H. J. Jeffery, of Ashford, and the builders are Messrs. Mancktelow Bros., Horsmorden.

ATHLETIC CLUB, EDINBURGH.—The George Watson's College Athletic Club, Edinburgh, was recently opened. The architect was Mr. T. F. Paterson.

PAVILION FOR THE NATIONAL EISTEDDFFOD, NEWPORT.—The pavilion in which the National Eisteddoffod of the present year is to be held will occupy about one-half of the Cattle Market, Newport, and will consist of an orchestra, surrounded by a semicircular auditorium for 17,000 people. Mr. G. Martin is the contractor, of Newport. Mr. Benjamin Lawrence is the architect.

BUSINESS PREMISES, SOUTHAMPTON.—Premises for drapery, millinery, &c., have been erected on part of the site of Blenheim House, at the Tranway Junction, Southampton. The architect was Mr. Walter Storer, of London, while the fittings were by Messrs. Haskins & Company. The shop proper, on the ground floor, has a length of about 100 ft.

COUNTY COURT, & OFFICES, WARRINGTON.—New County Court and Indian Revenue offices are being erected at Warrington, near the Gymnasium. The external elevations are of red brick and buff terra-cotta. The architect is Mr. Henry Tanner, of Her Majesty's Office of Works, and the builders, Messrs. Beckett & Company.

SUNDAY SCHOOL, OLD HILL, NEAR BIRMINGHAM.—The trustees of the schools in connexion with the Primitive Methodist Tabernacle, Old Hill, have decided to adopt plans prepared by Mr. A. Ramsell, architect, of Dudley, of a proposed new Sunday school and class-room.

METHODIST MISSION HALL, WARRINGTON.—A new mission-hall in Brick-street, Warrington, has just been opened. The building is of Ruabon bricks with York stone settings. The main hall measures 50 ft. by 33 ft., is 24 ft. high, and will accommodate 400 people. The builder was Mr. Mounfield, and the architect Mr. Stephen Dale.

CHAPEL AND MISSION BUILDINGS, WARRINGTON.—The foundation stone of St. Clement's Chapel and mission buildings, Bank-street, Warrington, has just been laid. Mr. William Owen is architect, the builders being Messrs. Richard Beckett & Co. The main feature is to be the mission chapel, and attached to it will be accommodation for Sunday school, meetings, and workmen's club. The chapel will be 46 ft. long by 31 ft. wide, with chancel in addition, with roof averaging 25 ft. in height. The mission room will have a length of 64 ft. and an average width of 23 ft., as well as two class-rooms covering an area of 34 ft. by 20 ft.

OPHARMACEUTICAL SCHOOLS, PURLEY.—The memorial stone of the J. R. Roberts School, Purley, was laid on the 24th ult. The architect is Mr. J. Kingwell Cole, London. The new building, which is to be a school for the boys, will cost about 7,000l.

SWEDENBORGIAN CHURCH, BLACKBURN.—The new Swedenborgian Church in Anvil-street, Blackburn, was opened recently. The new place of worship has been erected on the site of the old church, at a cost of about 2,250l., the material being brick and terra-cotta. The church affords accommodation for about 275 persons. Mr. Walter Stirrup, Blackburn, is the architect.

RESTORATION OF WICKEN CHURCH, NORTHAMPTONSHIRE.—This church, near Stony Stratford, was recently reopened after restoration. The east wall of the chancel has been taken down and the chancel lengthened. A new transept has been erected on the south side of the chancel with new arches opening out into the chancel and into the south aisle. A new pulpit has been erected, the whole of the church has been re-seated with new open seats in wainscot oak, with traceried ends. The chancel has been re-filled with new prayer desks and choir stalls, all in carved and traceried wainscot oak, and among the carvings of the poppy heads of the former have been introduced the arms of the

province of Canterbury and the diocese of Peterborough. The new rail rails are of wrought-iron work. The reredos is of oak. The contractor was Mr. H. Martin, and the architect Mr. M. H. Holding, both of Northampton. Mr. S. L. Reynolds, of Northampton, executed all the carving.

NEW WING, SAMARITAN HOSPITAL, BELFAST.—A new wing has been added to the Samaritan Hospital, Lisburn-road, Belfast. The wing contains two new wards, in separate stories, one above the other. Each ward will accommodate four, or, in an emergency five, beds, and, although accessible from the principle stair, is cut out from the main building. Each ward has a separate bathroom, lavatory, and other accessories for its own use. In the ground floor of the new wing are two bedrooms for the nurses, and also a dining and sitting room for their use. In addition to the new wing, improvements have been made in other parts of the hospital. The various appliances both in this part and the new wing were supplied by Messrs. Doulton & Co. and Shanks & Co. Below the new lavatories, &c., a dispensary has been formed. The various works have been carried out from the designs and under the direction of Mr. F. W. Lockwood, architect, and the general contract was by Mr. James Kidd.

TURKISH BATHS, EXETER.—On the 27th ult. the foundation stone was laid at Exeter of the Turkish Baths, which are being erected on a site adjoining the Rougemont Hotel. On the ground floor will be a large cooling-room, 36 ft. by 20 ft., in which will be placed divans, lounges, and dressing boxes. The hot rooms will be three in number. The shampooing room will be fitted with douche and other appliances, and a plunge bath will be provided. With the Rougemont Hotel the Baths will be connected by a span bridge. The architects are Messrs. Rilling & Tonar, of Exeter.

CONGREGATIONAL CHURCH, CROSBY, LANCA-SHIRE.—The foundation stone of the new Crosby Congregational Church was laid recently. The new building is situate on a site at the corner of Mersey-road and Eshe-road. In the new church there will be accommodation for about 650 people. Messrs. Douglas & Fordham, of Chester, are the architects. The estimated cost of the building is 5,700l.

SCHOOLS, DURSLEY, GLOUCESTERSHIRE.—The contract for the Victoria Commemoration Schools has been let to Messrs. S. Bloodworth & Son, contractors, of Dursley, on 1,750l. This is exclusive of the cost of the site and of the furnishing. The schools have been designed by, and will be erected under the supervision of, Mr. Wm. Paul, architect, of Totterdown, Bristol.

EDINBURGH BUILDING TRADE.—In Edinburgh Dean of Guild Court, on the 27th ult., there were forty-five applications, and twenty-two of these were granted. Warrant was granted to the Edinburgh Pavilion Theatre (Limited) for the erection of a front building at Grove-street; the Eastern Amateur Rowing Club to erect a boathouse at foot of Pitt-street, Portobello; the Royal Association for Incurables, to take down existing buildings at Causewayside to erect chapel and mortuary; James Smiles and others, laboratory at Blandfield Works, Lower Broughton-road; and to the St. Cuthbert's Co-operative Association (Limited) to take down old and erect new buildings at Lauriston-street.

OFFICES, WEST HARTLEPOOL.—Messrs. Furness, Withy, & Co. are making additions to their offices at West Hartlepool. When completed the offices will cover twice the amount of space they now occupy. The frontage in George-street is to have an additional 50 ft., making in all 100 ft. On the ground floor there will be a general office, 30 ft. by 25 ft., and a number of private offices and strong rooms. The staircase is to be of stone, with wrought-iron balusters. On the first floor is a dining-room. Adjoining is a serving-room, which communicates with the kitchen above by means of a lift. There is also an estate office. On the third floor are store-rooms, and underneath the whole of the building are cellars. The whole of the work is being carried out from designs and under the superintendence of Messrs. Barnes & Coates, architects, West Hartlepool. The contractors are Messrs. Joseph Howe & Co., of West Hartlepool.

THEATRE OF VARIETIES, SOUTHAMPTON.—The foundation stone of the new Royal York Theatre of Varieties, Southampton, has just been laid. The new hall will be 60 ft. in width, and will have seating accommodation for 2,200 people. The architect is Mr. Walter Emden, of London, and Messrs. Beer & Gash are the contractors.

ALTERATIONS AT THE NOTTINGHAM THEATRE ROYAL.—Alterations to this building are being carried out from the designs and under the superintendence of Mr. Frank Matcham, of London. Mr. Greenman is acting as clerk of works, and the contractor is Mr. Henry Vickers, of Nottingham.

CITY PARISH COUNCIL OFFICES, ABERDEEN.—Among the plans sanctioned on the 20th ult. by the Plans Committee of Aberdeen Town Council were those of the new offices to be erected in Union-terrace for the City Parish Council. The building will occupy a site at the corner of the lane leading from Union-terrace to Diamond-street. The ground floor and first floor form a rusticated basement to the second, or principal, floor, on which will be the Council chamber. The main doorway in the centre of the building extends to the height of the second floor, and is formed by two rusticated

columns, which support a carved pediment projecting beyond the line of the structure. A flight of granite steps lead from the main entrance to a vestibule. From the vestibule a staircase gives access to the upper floors. The ground floor is occupied by an office for the collector of rates, a collector's room, porter's office, medical officer's room, and dispensary. A waiting room for the accommodation of recipients of relief leads off the end of the vestibule. There is also a sheriff officer's room on the ground floor. The apartments on the first floor include rooms for the inspector and his assistants, the outdoor inspector, orphan inspector, clerks, &c. The second, or principal, floor is mainly occupied by the Council chamber, which measures 38 ft. by 30 ft., and a large committee room. On the second floor there are also a chairman's room, anteroom, and waiting room, while adjoining these are cloak rooms, &c. The attics will be used as a residence for the caretaker, and the basement floor as a furniture store and charter room. Hand lifts will run from the basement to the top of the building. The plans have been prepared by Mr. A. Marshall Mackenzie, A.R.S.A., and the contractors for the work are—Messrs. Mason, Messrs. George Fordyce & Co.; joiner—Messrs. Hendry & Keith; plasterer, Messrs. Stephen & Gibb; plumber, Mr. Peter Stewart; painter, Messrs. John Mason & Son; slater, Mr. George Farquhar; heating, Mr. Robert Tindall; ironwork, Messrs. W. M'Kinnon & Co.; electric bells, &c., Messrs. Shirras, Laing & Co.; electric lighting, Mr. P. C. Middleton.

LIBRARY, BRISTOL.—The foundation stone of the St. George Public Library, to be called the Victoria Library, was laid recently. The building will cost about 5,000l. or 6,000l., and it has been designed by Mr. Frank Wills. The building will have a frontage of 70 ft. The lending library, the librarian's room, and the boys' department will be divided from the main portion of the hall by arcading of Ham Hill stone. The building will be of Gattybrook bricks, with Ham Hill stone dressings. The structure will be heated with hot water apparatus supplied by Messrs. J. Crispin & Sons, and the builders are Messrs. W. Cowlin & Son.

PRIMITIVE METHODIST CHAPEL, SOUTH WIMBLEDON.—The Primitive Methodist Chapel, which has been erected in Quick-road, South Wimbledon, was opened on the 26th ult. The building comprises, besides the chapel, a lecture hall, situated at the rear. The former is 60 ft. long by 37 ft. broad, with a height from floor to ceiling of 25 ft., and will accommodate 300 persons. The front elevation is built of red bricks, relieved with stone dressings, and polished granite columns with capitals. Messrs. Bates and Pearce's hot air system will be used for heating the chapel, and Messrs. Pickup and Co.'s system has been adopted for lighting and ventilating purposes. The lecture hall, which will accommodate 100 persons, measures 37 ft. by 20 ft., and has two doors communicating with the chapel. The architect for the new buildings is Mr. W. Wray, of Canning Town, and the contractors are Messrs. Atkins & Green, of West Ham.

SANITARY AND ENGINEERING NEWS.

PUBLIC IMPROVEMENTS, THE HARTLEPOOLS.—On the 25th ult. Mr. F. H. Lubbock, M.Inst.C.E., Local Government Board Inspector, held an inquiry into an application by the Town Council for sanction to borrow 3,000l. for improvements at the sea front at Seaton Carew, 2,400l. for the purpose of a building for County Court purposes, 425l. for tarpauling footpaths at the park, and 105l. for the provision of a steam roller. The Surveyor (Mr. Brown) explained the plans of the alterations and improvements at Seaton Carew, and in regard to the County Court the Town Clerk stated that the Corporation proposed to purchase the Druids' Hall for 2,400l., and make the necessary alterations to fit the building for County Court purposes.

SEWERAGE SCHEME, WEDNESFIELD.—At St. Thomas's Schools, Wednesfield, on the 20th ult. Colonel W. Langton Coke, M.Inst.C.E., held an inquiry on behalf of the Local Government Board concerning the application of the Wednesfield District Council for power to borrow 7,500l. for sewerage works and sewage disposal. Mr. R. E. W. Berrington, the engineer, explained the scheme, and the Inspector visited the site.

STAINED GLASS AND DECORATION.

WINDOW, FALKLAND CHURCH, FIFESHIRE.—The large east window of this church has just been filled with stained glass. The work has been carried out by Messrs. A. Ballantine & Gardner, of Edinburgh.

MEMORIAL WINDOW, CRATCHE CHURCH, BALMORAL.—Messrs. J. R. Clayton & A. Bell, of London, have just placed in the church at Cratlie, Balmoral, a window executed at the command of the Queen, in memory of Prince Henry of Battenberg. The work represents an angelic figure rising from the sea. At the base is displayed the arms of the late Prince.

WINDOW, BRADFELD CHURCH, YORKSHIRE.—A stained-glass window has been placed in Bradfield Parish Church. The new window is from the studio of Messrs. Joseph Bell & Sons, Bristol and consists of three lights.

FOREIGN.

FRANCE.—The Conseil Supérieur des Beaux-Arts has awarded the Salon prize to M. Desbordes-Valle, who exhibited a marble statue of "Job," and an alto-relief in plaster, "Pastorale," at the Palais de l'Industrie this year.—The jury of the Champs Elysees Salon has awarded the Marie Bashkirtseff prize to M. G. Lemaître for his picture "Derniers Beaux Jours."—The Champs Elysees Salon closes on June 10, the Champ de Mars on June 30. The Ecole des Beaux-Arts, which was closed by the Government on account of the sad incident already mentioned by the *Builder*, will be reopened on June 14.—The new Pont Mirabeau will be inaugurated on July 13 by the President; also the Hospice Boucaut.—A monument in honour of Eugène Delacroix, the painter, is to be inaugurated some time during this month. It has been erected by the Conseil Général de la Seine. This monument, which has been executed under the direction of Jacques Lesquoux, architect, consists of a stele, which is ornamented with a palm, a palette, and brushes, in bronze, for which the sculptor, M. Hermica, made the model. On the stele will be placed the bust of the painter, modelled after that made by M. Dalou for the Jardin du Luxembourg.—M. Bertone, architect, Grand Prix de Rome, has just received the Prix Jarry and the pension founded by the Comtesse de Caen, on his leaving the Villa Medici. This pension, which lasts three years, is given with the Prix Jarry to the pupil who has fulfilled all the demands imposed on the competition for the Prix de Rome.—The Ecole des Beaux-Arts at Algiers will shortly be rebuilt at an expense of about a million francs, opposite the future Hôtel de la Préfecture, which is to be built on the esplanade Bab-el-Oued. The State will bear a part of the cost.—A new line of railway is shortly to be begun between Dieppe and Havre by Caux, Orville, and Fécamp.—M. Charles Babet, member of the Union Syndicats des Architectes Français, has just been elected Architect to the town of Cannes in place of the late M. Xavier Ferrand.—The building of the terminus station on the Chemin de Fer d'Orléans, which was to have been erected on the site of the Cour des Comptes, has been rejected by the Municipal Council of Paris by 54 votes against 12. Nevertheless, this important question has been actually submitted to the Chamber of Deputies, the majority of whom seem favourable to the scheme.—The death of the Jewish painter Edouard Brandon, at the age of 66 years, is announced. He was a pupil of Picot and Montford, and made a specialty of synagogic scenes. He exhibited this year a number of pictures and drawings reproduced from Jewish and Italian types.

GERMANY.—It appears that a special commission has been formed at Berlin with a view of framing new regulations for the protection of assembly rooms and public halls under the auspices of the Government, and that the whole of the places of entertainment throughout Prussia are to be carefully examined, and reports will be sent into the Government, inasmuch as the monument to Prince Bismarck was unveiled in the Grunewald, near Berlin, last month. The ex-Chancellor is represented in civilian attire, and the statue measures nearly 8 ft. in height, standing on a granite pediment of about 7 ft. The sculptor is Herr Max Klein.—The sale of the old Botanical Gardens in the Potsdammer suburb of Berlin will considerably influence the value of a suburban property. It is estimated that there will be about 115,000 square metres of building land coming into the market (after the deduction of nearly 2,500 square metres for new thoroughfares, the regulation of frontages, &c.). At the present time about 15l. per square metre has been paid for freeholds on main thoroughfares in this district, and about half the amount on roads of minor importance. Forty-eight thousand metres of the Botanical Gardens will be reserved as a small municipal park, this part of the site having been sold for a nominal sum to the city of Berlin. As the Municipality is to spend nearly 100,000l. on this park and the surrounding roads, it is expected that an average of 10l. per square metre will be paid for the various plots. This would mean that the Government will make about 700,000l. by the transaction.—The Potsdammer bridge is being carried out with all despatch. The structure consists of two parallel bridges, with a well of some few feet width between the two. The bridges will be of considerable architectural pretension, and the plastic decorations will be carried out by the leading sculptors.—It is not unlikely that Berlin will shortly have an underground railway, or, as it is officially called by the Berlin authorities, an "under-pavement railway." This railway will be worked by electricity and laid on similar lines to that at Buda-Pesth. The contractors who are taking the matter up are Messrs. Siemens & Halske. The idea is to connect the centre of the city near the castle of the Potsdammer district. Both the Government and Emperor have sanctioned the scheme.—The suburb of Charlottenburg is to have an important Town Hall; a site has been selected for it in one of the principal thoroughfares known as the Berlin High-road. It will have a frontage of nearly 200 ft., and the competition which has been opened for its design allows for premiums to the extent of 1,250l.—Several commissions have been given by the Emperor for a set of monuments which are to be erected in the

Victory-avenue. The scheme, taken as a whole will be a very imposing one, and the Emperor has carefully selected his sculptors.—Eberfeld is also to have a monument to the ex-Chancellor Bismarck, and Professor Brunow, of Berlin, has just completed the model which will show the figure of Bismarck nearly twice life-size, standing on a tall pedestal. The monument is to be ready by April 1, 1898.

AUSTRIA.—The memorial to Maria Theresa was unveiled at Presburg last month by the Emperor of Austria.—In connection with the regulation of the Danube Canal at Vienna, considerable works are to be taken in hand for a proposed harbour for the inland water-way traffic.—The Municipality has now finally decided to sanction two new electric tramways running from the city into the suburbs, and we understand that Messrs. Siemens & Halske are the contractors.—A large fountain by the sculptor Hellmer, on the Michael's-place, has now been completed.—There have been frequent disturbances of late at Vienna in connexion with the building trade, and one firm of contractors alone has recently had to lock out 1,500 men owing to certain differences. A general strike is expected in the course of this year, especially at Vienna.

It has been found difficult with the Viennese reservoir and waterworks in Tullnbarbach. A Commissioner of Experts has been lately examining these works, and has declared them to be dangerous, and it appears that there is a considerable difficulty in remedying the defects.

KIMBERLEY.—Just now there is a regular building being going on in all directions. New brick houses are rising up in all the streets and around the town. The days of tin shanties are departing.—*Natal Mercury.*

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ASSOCIATIONS.—The firm of Aldam Heaton & Co., Bloomsbury-street, will open in a few days a branch establishment at 89, Mount-street, Grosvenor-square, with show rooms for the exhibition of designs and decorative furnishing work.—Messrs. Widnell & Trollope, surveyors, have removed from 13, Parliament-street, to Broad Sanctuary Chambers, The Mall, Westminster.

APPOINTMENT.—Mr. A. A. Garside, who has been chief assistant to Mr. J. A. B. Williams, of Cardiff, has just been selected by the Corporation of Sheffield as assistant engineer for the Little Don Valley Works.

TENEMENTS AND LODGING-HOUSES. **MANCHESTER.** On the 25th ult. the Manchester Town Hall, Colonel J. T. Marsh held an inquiry on behalf of the Local Government Board with regard to the application of the Corporation for permission to borrow money for the purpose of erecting tenement dwellings and a lodging-house. It is estimated that the new buildings will cost about 75,000l., but as the Corporation has surplus borrowing power the Board was only asked to sanction the raising of 23,000l. It is proposed to erect tenement dwellings in the neighbourhood of Oldham-street, Chester-street, and Post-street, and a lodging-house for men in Harrison-street. Mr. Alderman Walton Smith (Chairman of the Sanitary Board) spoke in support of the application. He said that the total number of persons displaced in Manchester by the various improvement and reconstruction schemes was 2,584, and provision had been made for 1,206. Therefore provision was still required for 1,288 persons. Mr. T. de Courcy Meade, City Surveyor, explained to Colonel Marsh the details of the proposed buildings. Other evidence having been given, Colonel Marsh visited the different areas referred to.

LIBRARY, &c., BIRMINGHAM.—Colonel W. Langton Coke, one of the inspectors of the Local Government Board, attended at the Council House, Birmingham, on the 25th ult., to hold an inquiry relative to the application of the City Council for sanction to borrow 15,000l. for the alteration and extension of the Deritend Branch Library, and 600l. for laying out the land adjoining Cannon Hill Park recently presented to the city by Mr. J. C. Holder. Mr. J. A. Cossins (Messrs. Cossins, Pencock, & Bewlay) produced and explained plans which he had prepared for the extension. Subsequently the inspector visited the site in question.

THE JOSEPH THOMSON MEMORIAL.—This memorial is now nearly completed, and it is proposed that it should be unveiled at Thomson's native town, Thornhill, near Dumfries, on Tuesday, June 8. The memorial, which has been designed by the sculptor, Mr. Charles M'Bride, of Edinburgh, is of Classical style, and is in the form of an obelisk, the pedestal. The four sides are panelled. One is occupied by a bas-relief representing a female figure of Fame upholding a map of Africa, with palm trees, and Mount Kilima-Njaro in the background. The pedestal is further decorated with masks representing the heads of lions. The whole is surmounted by a bust in bronze of Joseph Thomson.—*Edinburgh Evening Dispatch.*

THE BRICK TRADE OF WORKSOP.—It is indeed many years since the brick-making trade was in so flourishing a condition as at present, and there is every prospect that it will continue for a considerable time, because of the number of new buildings in course of erection, and the proposed building of others. Indeed in all parts of the town

the building fever is raging, and it would be a hard matter to predict any abatement.—*Reform Times.*

THE NOTTINGHAM WATER SUPPLY.—The Nottingham Borough Authority have found it necessary to issue a notice to the inhabitants requesting them to avoid using water except where absolutely necessary, as the present demand upon the sources of supply for the town and district largely exceeds the yield of all the wells now belonging to the undertaking. The notice adds that unless an immediate reduction of such demand is made, there will be a failure of water within a few days, and consumers will have to be put upon a short supply. The Works and Ways Committee have decided to discontinue watering the streets. Since the issue of the notice, however, there has been a good deal of rain.

JUBILEE DECORATIONS.—The Lieutenants-Walton send us some illustrations of decorations prepared in their well-known material, including a medallion portrait of the Queen, the Royal Arms, and other heraldic insignia.

THE BLACKWALL TUNNEL.—The following is an official list of the principal sub-contractors who executed work at the Blackwall Tunnel, which was opened recently for the traffic of Water. We did not receive the list in time to print it last week.—All castings for tunnel lining: The British Hydraulic Foundry Co., Glasgow; shield and permanent pumps for drainage: Messrs. Easton, Anderson, & Golden, Britl; wrought-iron and steel caisson for shafts: The Thames Iron Works, London; hydraulic rams for driving the caissons: Walker & Co., Leeds; air-compressing plant: Messrs. Walker Bros., Wigan, The Ingersole Sergeant Drill Co., J. Slee & Co., Glasgow, and The Haslam Engineering Co.; white glazed bricks: John Hall & Co., Stourbridge; Joseph Brook & Son, Halifax, and The Farley Iron Co., Leeds; white glazed tiles: Messrs. T. & R. Boote, Burslem; red bricks: High Brooms Brick Co., Tunbridge Wells; polished granite, granite setts, and granite kerb: John Eyle, Aberdeen; granite channel and York paving: Messrs. A. & J. Manuelle, London; asphaltic paving: The Val de Travers Asphalt Co.; cement: J. Bayley, White Bros., & Co., Gillingham, and J. C. Barron & Co., London; hydraulic and steam pipes, &c.: Messrs. Lloyd & Lloyd, Birmingham; hydraulic line for erecting: Messrs. Grayson, & Lakin, Warwick; boilers: Messrs. Darg, Paxman, & Co., Colchester, and J. Penman & Co., Glasgow. The entrance houses were built by Messrs. Dove Bros., London. The contractors for the electric light installation were:—Electric lighting: Messrs. Laing, Wharton, & Downs; incandescent lamps: Edison & Swan Electric Light Co.; boilers for electric lighting: Messrs. Fraser & Fraser, Bromley-by-Bow.

BISHOP'S CHAIR, ST. JOHN THE EVANGELIST'S CHURCH, WALTON.—The new Bishop's chair, which has just been placed within the sanctuary of St. John the Evangelist's Church, Walton, has been designed by Mr. E. H. T. G. Latham, architect, of Liverpool. The new episcopal chair is framed in massive English oak. The back is carried high, terminating with a crocketed gable. Within the tympanum is a shield bearing the arms of the see of Liverpool, surmounted by a bishop's mitre. In the back rail, amidst carved foliage, occurs the date, 1897. The addition has been made by Messrs. Harry Hems & Sons, of Exeter.

THE SIDONS STATUE.—The Sidons Memorial Committee met on the 29th ult. at Paddington Vestry Hall, when arrangements were made for unveiling, on Monday, the 14th of this month, the new statue of Mrs. Sarah Sidons, executed by Mr. Chavilland according to a design approved by the late Lord Leighton. The Vestry has given a site for the memorial on Paddington-green, within a few yards of Paddington's old cemetery.

LANCASHIRE FEDERATION OF BUILDING TRADE EMPLOYERS.—The fourth half-yearly meeting of this Association was held at Barnley, on the 1st inst. The President, Mr. Cunliffe, Bolton, was in the chair, and there was a large attendance of representatives. The minutes of the last meeting were read and confirmed, and the President moved the adoption of the report. The Secretary's report stated that one local association at Warrington had joined during the half year, but as two of their smaller branches had become for a time disorganised the strength of the Federation remained about the same as before. The relations with the operatives were reviewed at some length. The report was adopted and ordered to be printed and circulated; and the treasurer's accounts, which showed a large balance in favour of the Federation, were presented and the balance sheet approved. Mr. James Storr, of Stalybridge, was unanimously elected President for the ensuing year; and W. Cunliffe, Bolton, Vice-President; Mr. J. H. Thompson, Bury, hon. treasurer; and Messrs. W. Shepherd, Rochdale, and J. Tinline, Bury, hon. auditors. The Secretary, Mr. John Tomlinson, Preston, whose two years' term of office expired, was unanimously re-elected for a similar period. The New Employers' Liability Bill was considered, and it was deemed advisable that the executive should take into consideration the best means of protecting the members, either by the formation of an Accident Insurance Company on mutual lines, or by endeavouring to obtain more favourable terms for federated employers.

PENRYN SLATE QUARRIES.—We regret to find that the strike at the Penryn Quarries seems as far

as ever from a settlement. Up to last Saturday both sides were sanguine about coming to an agreement, but the tone adopted at the Bethesda meeting, and subsequent disturbances by some of the least responsible of the men at the head agents' house, have widened the breach considerably. So far the trade has not suffered from the reduced supply of slates as much as might have been expected, the rise in the price of bricks and other causes having delayed building operations; and foreign slates are not making the headway their sellers anticipated, partly owing to the prejudice against them on account of bad quality in the past, and partly owing to merchants being required to buy before they are landed, and so having no remedy for breakage, short cut, &c.

EXAMINATIONS IN CARPENTRY AND JOINERY.—The Carpenters' Company hold their annual examination in these subjects this month. A large number of candidates is expected.

THE LATE MR. C. J. PHIPPS.—Mr. T. E. Knightley writes to deny that the Queen's Hall was carried out under his and the late Mr. Phipps' joint supervision, as stated in our obituary notice of the latter. He states that Mr. Phipps had retired from participation in the work before the building was actually commenced.

THE PROPOSED SCOTTISH NATIONAL BUILDING TRADES FEDERATION.—A meeting of delegates representing seven trades connected with the building industry of Scotland was held in the Trades Hall, Glasford-street, recently, for the purpose of forming a Scottish National Building Trades Federation. At a conference held on February 13 a committee was appointed to draft rules for the basis of such a federation. The following trades were represented:—Amalgamated joiners, slaters, painters, glaziers, bricklayers, plumbers, National Labourers' Union, and one delegate from the Associated Joiners. The swallow operatives and the tile layers sent in notices of willingness to join the federation. Mr. John Hardie (painters), Glasgow, was elected chairman of the conference, and Mr. T. Anderson (Amalgamated Joiners), Glasgow, was elected secretary. The proposed rules as drawn up by the committee were submitted, and it was agreed to establish a Scottish National Building Trades Federation, and that the rules as submitted be the basis of the federation for the first year. A committee was appointed to complete the business of the past conferences, and convene the first annual meeting of the federation to be held in Glasgow on the third Saturday of August, at which the Executive Council of the federation is to be elected.

CAPITAL AND LABOUR.

THE CARPENTERS' DISPUTE, LONDON.—The carpenters employed in the erection of many of the stands along the line of route of the Jubilee procession have, it is stated, forwarded a demand to the masters for an increase of wages amounting to 20 per cent. The three Carpenters' Unions to which the men are affiliated have refused to sanction the demand, but, notwithstanding this fact, the workmen employed on the stands at Charing Cross and St. Martin's-in-the-Fields came out on strike, as we announced last week, in consequence of the masters declining to grant the increase in wages. The movement has threatened, it is stated, to become general, and the majority of the masters have declined to pay their men 1s. per hour for 14d. overtime. The men engaged at Charing Cross decided to resume work, the masters having given an assurance that the demand made by their employes would be favourably considered.

THE PLYMOUTH BUILDING STRIKE.—At a large meeting of masons in the Co-operative Hall, Plymouth, on the 25th ult., a deputation of four members from the Master Builders' Association attended for the purpose of treating, if possible, with the men, they having given notice for rd. an hour advance in wages in October, and alterations in rules in their code. The masters offered at the meeting a rise of 1d. in October, the 12 o'clock rule on Saturday, half an hour for breakfast throughout the year, and half an hour for dinner during December and 14d. overtime, and one hour for the rest of the year. With regard to the other proposed rules of the new code affecting apprentices, the worked-stone and tied-work questions, the delegates from the Master Builders' Association had nothing to submit. The meeting decided not to accept the offer of the employers, directly on the ground that they had not considered the code of rules in its entirety, the masters' proposals being looked upon as premature. Certain of the rules ignored by the masters are held by the masons to be worth contending for.

BUILDING TRADES, STAFFORDSHIRE.—The building trade is good in all the Pottery towns, and there are no operative bricklayers or joiners out of work at the northern end of the district, but a small percentage is unemployed at the Stoke end. There are no large contracts on hand as yet in the district, but an enormous business is being done in artisans' dwellings. This is particularly noticeable at Burslem, for, in the neighbourhood of the park, a new town is growing rapidly. The painters are still out on strike, and so far there are no signs of a settlement, the employers' offer of arbitration having been refused by the operatives. This is un-

fortunate, for if the Board of Trade had been asked to appoint an arbitrator, there is no doubt that an able and conscientious man would have been selected, and a settlement might have been effected in the same manner as the bricklayers' and joiners' difficulty. At Crew's the building trade is good, but a dispute has occurred as to wages. At Leek, trade is good, and at Stafford there are no operatives out of work.—*Staffordshire Sentinel*.

JOINERS' STRIKE, WHISTON, LANCASHIRE.—A settlement of the strike of the joiners employed at the new Whiston Infirmary was effected on the 28th ult. Representatives of the men and masters had a conference at the North-Western Hotel, Liverpool. Mr. Willink, of the firm of Messrs. Willink & Thicknesse, architects, Liverpool, acting as arbitrator, when it was decided that the men were in the Liverpool district, and as a consequence they have resumed work at 6d. per hour, instead of 5½d. as hitherto.

THE CARLISLE JOINERS' STRIKE.—A meeting of the Masters' Association was held recently at the Viaduct Hotel, Carlisle, when it was decided to adhere to the offer previously made to the men, namely, to increase their wages from 7½d. to 7½d. an hour and to reduce the hours to forty-seven a week in winter, and to advertise for men to fill the vacant places. A master joiner in the city, who is not a member of the Masters' Association, has agreed, it is stated, to employ some of the men on strike at 8d. an hour.

THE BUILDING STRIKE IN IPSWICH.—There is no change to report in regard to this strike. Some of the men have left Ipswich for various large commercial centres.

THE REIGATE AND DISTRICT BUILDING TRADE STRIKE.—The carpenters and joiners, bricklayers and labourers, who went out on strike a few weeks ago, in consequence of their employers having refused (1) a demand for increased wages at the rate of a penny per hour all round; and (2) to accept a code of Trade Union rules based upon those now in force in London, have returned to work. The men's committee received a suggestion from one of the master builders with a view to effecting a compromise. The committee according proposed to the Secretary of the Masters' Association that the men should receive an halfpenny per hour increase, and start work immediately; and that on September 1 they should receive a further halfpenny, and on the same date the masters to recognise a code of working rules. The masters met, and it was decided to offer the men "a halfpenny increase in full settlement of their claims." A meeting of the men took place subsequently, and it was resolved, by a large majority, to accept the master's offer.

LEGAL.

THE LONDON COUNTY COUNCIL AND THE ROWTON HOUSES.

An interesting point was raised in a case which was decided on the 25th ult. in the Lambeth Police-court. The London County Council applied for penalties against Rowton Houses (Limited) for not obeying a notice served upon them by the Council under the London Building Act, 1894, Section 14. The building in respect of which the complaint arose was Rowton Houses, Churchyard-row, Newington. Mr. Hopkins said there was no dispute about the facts; it was admitted that every fact necessary to raise the question must be found against the defendants. The allegation which concerned him was that the defendants' building was so high as to infringe the last proviso but one of Sub-section 5 of Section 13 of the London Building Act, 1894, and if that proviso applied the building was certainly too high by many feet. If, say, the Gordon Hotels Company had done exactly what the defendants had done in the matter, and, after complying with the requirements of the statute, as the defendants complied with them, had erected on that very site one of their palaces, he thought it must be admitted that they might have gone to any height they pleased, and that no question could have arisen as to the height under the proviso, because the Gordon Hotels could not be said to be within it. For all the purposes of the London Building Act he could see no possible difference between, say, the Gordon Hotels Company building, a rich man's hotel, and Rowton Houses, Limited, building, a poor man's hotel. He was strongly of opinion that all the real merits were with the defendants, and he dismissed the summonses. Mr. Hopkins allowed 15s. 15s. costs.—*Times*.

MEETINGS.

FRIDAY, JUNE 4.
Royal Institution.—Mr. W. H. Pease, C.B., F.R.S., on "Signalling through Space without Wires." 9 p.m.

SATURDAY, JUNE 5.
Edinburgh Architectural Association.—Visit to Torphichen Church.
Incorporated Association of Municipal and County Engineers.—Meeting at Eastbourne.

WEDNESDAY, JUNE 9.
Northern Architectural Association.—Visit to the Leeds Steel Works, Limited, to view the manufacture of Steel in its various processes, from the Ore to the finished Gilder.

THURSDAY, JUNE 10.
Society for the Encouragement of the Fine Arts.—Third Convergence, to be held in the Courts of the Museum of Science and Art, South Kensington. 8.30 p.m.
Royal Institution.—Professor Dewar on "Liquid Air as an Agent of Research." III. 3 p.m.

SATURDAY, JUNE 12.
Incorporated Association of Municipal and County Engineers.—Meeting at Llandudno.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

8,852.—**MANIPULATING VENTILATORS, SASHES, &c.**: J. G. Walker.—Relates to a method of operating ventilators, sashes, doors, &c., placed in positions not easily accessible. Inventor conveys the necessary power by a liquid or gaseous fluid, conveyed through pipes, and acting on a piston moving in a cylinder.
9,164.—**SHUTTING WOODEN SASHES**: H. Vichalon.—In windows of the type specified, the inventor pivots to sash two sliding sashes, in combination with a bolt adapted to be moved to secure sash against sliding in window frame and to allow of sash being moved or conversely to be moved so that sliding sashes are free to move, but sash is secured from swinging.
10,620.—**ROOFING PLATES OR SHEETS**: Alfred J. P. Whelan.—In roofing plates of steel, iron, or other metal, inventor provides each with an upwardly projecting flange at one edge, and at opposite edge a groove to receive such flange of another plate so that inter-locking is secured.
13,316.—**FASTENERS FOR WINDOWS**: A. Breton and J. Duboué.—Relates to fasteners for windows, in which a catch and locking plate are employed. Inventor adopts a cam for the withdrawal of a spring bolt on a cord being obliquely pulled.
12,436.—**KILNS FOR BRICKS, POTTERY, &c.**: H. E. Mason.—Inventor claims in such kilns the combination of side air flues and side gas flues, supplied with air and gas from separate flues, such supply being regulated by valves or dampers.
4,810.—**TESTING DRAIN PIPES**: L. Moxes.—Claim consists in a method of discovering and locating leaks by the employment of cold fumes produced by volatile chemicals forced into the pipes by pneumatic pressure.
4,720.—**TILES FOR KILN FLOORS**: E. E. Bailey.—In floors of small kilns, &c., where the T joints used are inverted and tiles rest on flanges, the inventor proposes to form tiles with undercut edges, so that they come into more intimate contact with the girder.
8,928.—**ANTI-RATTLING DEVICE FOR WINDOWS**: J. H. Haslett.—Inventor claims in such windows a device in window frame by side of sash and pressing against it sufficiently tight to prevent rattling while permitting free movement.

NEW APPLICATIONS FOR LETTERS PATENT.

MAY 17.—12,125, W. Stokes and Others, Joists for Brick, Cement, Stone, or Wood Arches, Kings, Slabs, or Ricks.—12,143, J. Stevenson, Self-acting Window Fastener.—12,155, G. Phillips, Window Fastener.—12,200, G. Hunt, Platform for Use with Ladders, &c.
MAY 18.—12,241, E. Waddington, Brick Making.—12,242, A. Fordyce, Fireproof Construction.—12,255, J. Poste, Controlling the Movements of Doors.—12,272, H. Hope, Fastener for Window Casements.—12,283, J. Heaton and Others, Parquetty Floors, &c.—12,289, W. Hoffmann, Door Lock.—12,307, D. Evans and J. Jones, Window Sash Fastener.—12,308, E. Nash, Window Sash Fastener.—12,310, J. Austin, Window Sash Fastener.—12,312, W. Garnham, Window Sash Fastener.—12,335, C. Reichert, Adjustable Saw-filing Guides.
MAY 19.—12,351, B. Bridgwater, Chimney Tops.—12,354, F. Allen, Gate Latch or Fastener.—12,414, G. Woollocroft and H. Todd, Brick and Tile Making Machines.—12,423, J. Dixon, Electric Bell Pushes, &c.
MAY 20.—12,471, J. Bull, Panic or Analogous Bolt for the Doors of Theatres and other Public Buildings.—12,472, V. Mahler, Opening and Closing Windows.—12,475, A. Wrang and others, Dies for Making Bricks, &c.—12,478, R. Chamberlain, Sash Cord Fastenings.—12,492, A. Holden, Mixture for Whitewashing, Distemping, &c.—12,500, G. Janeway, Window Fastener.—12,537, E. and A. Hobman, Kilns or Ovens for Burning or Drying Bricks, Tiles, &c.—12,552, A. and C. Milinaire Ben, Metal Sheets for Roofs, Floors, Partitions, Girders, &c.
MAY 21.—12,563, J. Scaife and R. Wood, Conveyers for Wood Working Machines.—12,570, W. Maguire, Decorating Tiles, &c.
MAY 22.—12,674, A. Cushin, Securing Door-Knobs to their roses.—12,677, F. Collins, Hinges for Doors, Windows, &c.—12,699, J. Johnsons, Movable Partitions for Stables, &c.—12,702, R. Griffiths and A. Palmer, Window Sashes and Frames.—12,708, J. Duckett, R. Duckett, and J. Duckett, Water-closets.—12,717, W. Monnan, Window Sash Fastener.—12,719, E. Thomas, Sash Fastener.—12,720, S. Francis, Sash Fastener.—12,722, J. Cracker, Sash Fasteners.—12,724, G. Aikman, Sash Fastener.—12,725, R. Price, Sash Fastener.—12,743, G. Hall, Mixing Plaster and Cement by Machinery.

PROVISIONAL SPECIFICATIONS ACCEPTED.

9,137, J. Seward, Combined Latch and Bolt for Doors, Windows, &c.—9,622, H. Craig, Siphon Water Closets.—10,329, E. Martin, Gully Traps, &c.—10,479, W. Godfrey, Sewer Traps for Waste Pipes, &c.—10,493, R. Armitage and J. Cobb, Kilns for Manufacturing Bricks.—10,610, W. Water, Wedges to Prevent Rotation of I. Persons, Windows, &c.—10,683, H. Braun and R. Gross, Portable Door Fastener.—10,878, M. Holt, Sliding Windows, &c.—10,912, W. Tillmanns, Iron Roof.—10,924, F. Hulbrand, Catch or Fastening for Doors, &c.—10,931, J. Persons, Window Fastener.—11,050, J. Robb, Door Handles.—11,069, T. Watson, Roofs or Coverings for Brick-kilns.—11,093, W. David, Sash Fasteners.—11,138, C. Calloch, Band Saws.—11,238, A. Murray, Sheet Material as a Substitute for Glass.—11,343, R. Ayre and Craven Dundell & Co., Ltd., Pottery Kilns or Ovens.—11,354, J. Golding, Tiles.—11,365, T. Jamieson, Ventilators.—11,494, F. Lynde,

Lavatories, Baths, &c.—11,541, J. Thompson, Dust Excluder and Ventilator for Sliding Windows.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

11,392, E. Fletcher and others, Fastener for Downy Sponges, &c.—12,046, J. Edmundson, Sanitary Appliances.—12,165, G. Ridon, Window Sashes and Frames.—13,684, R. Walbrook and A. Wells, Apparatus for Coating Surfaces with Paint, &c.—16,938, K. Sutherland, Window Sashes.—1,384, W. Goodall, and C. Soar, Sockets of Pipes for Sewerage and other purposes.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

May 18.—By W. ROYCE (at Mason's Hall) Oxford-st.—South Molton, "The Bricklayers' Arms" p.h., ut. 16 yrs., r. 12ol., with goodwill, £3,550
By BAICH & FAICH (at Camden Town). Holloway, N.W., a plot of building land, 45 yrs., gr. 84, r. 4ol. 375
16, Crown-ter., ut. 58 yrs., gr. 44, r. 28l. 230
229, Tuffnell Pk.-rd., ut. 72 yrs., gr. 74, 108, r. 42l. 108, ut. 50 yrs., gr. 70, 108, r. 455
By REMDELL & SYMONS (at Toines). Harborton, Devon.—"Austin's Close" and 5 a. 2 r. 27 p. 1,500
By THOMAS & BRIDGIDGE (at Birmingham). Handsworth, Staffs.—Rookery-ld., The "Far Croft" Estate, 45 a. 0 r. 4 p. f. 15,800
Rookery-ld., a plot of building land, 2 r. 38 p. f. By GARROD, TURNER, & SON (at Ipswich). Creeping St. Peter, &c., Suffolk.—"Roydon Hall," 177 a. 3 r. 13 p. f. 3,350
Stowupland, Surrey.—"Suffern Farm," 27 a. 3 r. 27 p. f. and 6 a. 265
By G. MARSDEN (at Wickswoth). Wickswoth, Derby.—Greenhill, four houses and ale stores, 580
May 19.—By DOUGLAS YOUNG. Wandswoth.—28, St. John's-rd., f. r. 175l. 1,600
Ifford.—3, 4, and 6, Cranbrook-ld., f. r. 160l. 3,000
Warrington, Surrey.—Westfield-ld., four plots of land, f. r. 450l. 450
By FOSTER & CRANFIELD. Hackney.—104 and 106, Ambhurst-ld., ut. 40 yrs., gr. 16l. 38 4ol., r. 25l. 1,400
71 and 73, Downs Pk.-rd., ut. 50 yrs., gr. 16l., r. 130l. 1,500
Croydon.—143 to 153 (odd), Brigstock-ld., f. r. 405l. 6,390
By J. F. STONEHEWER. Westminster.—17, Dacre-st., f. r. 110l. 2,200
By LANGRIDGE & FREEMAN. Victoria Pk.—Vandocroft-ld., fgr.'s of 35l. 10s., reversion in 68 yrs. 750
Shepherd's Bush.—Richford-st., fgr. of 7l., reversion in 73 yrs. 200
By E. W. RICHARDS. East Barnet.—Oakleigh Pk., "Trevor Hall" and 3 a. 2 r. 8 p. f. 4,150
Finchley.—Hendon-lane, "Malabar House," ut. 73 yrs., gr. 30l. 2,200
By OMBROK. East Ham.—3 to 13 (odd), Rutland-ld., ut. 98 yrs., gr. 30l. 940
By H. DORSET. Netherbury, Dorset.—Pine Apple Farm," 97 a. 3 r. 36 p. f. 3,800
Netherbury, &c., Dorset.—"Bidlake Farm," 146 a. 1 r. 28 p. f. 4,000
By W. BERRY. Hunston, Sussex.—A freehold meadow, 3 a. 2 r. 20 p. 305
Edmonton.—Grosvener-rd., six building plots 350
New Southgate.—80 and 82, Avenue-ld., ut. 97 yrs., gr. 10l. 380
Barnsbury.—54 and 56, Wellington-ld., ut. 46 yrs., gr. 13l. 425
By WOODS & SELLING (at St. Mary Cray). St. Mary Cray, Kent.—Lawrence's-yard, 4 cottages, f. r. 260
Orpington, Kent.—1 to 5, Fionn-pl., f. r. 70l. 900
By HEPPEL & SONS (at Leeds). Leeds.—13, Rockingham-st., f. r. 46s. 46s.
21, St. James-st., and 2, 3, and 4, Scholes-yard, f. r. 460
By JOHN BOTT (at Herne Bay). Herne Bay, Kent.—Central Av., &c., 28 plots of building land, f. r. 1,140
Sea-st., hotel corner site, f. r. 295.
By F. FITTIS & SON (at Sandown). Sandown, I.W.—204 York-ld., fgr. of 20s., reversion in 92 yrs. £480
Bridget-st., fgr. 109l. 6s., ut. 83 yrs., gr. 11l. 2,050
Fort-st., three cottages, ut. 800 yrs., gr. 15s. f. r. 27l. 6s. 1,750
51, High-st., f. r. 120l. 1,200
May 20.—By VIDLER, SON, & CLEMENTS (at Dover). Alkham, &c., Kent.—Bushey Rough and Chilton Farm, 44 a. 1 r. 2 p. f. 5,750
Enclosures of land with cottages and buildings, 21 a. 2 r. 23 p. f. 310
Four enclosures of land, 7 a. 3 r. 4 p. 160
By TOOTELL & SONS (at Maidstone). East Malling, Kent.—Enclosure of building land, 6 a. 3 r. 4 p. f. 150
By FOWLER, PEMBERTON, & BEWLEY (at Birmingham). Sutton Coldfield, Warwick.—"The White House Farm," 76 a. 1 r. 38 p. f. 3,900
"Falcon Lodge" and 26 a. 3 r. 13 p. f. 3,750
"The Lingridge Field," 4 a. 2 r. 24 p. f. 190
"Church Grove Farm," 127 a. 2 r. 15 p. f. 4,800
Redditch Heath-rd., enclosures of building land, 23 a. 1 r. 12 p. f. 900
Hurley, Warwick.—Three freehold farms, 189 a. 1 r. 25 p. 7,100
A plot of building land, area 450 yds. f. r. 200
An enclosure of arable, 6 a. 1 r. 5 p. 200
By SENIOR & GODWIN (at Blandford). Manston, Dorset.—The Manston Farm, 98 a. or. 25 p. f. 7,300

Table listing property listings with columns for location, description, and price. Includes entries such as 'Blandford, Dorset', 'West Ham', 'Canterbury', 'London', 'Hampshire', etc., with detailed descriptions of land, buildings, and farms.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Table with columns: Nature of Work, By whom Advertised, Preliminary, Designs to be delivered.

CONTRACTS—Continued.

Table with columns: Nature of Work or Materials, By whom Required, Forms of Tenders, To be supplied, Tenders to be delivered.

CONTRACTS.

Table with columns: Nature of Work or Materials, By whom Required, Forms of Tenders, To be supplied, Tenders to be delivered.

PUBLIC APPOINTMENTS.

Table with columns: Nature of Appointment, By whom Advertised, Salary, Applications to be in.

Those marked with an asterisk (*) are advertised in this number. Competitions, pp. iv. vi. viii. & xi. Public Appointments, pp. xviii. & xxi.

Table listing various construction contracts with details on location, area, and terms.

PRICES CURRENT OF MATERIALS.

Table listing prices for various materials like timber, iron, and cement.

TENDERS.

Text containing tender notices for various projects, including alterations to messes, erection of offices, and construction of sewers.

CULLIN (Banfilree).—Accepted for the erection of a dwelling house, North Castle street, at the Strand, Dundee. Mr. Jas. Ferry, architect, Buckle.

GRYOUD.—For alterations and additions, including new classroom, at the Board School, Church-arch, South Woodford. Mr. Robert Ridge, architect, 13, Katharine street, Croydon.

ELGIN (N.B.).—For the erection of houses, Glenduff Distillery, Dufftown, for Messrs. William Williams & Son, Aberdeen. Mr. C. Dalg, architect, Elgin.

FENNY STRATFORD.—For the erection of four villa residences in Blechley-road, Fenny Stratford, for Mr. J. Coles, M.P. R. T. Bishop, architect, Leighton Buzzard.

FERRYMOY (Ireland).—For the erection of a dispensary house, Ballymoor, for the Urban Guardians. Mr. John Killy, clerk of works. Quantities by the clerk of works.

FOLKESTONE.—For the supply of 3,000 tons granite, &c., for the Corporation. Mr. John White, Borough Engineer, Town Hall, Folkestone.

Table with columns: per ton, per ton, per ft., per ft. and rows for various materials like Portland Cement, Granite, &c.

HANWELL.—For the erection of a block at Hanwell Asylum for twenty-nine nurses and servants, a set of rooms for a head attendant, &c., for the London County Council.

LEIGHTON BUZZARD.—For alterations to house in North-street, Leighton Buzzard, for Mr. F. J. Chew, Mr. T. H. Bishop, architect, Leighton Buzzard.

LEIGHTON BUZZARD.—For drainage and sanitary work at site "Flume of Feathers" Hotel, Leighton Buzzard. Mr. T. H. Bishop, architect, Leighton Buzzard.

LEIGHTON BUZZARD.—For the erection of isolation hospital, fodge, laundry, &c., in Stoke-road, Linslade, Leighton Buzzard, for the Hospital Committee of the Linslade Rural District.

LEIGHTON BUZZARD.—Accepted for the erection of a house in Grove-road, Leighton Buzzard, for Mr. G. H. Aswell, Mr. T. H. Bishop, architect, Leighton Buzzard.

LEVENTONSTONE.—For the supply of 300 tons Guernsey granite spalls for the West Ham Urban Guardians.

LONDON.—For rebuilding the Church Schools of St. George, Claverley-street, in Faversham, W. Mr. Philip A. Rowan, architect, 9, Bridge-street, Westminster.

LONDON.—For erecting a new sorting office at Penrose-street, Walworth, S.E., for the Commissioners of Her Majesty's Works and Public Buildings. Mr. Henry Tanner, architect.

LONDON.—For alterations and dilapidations at the "Park Tavern" public-house, Portway, West Ham, E., for Mr. S. Knight.

LONDON.—For additions, alterations, and fittings at the "White Hair Hotel," Gospy-lane, Upton Park, E., for Mrs. M. A. Fry.

LONDON.—For erecting new Conservative Club, Charlton, S.E. Mr. John Rowland, architect.

LONDON.—For alterations to the "Crown and Anchor" public-house, Jamaica-road, Bermondsey, S.E. Mr. Chas. H. Hatch, architect, 11, St. Dunstons-hill, Strand.

LONDON.—For alterations to the "Crown and Anchor" public-house, Jamaica-road, Bermondsey, S.E. Mr. Chas. H. Hatch, architect, 11, St. Dunstons-hill, Strand.

LONDON.—Accepted for drainage work at the Clerkwell Fire Station, for the London County Council.

LONDON.—Accepted for repairs and painting at the Clerkwell Fire Station, for the London County Council.

LONDON.—Accepted for the erection of the Dalton Theatre of Varieties, for Mr. C. Lees. Messrs. Wilson & Long, architects.

LONDON.—For residence, boundary fence, and walls, "The Downs," Mr. A. Wilkinson, architect, Luton.

LYTHAM (Lancs.).—For the execution of street works, &c., for the Urban District Council.

MIDDLEBROUGH.—For kerbing, flagging, &c., Bessemer-street, Greengrove, for the Eton Urban District Council.

MITCHAM.—For the construction of a sewer, &c., Church-end, for the Croydon Rural District Council.

NEW TREDEGAR (Mon.).—For the erection of seven houses, Caswell, Tophill. Mr. George Kenhole, architect, 25, Duffryn-terrace, New Tredegar.

NEW TREDEGAR (Mon.).—For the erection of four houses, Greenfield, Mr. G. Kenhole, architect, 25, Duffryn-terrace, New Tredegar.

NOTTINGHAM.—For new technical centre, &c., Leam Side Board School, Nottingham. Mr. A. H. Goodall, architect, Nottingham.

QUEENBOROUGH.—For the erection of a Congregational Chapel, Queenborough. Mr. W. T. Rule, architect, Sheerness.

RHONDA.—For the erection of a mission church at Trealan, for the Rev. J. D. James, M.A., Vicar of Llynypwll.

RUABON (Wales).—For additions, &c., to Welsh Baptist Chapel, Rhos, for the trustees of the Welsh Baptist Chapel, Rhodlanerch-y-gog. Mr. J. G. Owen, architect, 7, Preston-grove, Liverpool.

ST. LEONARDSON-SEA.—For the erection of school buildings, Boppep, for the U.D. School Board. Messrs. Elworthy & Son, architects, London-road, St. Leonards-on-Sea. Quantities by architects.

SANDBACH.—For alterations, &c., to the Commons House, for the Urban District Council. Mr. Alfred Price, architect, Elworth, Sandbach.

SEDFIELD (Durham).—For the execution of sewerage works, East Howie Colliery Village, Ferryhill, for the Rural District Council.

STAINLAND (Yorks).—For kerbing, flagging, &c., Westgate, for the Urban District Council. Mr. J. H. Walker, sealer, Medicines Hall, Stainland.

SWANSEA.—For the erection of a block of cottages, Cockett, for the Urban Guardians. Mr. Richard Watkins, architect.

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 J. Longley & Co. 22 8/6
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 Messrs. & Gitchell Ltd. 678 13 0
 W. G. Cannon & Sons 649 0

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 W. Shumans 489 0
 J. & F. May 237 0
 J. F. Clarke & Sons 231 0
 Vaughan & Brown, Ltd. 201 0

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 J. Ford 1,850 0
 J. Smith & Sons 1,850 0

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 J. Groves & Son 25,589
 Stimpson & Co. 25,460
 J. & M. Patrick 25,493

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 Kibby & Gylford 1,231
 W. M. Dabius 1,254

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 W. Shurutt 5,418
 W. J. Mitchell 5,507
 W. Groves & Son 5,549
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 W. Smith 5,403
 C. Cox 5,171
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 tary and drainage works.—
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 E. Lawrence & Sons 1,925 0
 E. Tignor 1,927 0

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 A. E. Symes 231 0
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The Builder.

VOL. LXXII. NO. 296.

JUNE 29, 1897.

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Elevations	Single-Page Photo-Litho.
Plan and Section	Single-Page Photo-Litho.
St. Alban's Church, Blackburn, Exterior and Interior.—Mr. E. Goldie, Architect	Two Double-Page Photo-Lithos.

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A Revised View of Italian Renaissance Architecture.



HE history of the influence of the architecture of the Italian Renaissance upon English architecture in the more modern period, exhibits rather a curious variation in one point of view.

In the days of our fathers and grandfathers Italian architecture stood as the symbol for what was correct, refined, and Academic in the application of the classic orders to modern architecture. Palladio was its great name, attaining in England an almost proverbial influence as a kind of architectural high-priest, such as he hardly attained in any other country. Alberti, Vignola, and Serlio were admitted though lesser lights in the same form of art. When the late Sir William Tite founded his prize for the encouragement of the study of Italian architecture, it was unquestionably this academical idea of it that was in his mind; he wished to promote the study of and taste for a correct application of the Orders, as an antidote to the threatening irruption of Gothic tastes. That the expression "Italian Renaissance architecture" could stand for much which is fanciful, original, and picturesque, is an idea which would almost have startled the older generations who just preceded the Gothic revival. But the younger generation of Englishmen of the present day, without philosophising much on the matter, have begun tacitly to find this out for themselves; their sketch books tell the tale, filled as they are often with bits of picturesque and unbacked architectural combination and detail; unlawful incidents, such as would find no place in the Vitruvian or Palladian scheme of architectural design. It is partly on this account that even those whose natural leanings are towards mediævalism or what is akin to it have ceased to regard Renaissance architecture in that spirit of contempt and aversion of which Pugin first set the example, and to which Ruskin afterwards gave voice in his eloquent but absurdly exaggerated language. Even the scholastic architecture of the Italian Renaissance is now regarded with some

respect by those who decline to take it as a guide; but our eyes have begun to be much more opened to the fact that there is a great deal in Italian Renaissance architecture which is much more than scholastic, and that the generation of mediævalists who poured contempt upon it were only contemplating one phase of Italian architecture, and that not the most interesting.

Mr. Anderson's book on "the architecture of the Renaissance of Italy" * is not therefore a new gospel on the subject: it is only a revised analysis to suit a position already tacitly taken up. But such a book was certainly required. The existing popular text-books, such as Fergusson's, take the old view of Italian Renaissance architecture as essentially an academic form of art; it was desirable that there should be a book for students and the public which would express the more comprehensive view of the subject which is now beginning to prevail. This therefore, is the excuse for the production of a small book on so great a subject as the architectural Renaissance in Italy; not to pretend to exhaust the subject, but to present it to the student from a new point of view.

The most important feature in Mr. Anderson's book is the emphasis which he lays on the earlier works of Renaissance architecture, which have been comparatively neglected by previous writers, who have regarded them merely as examples of incompleting progress towards the development of a purely classical style. Italian architecture, in fact, has till lately meant to the majority of architectural students the architecture of academic laws and the use of the Orders, and the student has been invited to concentrate his whole attention on the more symmetrical and imitative buildings of the later period, to the ignoring of the in many cases far more interesting and virile work of the earlier Renaissance. Thus has arisen the critical mistake of regarding the Italian Renaissance as merely an imitative period. That in the later Renaissance there was a good deal of cold imitation of Roman detail is true enough, and also that it was, as far as we know, the first time in the history of the art in which architects went back to

* "The Architecture of the Renaissance in Italy: a general view for the use of students and others." By William J. Anderson, architect, A.R.I.B.A., director of architecture and lecturer at the Glasgow School of Art. London: B. T. Batsford: 1896.

the imitation of the details of an ancient style many centuries before them; so far the Renaissance marked a new era in architecture, a new method of procedure; but even in regard to this later and more scholastic Renaissance, though the details were borrowed, the main design was not; and the works, for instance, of Palladio, Peruzzi, and Sansovino, each represent a distinct principle of architectural treatment;

"Michelangelo's dome, that had hung the Pantheon [in heaven,"

was not a copy of the Pantheon. But in the earlier days of the Renaissance this scholastic imitation had not been systematised; the architects, under the influence of the revival of learning, no doubt turned to the remains of Roman art and drew inspiration from them and made use of some of their materials, but it was a use made in an exceedingly free spirit, in buildings many of which were entirely new architectural creations. The falsity of that view of the Renaissance as a merely imitative school of architecture has been commented on more than once in our pages; and we are glad to find an able and thoughtful critic like Mr. Anderson promulgating the same view:—

"It is true with regard to the details or materials of its composition that in the Roman Forum, or the Palatine Hall, or among the ruins of the Baths of Caracalla, one may find not merely the prototypes, but the approximate forms, nearly every feature which goes to compose the church or palace built fourteen or fifteen centuries afterwards. With as much truth, however, may it be said that originality has never been displayed to greater degree than by the architects of the Early Italian Renaissance, and that considered in relation to the previous direction of all architectural effort for centuries, the interiors of the Capella del Pazzi, San Lorenzo, and Santo Spirito—all churches of Brunelleschi—are real works of genius. . . . In every way it becomes clear that those who consider the architecture of the Renaissance as merely an imitative style, and place it in a different category from all which precedes it, do so with a little truth and more error. If the Italians of the fifteenth century took the Roman forms and details as a basis, they built up a new style as different from the Roman as the Roman was from the Greek. There is, for example, a far wider gap between the Renaissance church and the Roman temple than between the Roman and Grecian temples; and such buildings as the Palazzi Strozzi and Grimani are unique, and have no relation of an imitative kind to anything in classic times."

This is no more than the truth, and it is well to have it set forth so plainly, not only

for architectural students, who may use the book as an introduction to the study of Renaissance architecture, but also for those of the public who may be induced to read it, and who are accustomed to follow with too implicit belief Ruskin's absurd and overacted denunciation of all Renaissance architecture as a sham. There is, however, one important point which might have been referred to in the Introduction (from which the above quotation is taken), viz., the extent to which architecture became a personal art at the Renaissance. It is not more the style of the country or of the age that we recognise in a Renaissance palace or church, than the treatment and manner of the special architect whose work it was. This fact represents the most marked and unquestionable distinction between the condition of architecture at the Renaissance as compared with any earlier period the works of which are known to us. There may be two or three ancient buildings which have the air of individual taste and intellect strongly marked on them. The Erechtheion is one. St. Sophia seems to have owed its grand design to the personal genius of its architect, since we know of no precisely analogous building before it. There is Peterborough west front; a distinctly individual idea. But in general both the Greek temple and the Gothic cathedral affect us as manifestations of an impersonal architecture, carried out according to a received programme. With the great Renaissance buildings it is different; they are each stamped by the personal character and predilection of their architect. Mr. Anderson seems hardly to have realised, or at least to have pointed out, this essential fact with sufficient emphasis, though he does lay stress on the influence of the personal genius of Brunelleschi.

This latter great architect can only partly be claimed by the Renaissance, for Santa Maria at Florence was essentially a mediæval building, and Brunelleschi's dome a mediæval dome, more like an octagonal vault than a dome, and pointed in section. It was in some of his smaller works that Brunelleschi fairly took up the new form of architecture. It is curious, and it is an evidence of the free and unfettered manner in which architecture was at this time practised, that while Brunelleschi was following classic examples in some of these smaller works, the Riccardi Palace was commenced, and the Strozzi even a good deal later; buildings which are in most respects far more mediæval than classic in feeling, the only effect decisively classic about them being the huge and strongly marked cornice, which was proportioned not to an Order, but to the whole height of the building. In drawing attention to the grandeur and great projection of these cornices, the author omits to show by a section what exceedingly artificial and unstructural creations they were; the cornices actually overhang to a much greater extent than the width of the walls, so that they must be cramped down; we do not know whether any one has had the opportunity or the curiosity to examine into this, but a published section of the Strozzi palace, which we may assume to be fairly correct, gives one a most uncomfortable idea as to the seating of the cornice on the wall.

Still more strange does it seem that almost simultaneously with the erection of buildings of such massive grandeur and breadth of treatment as these two palaces, Alberti should have thought that he was bettering

architecture by the production of so tame and flat though elegant a piece of commonplace as the Rucellai palace, that parent of pilasters, a building which represents the wrong side, the pedantic side, of Renaissance architecture, and seems like a prophecy of what it was to come to in the later period, when too much learning and the desire of reproducing Roman work had flattened and dulled the real life out of the architecture. The fact, however, that Alberti cared to do this kind of thing of his own personal motive and apart from any general tendency at that time to architectural pedantry, is another proof of the extent to which architecture had come to be governed by the personal taste of the individual architect.

The scope and object of Mr. Anderson's five chapters or lectures is to show that Italian Renaissance architecture was really of far more interest, originality, and variety, during the earlier period which has been least studied and illustrated, and when the idea of Classic precedent was less predominant, than in the later period of Michelangelo, Palladio, and Vignola, when precedent was all-powerful; a period which has been commonly regarded as the culmination of the Italian Renaissance in architecture, whereas Mr. Anderson frankly heads his last chapter "Palladio and the Decline." There are in fact plenty of architects, in the present day, even those of Classic tendencies and sympathies, who will agree with him in this view—who have in fact long agreed with it; but we are not aware that it has been so defiantly propounded in a text-book before. Mr. Anderson begins with "The Fifteenth Century in Florence," the chapter which, along with the Introduction, we have been hitherto considering. This is followed by a parallel chapter on the "Early Renaissance out of Florence," touching on such examples as the Certosa, and on the work of Bramante, who, if the Santa Maria della Grazie at Milan is really his, could be as original and as free from the trammels of classic precedent as the architects of the early Florentine palaces. In his liking for covering the surface of archivolts and pilasters with carving, slightly confined by a thin fillet, he anticipates some of the feeling and peculiar effect of the *plateresque* school in Spain. With this we are directed also to the earlier work in Venice and the North Italian cities, which, as the author truly observes, is even stronger evidence than the Florentine work against the charge that Renaissance architecture was merely imitative. The next chapter deals with the central period and the culmination in Rome, where, by the way, Bramante, in the last period of his career, seems to have become converted to pedantry and the pilaster ideal, and did with the Cancellaria Palace as poor a feat as Alberti with the Rucellai, as far as general vigour of architectural conception is concerned, though no doubt some of the details are beautifully refined. One important element, however, illustrated in the Cancellaria and elsewhere, which the author draws special attention to, is the variation in the spacing of the pilasters, by which they are divided up into wider and narrower intercolumniations alternately. The work of Peruzzi is also largely illustrated and described in this chapter, in which also we naturally come upon the subject of St. Peter's and the dealings with it of San Gallo, Raffaello, Bramante, Peruzzi, and Michelangelo. "Roman influence in the north of

Italy" forms the subject of the succeeding chapter; the last, as already mentioned, being occupied with "Palladio and the Decline." Palladio the author classes as undoubtedly the cleverest man of the late Renaissance, an architect of fine perceptions and no little originality. The praise of the latter epithet he, perhaps, hardly deserves; at least, where he was original, it was by no means always in the best manner. The author comments on the fictitious importance which his name has obtained in England: "Why he should be better known and more honoured than Brunelleschi, Bramante, Peruzzi, or Sanmicheli, it is difficult to understand, unless it be that he showed what could be done on a small scale and with simple and cheap materials." That would, no doubt, be one reason for his being dear to people who erect buildings in this country. Whatever the cause, it is certain that with many old-fashioned Englishmen, to this day, the name of Palladio is a kind of synonym for architecture.

The book makes a very good summary of the subject in a small compass, and the numerous illustrations, mostly reproduced from photographs, serve to give a very fair panorama on a small scale of the salient qualities of the principal classes of architectural monuments of the Renaissance.* It may be recommended as an introductory book both to students and the laity. Among special points of criticism we are glad to see that the author repudiates the now popular idea that a painter's or a sculptor's training makes the best architect. The fact that a few of the great architects of the world had found their way into the art through a sculptor's or painter's studio, only shows, as he observes, that special capacity will assert itself and find its true outlet. "Many painters and sculptors made poor architects, and hundreds of them never indicated any architectural skill whatever. The best of the architects were those who laid aside everything for their art, and became no longer painters and sculptors but architects." And this is really the common sense of the matter. We also entirely concur in the advice to look after small works of the Renaissance as attentively as after the great buildings, as the smaller ones may often be found to be the most perfect examples of the art. Lastly, we may draw attention to the important distinction which the author suggests between the art of the Renaissance and "the fleeting revivals of styles in modern days." "Had the Italian church builders of the sixteenth century pursued the architectural methods of the English Gothic revivalists of the last generation, they would have attempted to reproduce the temples, or at least the law court or Basilica, or the form of the Roman houses where the earliest Christian churches assembled. This was not their method, and where their arrangements were not virtually original, designed to meet the wants of the time, they were developments of Mediæval or Gothic practice, that is, of the period immediately preceding." That is perfectly true, and it is a distinction often lost sight of by those who rank the great architectural movement of the Italian Renaissance with an ordinary "revival."

* This system of illustration by reproductions of photographs, which is now becoming fashionable in books on architecture, no doubt saves time and trouble, and is in a sense more trustworthy than drawing, but it does not give a book the same interest, especially when the perspective is seriously distorted by the photograph.

THE EFFECT OF EXTRA WORK ON THE DATE OF THE COMPLETION OF BUILDING CONTRACTS.

It is very seldom that what may be called a pure point of building law comes before the Court of Appeal, so rare, indeed, that even if the recent decision in the case of *Dodd v. Churton* (Law Reports, 1897, 1, Q.B.D., p. 562) were on a point of less importance than it is it would be worthy of some attention. But the practical value of the case in question makes it desirable that it should receive detailed notice.

There is no point in building arrangements more vital than the question of the date of the completion of a contract. It is one which too often gives rise to much disagreement, more especially when some work extra to the original contract has been done. No prudent building owner will fail to have a date for the completion of the work inserted in a contract, and also have a scale of penalties to be paid by the builder added in case the latter does not complete the work by the specified date. In the simple but rather exceptional case of a contract which is completed without extras there can be, as a rule, no difficulty on this point. If the work is not done by the date which is specified, then the builder has to pay the penalties under the contract.

But nine-tenths of the building contracts of the present day are not completed as originally entered into—some extra work is almost certain to be ordered. It is then that complications frequently arise, since it is obvious that the completion of the work by a specified date may be prevented if the building owner requires extra work to be done. The non-completion necessarily brings the question of the penalties to the front, and it is here that there has been some uncertainty as to the law, which the recent case of *Dodd v. Churton* appears to have finally cleared up. In *Holme v. Guppy*, which was decided in 1838, and also in *Thornhill v. Neats*, decided in 1860, the ordering of extra works and their execution by the builder was held to wholly put an end to the penalty clause in the contract. In *Legge v. Harlock*, decided in 1848, it was held that the result of the extra work was "to enable the builder to have an allowance made in respect of the days necessarily occupied in the execution of the additional work" (see *Roscoe's "Digest of Building Cases,"* 3rd ed., p. 58). This decision, it is obvious, has an important practical result, different from that of the two first-named cases, since, in them the question of penalties was wholly put an end to. But, as pointed out in the work from which the above extract is taken, according to the contract in *Legge v. Harlock*, if extra works were ordered, they were to be finished in a reasonable time. In other words, the question of the date of the completion of extra works was provided for in the contract.

In 1870 we get to a case in which the date of the completion of any extra works was specified with a will, since the builder bound himself to complete the contract, extras included, by the original date. The Court of Queen's Bench held that if a man was foolish enough to bind himself under a penalty to do something which was impossible he must be held to his bargain. In the recent case of *Dodd v. Churton* there were the usual circumstances. There was a date fixed for completion of the contract; extras

were ordered—these delayed the completion of the contract. The value of these additional works was 22*l.* 8*s.* 8*d.*, and it was said that a reasonable extension of time would have been a fortnight, but the builder did not, in fact, complete the contract for twenty-seven weeks beyond the date originally specified for its completion. The building owner consequently claimed penalties for twenty-five weeks. But in the argument of the case, the middle course, as it may be called, which had been adopted by the building owner, seems to have been thrown over by his counsel, since he relied on the *St. John's College* case, and argued that the true construction of the contract was that the builder had undertaken to do the original and any extra work by the specified date. On the other hand, the counsel for the builder argued that the case was within the general rule, namely, that the building owner by ordering extras had put a complete end to the penalty clause.

This was the view taken by the Court of Appeal, who held that the *Oxford* case was exceptional, and that unless a contract in clear words stated that extras were to be completed by the date originally specified then that this case did not apply, and that there was no date fixed for the completion of the contract. This decision is no doubt sound law, but it is rather hard on the building owner, and we think that the Court, while holding that the penalty clause was put an end to so far as regards the date originally fixed, yet might have implied a contract to finish the work in a reasonable time. It is absurd that extras, which properly lengthen the time of execution of a contract, we will say, for fourteen days, should allow a builder to delay the completion for perhaps fourteen weeks.

What is the practical matter, then, for parties to building contracts to bear in mind, having regard to these various decisions? One thing is clear, that no builder should bind himself by such mad conditions as in the *St. John's College* case. In *Legge v. Harlock* we find the reasonable solution—there should be a stipulation in the contract that extra works, if any are ordered, shall be completed in a reasonable time: or in such additional time as may be allowed by the architect. This is fair to both parties, whereas the rule laid down in *Dodd v. Churton* is not fair from a common-sense point of view to the building owner. As we read it, the meaning of Clause 15 of the conditions agreed upon by the Institute and by the Central Association of Master Builders is in accord with the decision in *Legge v. Harlock*. The recent decision of the Court of Appeal shows how desirable it is for well-known conditions to be used in building contracts, and not those which are drawn by some lawyer who is probably unaware of the various decisions on these technical questions.

NOTES.

In a communication to the *Age of the Earth*. Victoria Institute the other day, Lord Kelvin discussed the "Age of the Earth as an abode fitted for life," in which, however, we fail to find any new data that could be utilised in the solution of the problem. The date of the solidification of the earth he now places between twenty and thirty million years ago, and he arrives at

this date by judging of "the properties of rocks and by underground temperatures." This last is delightfully vague, and when we begin to know something of underground temperatures we may be able to follow the Glasgow Professor; as it is we are in daily expectation of having our views on that subject modified by new discoveries, for during the past few years very divergent results have been obtained in actual practice as to the rate of increase of underground temperature. And if the deductions are mainly based on the "properties of rocks" (presumably igneous), we shall be glad to learn of any two authorities who are in agreement with each other respecting the temperature under which any holo-crystalline rock has settled down. Lord Kelvin is a champion antagonist of the doctrine of uniformity in geology, and, although it is not fashionable, we are rather inclined to agree with him on that point. At the same time, it is difficult to reconcile the grounds for that antagonism with the mathematical progression demanded by his calculations. If "seventeen million years" have elapsed since the beginning of Cambrian time, biologists will want more than double that for the estimate of the date of the first appearance of life on the globe. These oldest fossiliferous rocks contain the remains of some of the most highly organised invertebrata, and some of the genera have very little altered up to the present day. The study of the phylogeny of Lower Palaeozoic life renders it impossible for the paleontologist to accept any estimate of time for the evolution of pre-Cambrian life. We do not follow Lord Kelvin, therefore, in his observations on the biological aspect of the problem. At the risk of being included amongst the "antiquated geologists of thirty years ago," we venture to suggest that more facts are wanted before any scientist is warranted in attempting to fix the date of the appearance of life on the globe. The younger school of geologists also will have none of these precious theories, which, as a rule, have no shadow of foundation in fact to rest upon; and Lord Kelvin is hardly correct in stating that geologists "no longer consider the question of absolute dates as outside their province."

A CORRESPONDENT in the *Times* makes a rather exaggerated suggestion as to the danger of an extensive fire if one of the temporary scaffolds on the line of route of the procession caught fire. To say that "a chance spark or an unextinguished match would quickly set them alight" is hardly true. Thick wooden joists and planking are not easily set on fire by a burning match falling on them. Such danger from fire as there might be would rather arise from a match falling on any accumulation of shavings or paper, or other easily inflammable material, accumulated in the spaces under and behind the staging. These spaces, which will be invisible and not to be got at during the procession day, ought to be carefully examined and cleared of rubbish the evening before the 22nd. If that were properly done the danger from fire would be hardly appreciable. What we should feel more anxious about is the stability of some of the scaffolds under the pressure of a crowded mass of persons all striving to lean as

near the front as possible; we do not refer to the scaffolds erected in steps on a slope—those are safe enough—but to some of the very high narrow stagings which we observe are getting erected against nearly the whole height of some of the street buildings. These ought to be securely tied into the buildings behind them, and we feel some doubt whether this has been adequately done in all cases, people being naturally anxious to damage their buildings as little as possible. But the whole of these erections are liable to the supervision of the District Surveyors, so that we may hope they will be well looked after.

THE Committee which is charged with the arrangement of the Paris Exhibition of 1900, has drawn up its scheme for the "retrospective" exhibition of Fine Art and the exhibition of Decorative Art, in its main lines at least. According to the programme, drawn up by M. Molinier (assistant-director of the Louvre), the Retrospective Exhibition will have the whole of the small palace at the Champs Elysées and part of the large palace on the line of the Avenue d'Antin. In the small palace will be collected objects of decorative and industrial art from the earliest date to 1800, classed in twelve series according to chronological succession. The upper portion of the Retrospective Exhibition will include works of art from 1800 to 1839, installed in a portion of the large palace; sculpture on the ground floor; painting and industrial art on the upper floor. This portion of the exhibition will be divided into five parts, corresponding to the First Empire, the Restoration, the reign of Louis Philippe, the Second Empire, and the modern Republic. Between the different galleries will be rooms for visitors to rest, furnished in various styles so as to illustrate the progress and change of style in furniture design. In connexion with the subject of the Exhibition, it may be mentioned that it appears now to be definitely settled that the annual Salons, until after the 1900 Exhibition, are to be accommodated in the Galerie des Machines.

A LONG letter on this subject from the Bishop of Chester, in Monday's *Times*, is gratifying as indicating that the labours of the Joint Committee of the Institute of Architects and the College of Organists, appointed some years ago to consider the question of the best position of the choir and organ in churches, are not entirely thrown away, and that their Report, though not final in its nature, is now influencing clerical opinion. The Bishop quotes largely from this Report, and with evident approval; but when he refers to the conservatism of architects as standing in the way of improvement, we are inclined to suggest that it is rather the conservatism of the clergy that is at fault. The scheme of the chancel choir is undoubtedly favoured by the clerical party from the idea that there is a traditional ritualistic propriety in it, and we imagine that in many cases an architect would not be allowed to dispense with the long chancel and the choir stalls in it, even if he wished to do so. Yet the idea of the traditional propriety of the arrangement is only illusory; it dates from the days when the choir were also the clergy, and were a segregated body. In the present day the lay choristers should be more properly regarded as a portion of the congregation. The

Bishop of Chester seems to be fully persuaded of the unsuitability, on musical grounds, of the "organ-chamber" (it is something to have got that opinion on record from an ecclesiastical dignitary), and evidently favours the idea of a west-end organ with a choir on either side of the nave, which we have long regarded as the true solution. The choir are then really in a position to lead congregational singing, and a large organ has at the same time a chance of being heard with its best effect.

THE Royal Institution was crowded on Friday evening last week, when Mr. Preece gave a lecture on "Signalling Through Space Without Wires." He first described a primitive system which was successfully used to signal across the Sound of Mull when the submarine cable broke down in 1895. The principle employed was that currents in a long straight wire induce currents in a long wire parallel to it, even when they are many miles apart. Another system described was that of communicating with lightships by means of a cable coiled at the bottom of the sea under the ship. The currents in this cable were to induce currents in another independent cable coiled round the ship. This method, however, was a failure, as the currents induced in the iron hull of the ship screened the coils from one another. He then described Signor Marconi's system, about which it now appears much needless mystery has been made. It was found to be a modification of a Hertz oscillator and a Lodge coherer. It was stated that by its aid signals were transmitted across the Bristol Channel between Penarth and Brean Down, a distance of nearly nine miles. He also said that secrecy could be perfectly obtained by its use, as only a receiver tuned to the particular frequency would respond to the signals. We do not see, however, what is to prevent any one from tuning a receiver until it answered the P.O. signals. It is well known to mathematicians that the resonance of such a receiver is not at all marked, and that it will respond to electric waves throughout a wide range of frequency. For shipping and lighthouse purposes this system has a future before it, and it will be interesting to see whether the Post Office or private enterprise will be the more successful in adapting Hertz's and Lodge's discoveries to practical work.

A Central Railway Station.

A RUMOUR was set afloat last week that the Midland Railway Company were negotiating for the purchase of the site of the Foundling Hospital, with a view to erect on it a central station. This report, we are glad to hear, has now been contradicted by the Company. The idea is one, however, which must take practical form sooner or later. The position of the termini of the Great Western, the North Western, and of the other lines which end north of Euston-road, is quite an anachronism at the present time. In the same way the terminus of the South Western is extremely inconvenient. We have therefore no doubt at all that, cost what it may, one or more central stations will, sooner or later, be seen in London. It does not necessarily follow that all trains will arrive at or start from this point, but that there will be some concentration of traffic partially, at any rate, in a

central place, we feel no doubt whatever. It is to be hoped, however, that it will not be at the cost of destroying a building of so much historic interest as the Foundling Hospital, and filling up one of the open spaces of London.

The Public Health Act.

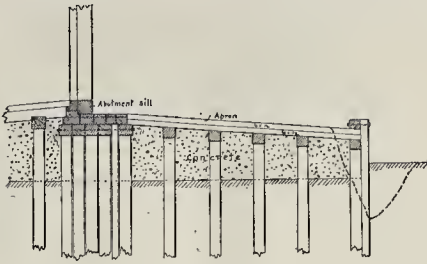
A SOMEWHAT curious point in regard to by-laws under the Public Health Act, 1875, was decided shortly before the Courts rose for the Whitsun Vacation. It was declared by a by-law that any person who should construct a sewer should place it at least 50 ft. from the building with which it was connected. Various objections were taken to what was an unreasonable by-law, and that it could not apply to alterations to old buildings. These the Court brushed aside, they were not tenable. A third objection was overruled, but not in so satisfactory a manner. How was a cesspool to be made 50 ft. from a house if the owner of it did not possess the ground to this extent? The answer given was that if this were so the cesspool could not be made in the case of a new house, and in the case of an old one the owner was not bound to construct a new cesspool. It is, however, hardly conducive to improved sanitation to allow cesspools to remain at less than a given distance from houses, if in the case of new buildings they are to be at some specified distance away. It is also to be observed that in the case in question the old cesspool was 3 ft. from the house, and was closed by order of the Inspector of Nuisances, so that the owner was not a voluntary agent in the matter. As regards new houses in streets, a by-law such as that which was under discussion in *Simmons v. the Malling Rural District Council* appears to contemplate a system of drainage and not isolated cesspools.

Electric Lighting by Reflection.

IN a new banqueting hall in connexion with the Royal Palace Hotel, Kensington, an experiment has been tried which was recommended years ago in our columns, in the early days of electric lighting, viz.: lighting a room by reflection from the ceiling, the actual lights being concealed. In the room in question some hundreds of 16-candle-power lamps are hidden under the cornice and the light is thrown on to the ceiling and thence reflected down into the room. The work was carried out by Messrs. Donnison, Berlyn, Sillem, & Co. Of course a certain amount of light is wasted in the reflection, but the glare of the lamps is removed from the eye, and there is also the pleasing effect produced of a light from no apparent artificial source—a kind of daylight effect.

A Cause of Leak in a Dry Dock.

THE *Scientific American* in a recent issue gives some information as to a leak in the dry dock in Brooklyn Navy Yard, and its probable cause, which may be of interest to engineers. Water had been percolating into the dock beneath the apron which extends from the outer sill into the entrance channel. The apron consists of two layers of 12 by 6 timber on a bed of concrete and piling, with sheet piling 12 by 8 on the side towards the entrance. A diver sent down to examine found that a hole had been torn open at the outer edge of the apron, exposing the underlying bed of concrete, and that a large hole had been formed in the bottom



Section of Apron, Brooklyn Dry Dock.

itud of the channel round the damaged portion. The following is given as the probable explanation:

"The construction of the dock was carried on from the inshore end toward the channel, and the apron was built while there was yet a couple of hundred feet of solid ground between it and the Wallabout channel. The removal of this material was done by a floating steam dredge, and it is supposed that in excavating the channel near the apron the bucket caught the edge of the apron, tearing up the sheet piling and breaking away a portion of the concrete and the timber flooring. The water was now free to enter beneath the concrete floor and work its way along the sides of the dock. Under the great head of from 26 to 29 ft., the pressure upon the structure would be enormous, and would easily account for the bursting in of the walls on the occasion already referred to."

We give a reduced copy of the diagram accompanying the description. The dotted lines enclose the portion which was damaged as described.

A CORRESPONDENT, well known in India, draws attention to the indifferent manner in which we treat artistic gifts from loyal and distinguished Indian subjects of the Empress, as especially exemplified in the case of the Gwalior Gateway, a remarkable piece of work by Indian artisans, executed at the cost of the Maharajah Scindia of Gwalior and presented by him to the South Kensington Museum. This gateway was illustrated in the *Builder* eleven years ago (in our issue of July 3, 1886) by a beautifully executed engraving by Mr. J. D. Cooper, the gateway being then temporarily placed in the Indian and Colonial Exhibition held that year. It might have been hoped that such a costly and beautiful piece of work as this, the gift of an Indian Prince and the work of Indian artisans, might have had a permanent and conspicuous place in the South Kensington Museum. Instead of that, it has been ever since stowed away, in pieces and wrapped in cloths, in a lumber-room. What makes matters worse is that, but for a hint given to the Maharajah that South Kensington would be glad of the work, a fine site would have been given to it in Calcutta. At the time when we are inviting strangers from India to the celebration of the Jubilee of the Sovereign one of whose titles is "Empress of India," this is a very charming specimen of the way in which we treat munificent artistic gifts from our Indian tributaries.

THE drawings executed in the Architectural Association Students' Designs School of Design during the session 1896-7, which have been on view for a

few days at 56, Great Marlborough-street, show a highly creditable degree of invention and originality. The subject given to the junior students was "A Westmoreland Hill Church." Most of the students seem to have aimed at producing what ought to be the essential qualities of a country church in a hill district—simplicity of design and solidity of construction, with rather low and wide proportions. The prevalent defect in the general character of the designs is, perhaps, that, in aiming at simplicity, ecclesiastical character has been rather lost sight of, and some of the designs have consequently a rather too utilitarian character. The gable end of Mr. G. S. Nicol's design, with its stepped coping executed in large flat thin stones, suggests very well the kind of work which can be carried out with local materials. The weathervane to this is a good design, and generally speaking, the metal details in several of the designs show a good deal of fancy and originality, as in the hinges in Mr. Hawes's design, with birds *en silhouette* as if seated on them; Mr. Green's design for a hanging lamp, in a flat circle of gilt metal with decorative foliage inside it, also kept flat; the scraper is also well treated. Mr. Brierley adopts a slip vane with lateen sails, the hull treated with double sides of metal so as to give a modelled representation of a hull, but this we think out of place in a vane, which, for its practical purpose, should be kept as flat as possible. What is the point of the "emu's egg" hung beneath the lamp in the same set of drawings; is it decorative or "symbolical?" The general character of a hill church is perhaps best given in Mr. Reckitt's sketch, with its wide-spreading low-pitched roof and short buttressed tower. As the work of young students there is enough in these designs to show a great deal of promise for the future. The few drawings by the Advanced Class of Design, hung in the passage, were, we presume, a selection only; they are, as might be expected, less fanciful and more practical in character; the only remarkably original suggestion is that for a country Bank entrance, by Mr. G. C. Carter, with a bas-relief in marble overhanging the doorway in an odd but effective fashion; the remainder of the front is only like an ordinary brick house, and wants the character of a Bank.

THIS great decorative painter has now happily entirely recovered from his illness, and

has been able to send to the Champ de Mars exhibition, during the last few days, his new cartoon for a portion of the decoration which he is commissioned to carry out

at the Panthéon.* The composition, which is divided into three parts, represents the legend of Ste. Geneviève coming to revictual Paris when besieged by Clovis. The compartment on the left shows the long procession of starving people coming out from the besieged city. In the centre Ste. Geneviève stands in a boat leading a flotilla laden with food. In the third, or right-hand portion of the picture, men are shown disembarking the cargo from the ships. It is hoped that this fine work will be exhibited in its completed form next year. The study of it makes one again regret the unfortunate division of the decoration of the Panthéon among different artists of different schools. The whole work ought to have been put in the hands of M. Puvis de Chavannes.

ARCHITECTURE AT THE ROYAL ACADEMY.—IV.

DECORATIVE work is not very largely represented in the architectural room this year. We find under this head, however, two important pieces of design for church furniture or fitting. One of these is Mr. Carøe's design for a bishop's throne (1,750), a pencil drawing, lightly tinted, and very delicately though not laboriously finished, showing a wooden structure in the orthodox canopy form of a bishop's tomb, gothic in general outline and feeling, but with a certain amount of eclectic freedom in the details: the general effect is very satisfactory, rich in detail and sufficiently constructive. The other design of the same class is Mr. Pearson's rood screen for Bristol cathedral (1,924), a rather heavily worked pencil elevation showing an erection with three large ogee arches with heavy cusping, with canopied figures and open tracery panels above; the dwarf wall on which the woodwork rests is treated with geometrical tracery, and the same kind of geometric tracery repeated in the wrought iron gates. General effect—dignified and solid but not very interesting. Some less important works of the same class show more character, notably Mr. Eden's rood screen for Bilsland Church Cornwall (1,808), the lower part in light tracery compartments, the upper portion panelled solid and forming a background for two coloured figures in relief looking up towards the central cross, and two figures of cherubim, one at each side. There is such a curiously old-world look about this little bit of work that we inquired whether it was actually new work or a representation of an old reredos; but it is new and not yet finished, and is creditable to the fancy and feeling of its designer. Mr. Lacy is also original, but not in a way we like so much, in his design for proposed screens and decoration for All Saints, Cambridge Circus (1,774), which shows a plain thinly built wooden arcade, apparently painted on with foliage or some other light decorative device in colour on the white ground; this, as well as the framing of the centre gates, looks bright and piquant but certainly rather gay and secular. Mr. Rose's "New Altar St. Mary's Chaddesden" (1,819) is a sketch of an interior in which we see more of the chancel screen than the altar; the screen is effectively treated in a quiet way, with tracery at the top of the panels, so treated and truncated as to give the effect of a straight carved band along the top; the cross-barred iron grating in the openings between the mullions of the screen has rather an odd effect in combination with the woodwork. In the drawing of the new stalls, organ-case, and screen for Kington Church (1,800), Mr. John Belcher shews a small organ case very like a Renaissance one, and which has at all events the merit of exhibiting that simplicity of idea and free flow of line which characterises many of the old English organ cases of the period from which this is imitated. Mr. Joass exhibits a reredos in gesso and colour (1,915), the lower portion in large picture panels with decorative borders between them; the upper line of the whole is treated in bold reversed

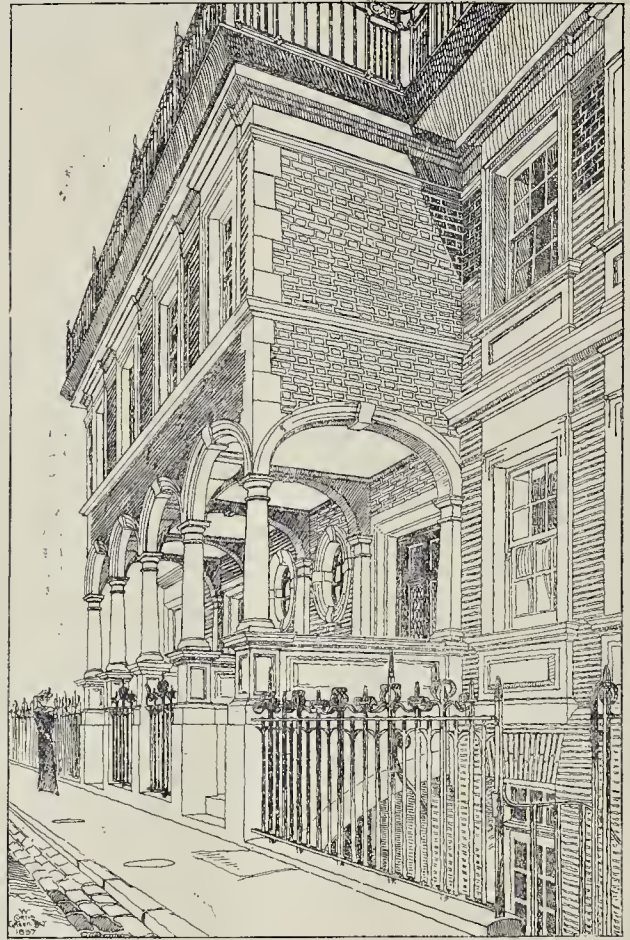
* This fact again illustrates the difference between the reasonable and courteous treatment of artists by French exhibition juries, compared with the red-tape system of snubbing prevalent at the Royal Academy. Imagine any artist presuming to ask the Academy to let him send in a work when the Show was half over, because he had been too unwell to finish it before!

curves, enclosing figure subjects on a gilt ground; the general effect is very good and somewhat new.

Among secular designs of decorative work there is Mr. Shaw's sketch for bronze gates (1,779), a powerful "blend" of figures and scroll work producing a rich and very well filled up design, which would have a dignified effect in execution; the only thing we do not quite like is the cresting, which looks a little too accidental in character, and is thus out of keeping with the very symmetrical design of the rest. Mr. Pawley's design for wrought iron gates for Dacre Court (1,790) has the defect of not exactly showing which are the gates—the opening portion, whether it is between the pilasters (as they may be called) or whether these are part of the gate. A gate and grille should show the distinction between the actual swinging gate and the standing portion of the metal work. The broad band of scroll-work over the top has a good effect, suggesting a kind of entablature to the pilaster forms. Mr. Dymoke Wilkinson shows "a suggested drawing-room fireplace in coloured gesso-duro, stained alabaster, and gilded bronze" (1,867), but all this colour is only described in the margin, not shown on the drawing. We do not like the double curve of the top of the fireplace opening; it is weak and unstructural. Mr. Christopher Carter's design for a font in cast and decorated lead (1,872), which we accidentally passed over among the ecclesiastical work, is a really original and clever piece of design, though we cannot think the material a very happy one to use for a font. There is a fancy for lead-work, however, now, and it is natural that we should find attempts made to apply it where it has not been applied before. Messrs. Waring exhibit a very good free sketch in pencil of a Dining Room in Dutch Renaissance manner (1,926), the general effect is just roughed out, and no detail finished; its chief interest is as a capital piece of pencil work. Mr. L. Turner exhibits a design for a carved wood panel (1,910), that is, a pencil drawing for a piece of naturalistic wood carving in high relief; a rather odd exhibit; it would seem so much better to have exhibited the carving itself. Mr. Beresford Pite's three doorways of street houses adorned with sculpture (1,826-7-8) may be considered as coming under the head of decorative work; they have all been illustrated in our pages from photographs, but the architect's own freely-handled water-colour drawing gives them a new interest, and we are glad to see them grouped together, as a suggestion of what might be done with our street entrances by the union of architectural detail and sculpture.

Of stained-glass design there is not very much, and hardly anything that calls for special remark; Mr. W. Aikman's two designs for single-light windows, "The Birds of the Bible" (1,909) and the "Tree of Life" (1,911) have the appearance of original designs, but cannot be well seen, as they are small drawings and hung rather high. There is some originality of treatment too, in Mr. Fisher's east window for Thornghumbald Church (1,877), the glass above and below the figure subject being treated in plain leaded squares with decorative emblems in them; the whole looking perhaps rather more like a domestic window for the entrance hall of a house than a church window. Mr. E. Ingram Taylor's design for a painted frieze (1,840), a bold piece of conventional foliage work, looks however more like a design for wall paper than painting. Mr. Pinhorn Wood's "Design for a Nursery Frieze" (1,866) may pass as such, there is not perhaps very much "design" in it, but it would look bright and pretty, which is the main point in nursery decoration. Mr. Tennant Potter exhibits a good bit of illuminated work under the title "Mercy" (1,866), a central figure with a minutely diapered gold background, surrounded by a wide border in boldly coloured foliage.

Among drawings of ancient work Mr. H. C. Corlette contributes several careful measured and coloured drawings of the decoration of St. Savin, including a complete coloured section of the church, with its long, cylindrical Romanesque columns, each coloured differently. The details of painted decoration, which are given to a larger scale, are very interesting, and almost Greek in precision and purity of line. Mr. C. A. Nicholson contributes an effective monochrome water-colour drawing of the portal of St. Sauveur, Dinan (1,778). Mr. A. E. Henderson has given well



Sketches of London Street Architecture.—XIV. Nos. 2 and 3, Balfour-Place, W. Messrs. Balfour & Turner, Architects.

the character of the interior decorative work and furniture in Or San Michele, Florence and in the Capella Palatina, Palermo (1,809, 1,815), but his best exhibit is a small and delicate water-colour drawing of a group of columns at the south-west angle of St. Mark's (1,816). This is an exceptional little bit of illustrative work, and is one of the best things in the room. Mr. Brewer sends his pencil drawing of the interior of the western choir at Bamberg Cathedral, which has been illustrated in our lithograph pages; it is in pencil, and seems rather to show that this is not a very good medium to use where an effect of dark shadow is required over a considerable part of the work, as in the centre portion of this drawing, which has a rather loaded effect; the portions in light are very successfully and freely handled. Lastly, Mr. Corlette contributes also a very careful and highly-finished water-colour drawing of the curious painted sculpture of the late medieval period, in Albi Cathedral, figures which have the appearance of large dolls stuck in among the architecture, worth careful record as curiosities, but hardly in any other light.

This concludes our notes of a collection which on the whole can hardly be said to be equal to the average interest of the Academy architectural room.

THE '91 ART CLUB.—This club will hold its Annual Exhibition of Members' Works at Clifford's Gallery, 21, Haymarket, during the latter part of the month.

SKETCHES OF LONDON STREET ARCHITECTURE.—XIV.

NOS. 2 AND 3, BALFOUR-PLACE, W.

THESE houses were erected in 1802. The materials used were red Suffolk bricks with brown Portland stone dressings. The only unusual feature which needs explanation is that there are three floors at the front of the house, taking up the same height as two floors at the back; i.e., the kitchens are 14 ft. 6 in. high and dining-room 14 ft., whereas the heights of the rooms in front are—basement 0 ft. 3 in., hall 9 ft. 9 in., and library 8 ft. 9 in., thus bringing the front and back drawing-rooms on the floor above, on one level.

The area railings are of wrought iron and the balcony railings cast iron.

Messrs. Balfour & Turner are the architects.

CHOLERA HOSPITAL FOR CARDIFF AND BARRY.—The official inspection previous to the taking over of the new cholera hospital on Flat Holm Island by the Cardiff Corporation was made recently by the Health Committee. The hospital buildings consist of a ward pavilion and a laundry block. The pavilion contains two wards, each 36 ft. long, 24 ft. wide, and 14 ft. 6 in. high, providing together accommodation for twelve patients. The buildings are constructed of local stone, quarried on the island. There has also been erected a crematorium for disposing of the bodies of any patients who may die of cholera. The whole of the work has been carried out by Messrs. Cadwallader & Hockridge, of Cardiff, from the designs and specifications of the Borough Engineer, Mr. W. Harpur. The cost of the work was nearly 3,000.

THE LATE MR. GILBERT SCOTT :
BY AN OLD PUPIL.

[FOR three or four weeks back we have been endeavouring to persuade one or other of Mr. Gilbert Scott's former pupils or friends to write out some short but reliable account of the life and work of an architect who, though of remarkable and exceptional ability, was little known in the general architectural world. Generally speaking, we have found the personal friends of a deceased architect or artist very glad to have an opportunity of putting on record what they knew of him. It is an odd exception in this case that, while all those who knew Mr. Scott seem to have had the highest admiration of his powers, each of them seemed unwilling, for some reason, to put any record of him in writing, and desirous to turn over the task to some one else. It is owing, therefore, to the backwardness of Mr. Scott's own friends, and not to any indifference on our part, that we have had to postpone for so long giving any account of his work. The following, from one of his old pupils, at last reached us, just too late for insertion in our last issue] :—

In the late George Gilbert Scott, the architectural profession has lost one who, though little heard of in recent years, was during the later sixties and seventies one of the leading men of what was then known as the New School; and who, though he never sought a wide practice, has left several notable buildings, which entitle him to a high position among those who have taken part in the architectural development of the closing part of the century. Mr. Scott was among those who were first attracted by the beauties of the later English Gothic and Early Renaissance styles, which had been neglected, and to some extent despised, during the rage after everything early and foreign.

One of Mr. Scott's earliest works, the restoration of the Hall and the Combination-room of Peter House, Cambridge, well illustrates his thorough knowledge of, and insight into, the manner and feeling which inspired our old builders, while at the same time possessing a freshness and originality which raise it out of the province of the more or less skilful copyist. The furniture and fittings were in this case fortunately left to the direction of the architect, and form a most pleasing and artistic whole, thoroughly in keeping with its place and purpose.

Mr. Scott carried out other work at Cambridge during the active years of his professional career. The restoration of the Hall at Christ College must be mentioned, together with the enlargement of the chapel at Pembroke, interesting as being the earliest recorded work of Sir Christopher Wren. There is also a new court at St. John's, Oxford, by Mr. Scott; and at Pembroke, Cambridge. Both these latter buildings are, unusually fine specimens of their class.

In domestic architecture Mr. Scott's most important work was Garboldisham Hall, Norfolk, a well-designed building in the later Jacobean style peculiar to the district. One of his most characteristic works of this class was the vicarage house at Milverton, not to mention a number of less important buildings, all showing the same thoughtful and vigorous style.

Mr. Scott's name, however, will be chiefly remembered by his ecclesiastical work. A considerable number of old churches in different parts of the country have been restored by him with the same skilful care; and, at the time when they were mostly done, contrasted strongly, in their conservative spirit, with the too common methods of so-called restoration. The writer well remembers the impression made on him by the first of Mr. Scott's works of this kind which he saw—the church at Nunburnholme, Yorkshire. Instead of the usual sweeping away of everything interesting and the bungled copying of the old work, which, as a rule, made Yorkshire restorations a byword twenty-five years ago, the old church remained strong and serviceable, and with its history unimpaired, and with such new work as it was necessary to introduce designed and executed in thorough harmony with the old.

Of new churches by Mr. Scott, probably the best known is the stately fabric of St. Agnes, Kensington. The church at Milverton is another characteristic example of his work, as is also All Hallows, Southwark. The completion of the transepts and choir of the Cathedral of Saint John's, Newfoundland, was carried out from Mr. Scott's designs, after the death of his father, Sir Gilbert Scott. Mr. Scott's larges

ecclesiastical work is the still unfinished Roman Catholic Church at Norwich. This church Mr. Scott designed in the thirteenth-century style of English Gothic, instead of taking his inspiration from the later works of the fourteenth and fifteenth centuries, as had been his previous general practice. In its present unfinished state, it is hardly possible to judge fairly of the exterior of this fine building, but the interior of the nave is certainly one of the best specimens of modern English architecture.

In 1881 Mr. Scott published his "History of English Church Architecture," a volume of much research and information. He was also the author of several papers chiefly bearing on architectural subjects. He also took an active interest in the improved production of stained glass and of textile fabrics for ecclesiastical and domestic purposes.

Mr. Scott was a distinguished member of the University of Cambridge. He was the successful competitor for the Burney Prize, first in the Moral Science Tripos of his year, and was, in consequence, elected Fellow of Jesus College.

ARCHAEOLOGICAL SOCIETIES.

ARCHAEOLOGICAL INSTITUTE.—At the general meeting, on the 2nd inst., of this Institute, Judge Baylis, V.P., in the chair, Mr. H. W. Seton-Karr exhibited a large series of flint implements from the lost flint-mines of Egypt discovered by him in November last in the Eastern desert, between ten and thirty miles from the Nile, in the Wady el Sheik district. Many of the implements, he said, are new to science. The mines resemble ruined cities, and have a central work-place where most of the objects were found. They consist of flint ornaments, truncheon-shaped implements, clubs, axes, javelin-points, sickles, and variously-shaped knives. He also exhibited flint implements found during the last expedition to East Africa. Mr. Seton-Karr discovered a long, low hill in a plain, which may have been a paleolithic city, judging by the thousands of large weapons he found in a perfect condition. It is situated near Jalelo, about one hundred miles from Berbera. This is the first instance of such a discovery, and the first time prehistoric implements have been found in tropical Africa, and may throw much light on the question of the original home of the human race. A paper by Lord Dillon, President, and Mr. W. H. St. John Hope was read on the contents of an inventory of cloths of arras and other tapestries, beds, vestments, and books for the chapel, silver vessels, &c., books, garments, arms, and armour belonging to Thomas of Woodstock, Duke of Gloucester, K.G., and seized in his Castle of Pleshy, in Essex, December 13, 21 Richard II. (1397), with their values as shown in the accounts of the Escheator for the counties of Essex and Herts. Mr. J. Hilton then read a paper on the Coronation stone at Westminster Abbey giving an outline of the story attached to it, as related by Holinshed in his chronicles circa 1577, and gathered by him out of earlier Scottish legends and records which say that the stone came from Palestine to Egypt, and was carried to Egypt, Ireland, and Iona. The particulars, as related, gained implicit belief in Scotland, involving as they did a prophetic Latin couplet, that the Scottish reign should follow the destination of the stone. The paper then recited the views of modern investigators and critics, showing that the early story is fabulous down to the time when a certain stone found its way to Dunstaffnage Castle, in Argyllshire, where, for a considerable period it was used as the seat of the Scottish kings, who were crowned there. The stone was conveyed for similar use and better preservation to Scone in Perthshire, by King Kenneth, circa 834 A.D., and as it is said the prophetic verses were, by his order, engraved upon it. In the year 1296 Edward I., King of England, removed the stone to Westminster. The inscription is quoted in a chronicle written as early as 1389, or nearly two centuries before the birth of James VI., in whom is claimed the fulfilment of the prophecy, and since his time, and probably much earlier, sovereigns of England have been crowned when seated on it. Geological evidence shows that the stone is of Scottish origin. The paper brought together for the first time all that appears in scattered sources for or against the story, whether of fable, legend, or fact. A very curious light is thrown on the prophetic character of the Latin couplet, by a tract in the British Museum Library, dated 1681, wherein

the words are printed as a chronogram, involving the mundane date of the birth of James VI., the first of the Scottish race to reign over England, a document hitherto unnoticed by the writers on the subject of the Coronation stone. Mr. Hilton put it on record for whatever it may be worth. It certainly is not a prediction written after the event. The paper concluded with remarks on the present condition of the Coronation chair.

BRITISH ARCHAEOLOGICAL ASSOCIATION.—On the 2nd inst. an interesting ceremony took place at the last Council meeting of this Association for the session 1896-97, the occasion being the presentation to Dr. W. de Gray Birch of an address and testimonial from some of the members and friends on his retirement from the post of Honorary Secretary and Editor of the Journal of the Association. The Marquis of Bute, V.P., occupied the chair, and after a few words expressive of his interest in the science of archaeology, and of his long friendship with and appreciation of Dr. Birch, handed him the gift, which consisted of a handsome gold demihunter watch. Dr. Birch suitably replied. It may be interesting to mention that Dr. Birch has worked with the British Archaeological Association for upwards of twenty-two years, being a most indefatigable Honorary Secretary and an untiring Editor of the Journal, which may be said to comprise in the twenty-two volumes which mark his period of service notices of all that has, in a prominent form, transpired in archaeology. At the evening meeting—Mr. Thos. Blashill, hon. treasurer, in the chair—a large collection of rare and beautiful miniatures was exhibited by Mr. B. Nathan, many of which are of historical interest. Amongst the more prominent were a miniature of Lady William Russell, by Englehart; a miniature of Lady Penelope Fitzgerald, by Plomer; a miniature of Marie Louise, Princess of Orange; a box, with enamel of the marriage of Marie Antoinette with the Dauphin, afterwards Louis XVI.; a circular miniature by Grege; a large miniature of Madame Vestris, by Plimer; a Limoges enamel of the Virgin and Child, from the Bohn Collection. In all, there were some thirty-six exhibits. A paper was read by Mr. Patrick, hon. secretary, in the absence of the author, Mr. T. Cann Hughes, entitled "Notes from North Lancashire," in which the ancient charters of Lancaster and the Borough seals were described. The earliest existent document is that of John, Earl of Moreton, dated 1193. The mayor's seal of the Borough is believed to be of the reign of Henry IV. or V., and bears in its centre three towers, each triple turreted, with a lion passant gardant, crowned, and a fleur de lis. The ancient stocks of the town are preserved at the Town Clerk's office, together with a series of ale and spirit measures, said to have been made from guns captured from the Spanish Armada. There are very many ancient door-heads in and about Lancaster, some of them having curious designs of fish and other emblems. The Rev. H. J. Dukinfield Astley, M.A., the newly appointed hon. sec. and editor, was introduced to the meeting and commenced his duties.

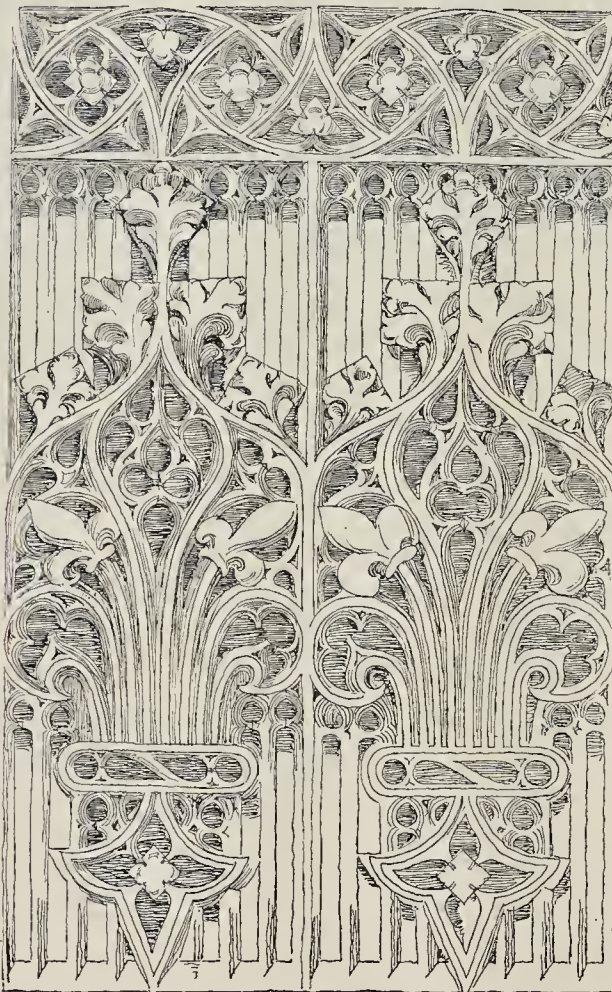
ARCHITECTURAL SOCIETIES.

GLASGOW ARCHITECTURAL ASSOCIATION.—The annual business meeting of this Association was held in the rooms, 187, Pitt-street, on the 1st inst., Mr. Wm. Tait Conner, President, in the chair. The Secretary's and Treasurer's reports were read and unanimously approved. The following gentlemen were elected officers-bearers for the ensuing session:—Mr. Jas. A. Morris, Hon. President; Mr. Wm. Tait Conner, Hon. President; Mr. John Fairweather and Mr. George S. Hill, Vice-Presidents; Mr. Charles E. Whitelaw and Mr. James Salmon, Hon. Joint-Secretaries; Mr. Robert J. Walker, Hon. Treasurer; Mr. Hugh Dale, Hon. Librarian; General Committee, Mr. John Arthur, Mr. Walter Tucker, Mr. Alex. Wingate, and Mr. Alex. McGibbon. The travelling studentship prize for 1896-97 was awarded to Mr. Geo. Edward Walker.

RESTORATION OF PRIMITIVE METHODIST CHURCH, WATTON, NORFOLK.—This building has just been reopened after restoration. Mr. A. F. Scott, of Norwich, was the architect for the work, which was carried out by Messrs. Adcock & Sons. Both the church and schoolroom adjoining have been fitted with hot-water apparatus by Messrs. Reeve & Sons, of Norwich.



ONE OF A COLLECTION OF ENGLISH AND FLEMISH PANELS OF THE 15TH AND 16TH CENTURIES.



PANEL FROM A CHEST. FRENCH. END OF THE 14TH CENTURY.

CARVED PANELS FROM SOUTH KENSINGTON MUSEUM.

THESE two panels are respectively good examples of the rather stiff and symmetrical decorative panel carving of fourteenth century Gothic, and of the free style of late Gothic Flemish carving. The long-tongued leaves of the Flemish example show a kind of form frequently found in late Flemish and German work, and which is effective as giving occasion for a great deal of freedom and flow of line in the design. In the main curves of the stems we see almost the beginning of the Renaissance feeling, though this is contradicted by the little incident of the naturalistic butt-end of the scroll.

THE INCORPORATED ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

A HOME Counties District Meeting of this Association was held on Saturday last week, at Eastbourne.

The members met at the Town Hall, where brakes were taken and the party visited the Flood Prevention Works, the Destructor and the Shone Ejector Station.

The members subsequently returned to the Town Hall to luncheon, which was provided by the Mayor of Eastbourne, after which a meeting, presided over by the President, Mr. F. J. C. May, of Brighton, was held, amongst those present being Messrs. C. H. Cooper, Wimbledon; Fowler, Manchester; Pritchard, Birmingham; J. P. Barber, Islington; T. Walker, Croydon; W. H. Savage, East Ham; Dodd, Wandswoth; Thomas, Buckingham; C. J. Lawson, Southgate; J. P. Norrington, Lambeth; Mason, St. Martin's-in-the-Fields; T. H. Yabbicom, Bristol; W. Weaver, Kensington; Laffan, Twickenham; and others.

A paper by Mr. R. M. Gloyne, the Borough Engineer, and entitled, "Construction of the Most Recent Flood Prevention Works in Eastbourne" was, for want of time, taken as read.

Mr. Gloyne, in the course of his paper, stated that the works had been designed and are being executed for the purpose of obviating, in the future, the periodical flooding to which the town has, in parts, been subject in the past in times of heavy or continuous rainfall. The cause of this flooding was undoubtedly the extremely rapid development of the high, and the flat level of the low-lying portions of the borough. In 1891 two surface-water schemes were adopted, one for the western or high-lying portion, and one for the eastern or low-lying portion of the borough, the combined cost of these being some 15,000*l.*, and in addition a sum of nearly 6,000*l.* for further plant required at the Ejector station. The author commenced his duties at Eastbourne in 1893, and the first experience he had of flooding was some three months afterwards, when Terminus-road was nearly 9 in. deep in water. It had been expected that when the construction of the 1891 schemes was finished, complete immunity from flooding would be obtained, and on being confronted with a repetition of the former evils,

The Council resolved to obtain the highest expert advice. They consequently called in Mr. Henry Law, M.Inst.C.E., of Westminster, and, acting upon his report and advice, they resolved to carry out the scheme he designed, and without any contractor, and under the author's immediate control. The total cost of the works is estimated at \$5,000., of which some 70,000. is now being spent, leaving the balance for a purely surface-water scheme to be carried out afterwards. The work now in hand consists broadly of the abandonment of the two existing 3 ft. diameter brick sewers across the Crumbles, and the substitution of two lines of 4 ft. 6 in. diameter cast-iron pipes with turned and bored joints; an entirely new high-level sewer 4 ft. 6 in. diameter, constructed of 4 ft. 6 in. cast-iron pipes through the water-logged beach, and of concrete and iron pipes of 4 ft. 6 in. internal diameter through the town; and the displacement of a portion of the existing 3 ft. diameter brick high-level sewer by cast-iron pipes 4 ft. 9½ in. diameter with turned and bored joints. The author then deals with the subject under the following heads—(a) Depot arrangements; (b) Outfall at Langney Point; (c) Valve chamber at Langney Point; (d) Three parallel lines of cast-iron pipes of 4 ft. 6 in. diameter laid across the Crumbles in the same trench; (e) Concrete sewer 4 ft. 6 in. diameter; (f) 4 ft. 6 in. and 4 ft. 9½ in. diameter cast-iron pipes laid in Terminus-road; (g) Regulating chamber. The author fixed upon a site for a depot immediately adjoining a beach road leading from the main road to Penveney, to Langney Fort, and adjacent to a single railway line upon which trains of wagons are run to and from ballast holes on the Crumbles.

The outfall proper consists of three parallel lines of 4 ft. 6 in. cast-iron pipes, 12 ft. working length, 1½ in. metal, with turned and bored joints, the sockets being 5½ in. deep, and the band on the spigot ends of nearly corresponding width. These pipes run 260 ft. into the sea, and each line terminates with a horizontal bend to throw the flow of sewage eastward. To place these lines of pipes in position a pier of whole timber piles was constructed seaward. These piles were spaced longitudinally 12 ft. between centres, and transversely 28 ft. 6 in. from centre to centre, each pair being braced across at the top with half-timbers bolted through the main piles by 1½ in. bolts. Each alternate pair of piles was cross-braced with half-timbers similarly secured to the main piles and to one another. The piles were connected longitudinally by whole timber runners with butt joints, these latter being secured by 3 in. wooden fish plates and 1½ in. bolts. The runners were securely dogged to the piles and bolted through the horizontal braces. Upon them were spiked railway metals, upon which the gantry spanning the trench and carrying the pipes to their proper position was worked. This gantry was framed of 12 in. by 12 in. and 12 in. by 6 in. timbers, and upon the top cross-pieces were spiked metals carrying a travelling jenny, upon which were secured two crabs, each capable of lifting 3 tons direct from the drum. Both traveller and gantry were worked by toothed gear from one side, and as the former ran at right angles to the latter, any spot in the trench was commanded. Sheet piling 12 in. by 6 in. was put in between the main piles for 16 bays shoreward, and also across the ends of the pier, and from the space so enclosed the sand, &c., where necessary, was excavated to its proper level, and concrete in bags substituted by a diver. Upon the concrete so placed the pipes were laid, being carried out by the gantry. The seaward end of the outfall for a distance of about 150 ft. inland is incased in concrete 2 ft. thick at the top, and practically forms a low concrete groyne, through which run 3 parallel pipes, 4 ft. by 6 in. diameter. For 215 ft. from the sea end the inclination is 1 in 40, and then to cross under the existing high-level sewer, the remainder is dead level, the difficulty of working in turned and bored joints to two different gradients being surmounted by using a make-up length of concrete. The high-level brick sewer was some distance above the new outfall, and being in rather a dilapidated condition, great care was necessary to prevent its bursting and flooding the trench. The shingle surrounding it was excavated across the trench in sections, and each end so exposed was close lagged all round the outside of the brickwork, the laggings being encircled by wrought-iron bands secured by bolts and nuts, and tightly

wedged up. As each section was finished so far, it was slung up to 16 in. square baulks stretching across the trench, the chains being wedged up as lightly as possible. On completion of the pipe line underneath, a stiff timber was laid across on the pipes, and another placed immediately over it underneath the brick sewer, and secured in position by puncheons. The low-level sewer had to be cut into to allow the new work to be put in. Each line of pipes had to be treated separately, and the old brickwork made good before the next was touched.

The valve chamber is of concrete, 20 ft. internal diameter at the bottom, and 28 ft. at the top. The circular walls are 3 ft. thick, although where the pipes had to pierce them they were originally constructed 18 in. thick, the difference being made up after the pipes had been fixed. This structure was built up on the beach on a cast-iron curb, 35 ft. diameter outside, composed of twenty-four segments accurately fitting together, and afterwards sunk into position by excavating from inside. The author believes this is the first instance of a concrete cylinder being so treated. The cast-iron curb was first set level on polling boards in the beach, and bolted up in segments, the outside and inside soldiers were then erected and bolted together at the top in pairs, and also connected round the circumference of the chamber. Shutters, 3 ft. deep, of 2-in. stuff nailed to ledges cut to the proper radius were worked in between the soldiers, the cavity so made being filled in with 6 to 1 concrete. The shutters were 6 ft. 4 in. long for the outside, and 5 ft. 2 in. for the inside of the work. As each layer of concrete became set, the shutters were moved up, being kept in their new position by upright struts placed underneath. The face of each shutter, when altered, was brushed over with a composition called "concrete composition," which effectually prevented any sticking or adhesion between the timber and the concrete. In each layer of concrete a V-shaped groove was formed on the top surface to act as a key for the succeeding one. In this manner the walls were carried up almost to their full height when a regrettable accident occurred, resulting in the partial collapse of the chamber. The action of spring tides aided by south-west winds undermined the curb on which the structure was built, the result being that two sections broke, and portions of the concrete walls came down, leaving other portions standing, although very badly cracked, and others quite intact. About one-half the chamber was involved. The cracked portions of concrete were thrown down, and together with those already on the ground, were placed in a position to act as a breakwater. Fortunately, there was nothing straight about the broken faces of the perfect portion, and by taking advantage of this, jumping holes in the yard-wide faces, letting in curved iron bands, careful washing, ramming the new concrete into every nook and cranny, and grouting each layer thoroughly in at the joints, a most successful mend was made. When the reconstruction had been effected and the new work carried up to its height, the chamber much resembled a Martello tower without its roof. Three weeks were allowed to elapse before a commencement was made with lowering by internal excavation, of which the first thing to be done was to remove the boards upon which the curb rested. These were taken out bay by bay on opposite sides of the chamber, so that when all had been removed, the whole weight of the walls rested on the cutting edge of the curb. Square timbers were thrown across the top, and partially cemented in to secure them. From each of these depended two stages hung to iron rods hooked over the timbers, and these, together with another on tremles on the beach, gave sufficient lift to throw the material out. By continually excavating the shingle from inside and throwing out by the means just described, the chamber gradually settled down to its proper level by its own weight, and as the walls were tapered one foot in the total height to skewback level no difficulty was experienced as regards earth binding. When the structure had been sunk low enough, the bottom had to be put in. The level of this is 18½ ft. below H.W.O.S.T., and precautions had, of course, to be taken to prevent the sea damaging the newly laid concrete. This work was commenced by excavating the shingle under the cast-iron curb to its full depth below the 18-in. horizontal flange, and substituting sugar-bags filled with dry concrete material, bay by bay, working alternately on

opposite sides of the chamber. It is being tidal work, the inflowing water caused the cement and beach to set in the bags, and proper care was taken not to disturb the beach in the bays adjoining the one which had been last dealt with, until the author was satisfied that the concrete material was sufficiently compact and hard. To facilitate the operation of excavating, a No. 9 pulsometer pump, driven by a 20 horse-power portable boiler, was slung inside the chamber, and the suction-pipe carried down below the bottom of the floor. Towards the sump formed to receive this pipe ran drains of stoneware pipes, roughly laid down and not jointed, into which other drains formed with large boulders, &c., delivered the water from all round the circumference of the chamber. When the curb had been packed and underpinned with concrete all round, the floor, 2 ft. thick, was put in in sections and in two layers. The necessary withdrawal of the pump rendered it requisite to deal last with this particular portion, and sufficient time was allowed to elapse beforehand to preclude the possibility of the tide blowing up the floor when its free ingress through the sump hole was stopped. In anticipation of this closing, an iron cylinder with circular flange at the top was cast, of sufficient diameter to contain the suction pipe as well as a thickness of concrete, and placed in position. A cover plate, with bolts, nuts, &c., was also provided, to slip on to the flange of the cylinder and bolt down to it, and one long tide, the pump and suction were withdrawn, the sump plugged with concrete, the cover plate bolted down and weighted with 12 in. of concrete put into the proper floor level, this concrete being itself burdened with railway metal and other material, to keep it in its place. Complete success resulted from these endeavours, and no blowing or unsoundness has been observed in any part of the floor. Some weeks afterwards the dome was put on. The ribs for this were carried on a single upright in the middle of the chamber, and on soldiers placed at intervals round the interior and strutted from the central pillar. The necessary laggings having been cut and shaped, were nailed on forming a complete centre for the concrete. This is 2 ft. thick at the crown, and 3 ft. at the skewback. Access to the interior of the chamber is obtained through a manhole at the top, to the frame of which is affixed an iron ladder stayed to the walls inside by wrought-iron rods.

The trench for 4 ft. 6 in. cast-iron pipes was commenced right away from the chamber for a certain depth, and then a dumpling left beyond which the excavation proceeded to its full depth. The author then described the timbering, and the objects of the three lines of pipes.

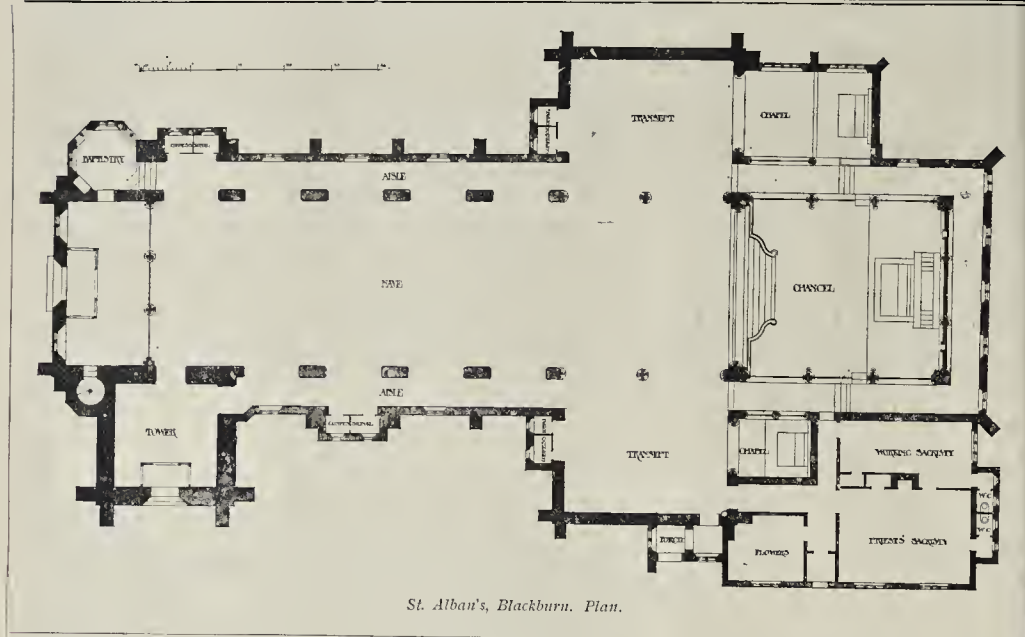
The concrete sewer was commenced near its future junction with the pipes, enough space being left for a making-up piece, and was speedily carried through Latimer-road as far as St. Aubyn's road. The ground was all of beach, rendering close timbering with runners necessary, but some compensation was obtained in that the excavated material was for a considerable length suitable for concrete work. The author then detailed the method of construction. The whole of the concrete was mixed in the proportions of 4½ of beach and 1½ of sand to 1 of cement. The manholes were formed in concrete, and are 4 ft. 6 in. diameter, with walls 12 in. thick. A wrought-iron ladder is fixed in each one, and for covering-in, 7-in. York landings are used with manhole frame and cover.

The cast-iron sewer, Terminus-road, and regulating apparatus, consists of cast-iron pipes, similar in all respects to those being laid in across the Crumbles, except that one portion is larger in diameter to the extent of 33 in. The method of working was also similar to that now in use on the Crumbles.

The President then invited discussion upon the paper.

Mr. Walker, in proposing a vote of thanks to Mr. Gloyne, said he was in favour of clay ballast for making concrete. Some care was necessary in making the concrete, but he had obtained some excellent results with clay ballast.

Mr. Pritchard, past President, seconded the vote of thanks, and said, in reference to administrative work as against work carried out by contractors, if administrative work could be carried out by the London County Council, or any other public body, as well as the work they



St. Alban's, Blackburn. Plan.

were considering, there would be no occasion for fault-finding.

Mr. Fowler, past President, asked what the height was of the pipes above ordnance datum. In regard to Shone's system, it gave him pleasure to see that day the work which Mr. Shone had carried out. The system was adopted more now than it used to be, but even now it was not known all that Shone's ejector could do. He was adopting the system in several places.

Mr. Barber referred to the construction of the valve chamber, and said that too often irresponsible critics were able to interfere in the work of competent men. He was much struck with the timbering of the trench, which was an excellent piece of work.

Mr. Mason asked why a grab was not used in the excavation, and whether it was possible to know how the cost of the work would compare with contractors' work.

Mr. Lañan asked why there were three separate sewers instead of one equal to the capacity of the three?

The President then put the vote of thanks, which was cordially agreed to.

Mr. Gloyne, in reply, said that he did not intend to touch upon the vexed question of contractors' work *versus* that carried out by administration, though he might say that when the work at Eastbourne was completed, the cost would probably be on the right side. A grab had been tried, but it did not answer because of the large boulders met with during the excavation. As to why three separate sewers were used instead of one, two of the sewers were to replace existing high- and low-level brick sewers, and the other was a prolongation of the new concrete sewer which had been carried out through the town. At Manchester he had had much experience with ballast as concrete, and at Davyhulme, in the tanks where it was used, it had answered admirably.

On the motion of Mr. Mann, seconded by Mr. Fowler, a vote of thanks was accorded to the Mayor and Corporation of Eastbourne for the facilities given to the members during the visit.

The members then proceeded to the seawall works now in course of construction at Splash Point, where they were received by Mr. T. Wilkinson, the contractor for the works.

BAPTIST CHURCH, HEATON.—A new Baptist church has been erected in the Heaton-road, from plans prepared by Alderman W. H. Dunn, of Gateshead. The contract was let to Mr. W. A. Laws, of Heaton. The new church, which is built in red brick with stone facings and mouldings, will seat 750 persons, and will cost 3,451.

Illustrations.

DESIGN FOR THE NEW BELFAST MUNICIPAL BUILDINGS.

THE illustrations show the perspective view, elevations, plan and section of the design by Messrs. Thomas & Son, of London, which has just been selected in the competition for new municipal buildings for Belfast.

The building will abut (at the south) on the road forming the south side of Donegal-square, and the business entrance to the building will be through the drive from that road.

The principal front faces the principal street of Belfast, which runs northward from the centre of the road forming the north side of the square. The principal feature of this façade is designed within the limit of view obtained from any point in the principal street, which extends for a considerable distance from the square.

The site is at present a public garden, and as far as possible this is to be retained. The building permits the retention of most of the trees on the site.

By the adoption of a drive from the back the point of approach to the building is centralised under the dome, whether approached from the front or the back.

The "Rates" and "Gas" departments are directly accessible from the street, without traversing the rest of the building.

The general arrangement of the principal rooms is the outcome of a desire that they should form a suite of reception rooms for municipal functions, and at the same time permit the great hall and refreshment room being shut off and let for public purposes.

In carrying out the building we may suggest one small alteration which may be made with advantage; the wall of the corridor where the ladies' and gentlemen's retiring-rooms are shown, on each side of the octagonal entrance hall, should be set back so as to leave a small vestibule in front of these rooms. To open lavatories with only a single door straight out of the corridor, in the way proposed in the plan as shown here, is rather an uncivilised kind of planning.

ST. ALBAN'S, BLACKBURN.

We give the interior and exterior perspective views and a plan of this church, which is being erected at Blackburn from the design of Mr. E. Goldie, and is to seat 1,000 persons. It is to be built of local stone, and roofed with Westmoreland slates.

The church, as will be seen, is planned on

the modern system of reducing the side aisles only to narrow passages for access, and the plain and massive manner in which the arcade is treated renders it architecturally a kind of basement on which the more decorative portion of the composition rests. The effect is good though the piers are rather large as a matter of convenience in arranging and getting at the seats.

The flooring under the seats is to be wood block, the aisles tiled, and the chancel and side chapels laid with mosaic. The roof internally is a plain barrel vault of wood divided into bays by stone arches; the chancel and side aisles are to have wood groining.

It is proposed to spend 20,000*l.* on the church and sacristies, exclusive of tower and fittings. The lighting is to be by electric light. It is proposed at some future time to make a special feature of the high altar and reredos, which will practically fill up the whole of the east end; the high altar being made more prominent by being raised some 4 ft. 6 in. above the nave floor level.

The church will stand in a prominent position, being free of buildings on all sides, and having a large open space in front.

The interior perspective is at present exhibited at the Royal Academy.

MAGAZINES AND REVIEWS.*

THE bulk of the June number of the *Art Journal* is occupied with an illustrated review of the Royal Academy Exhibition, by Mr. A. C. R. Carter; a well-written and judicious piece of criticism. There is also an article on the New Gallery Exhibition, and a continuation of the series of articles on "The Royal Academy in the Present Century," dealing this month with the works of James Ward and Henry Bone, the latter a name little remembered now; he was a painter on porcelain and enamel. The principal plates are illustrations of Mr. Gregory's "Boulter's Lock" and Mr. Waterhouse's "Hylas and the Nymphs," from the Royal Academy Exhibition.

The *Magazine of Art* has also its article on the Royal Academy. The writer considers there are five works supreme in the present exhibition, Mr. Abbey's scene from Hamlet being one of them—a ruling in which we cannot concur. The most interesting article is a

* The object of these notes is to point out anything in the contents of the current magazines which is of special interest to our readers, with occasional brief criticisms on the views expressed in such articles. When a magazine which has been sent to us is not noticed, it is because that number contains nothing that it is within our province to comment upon.



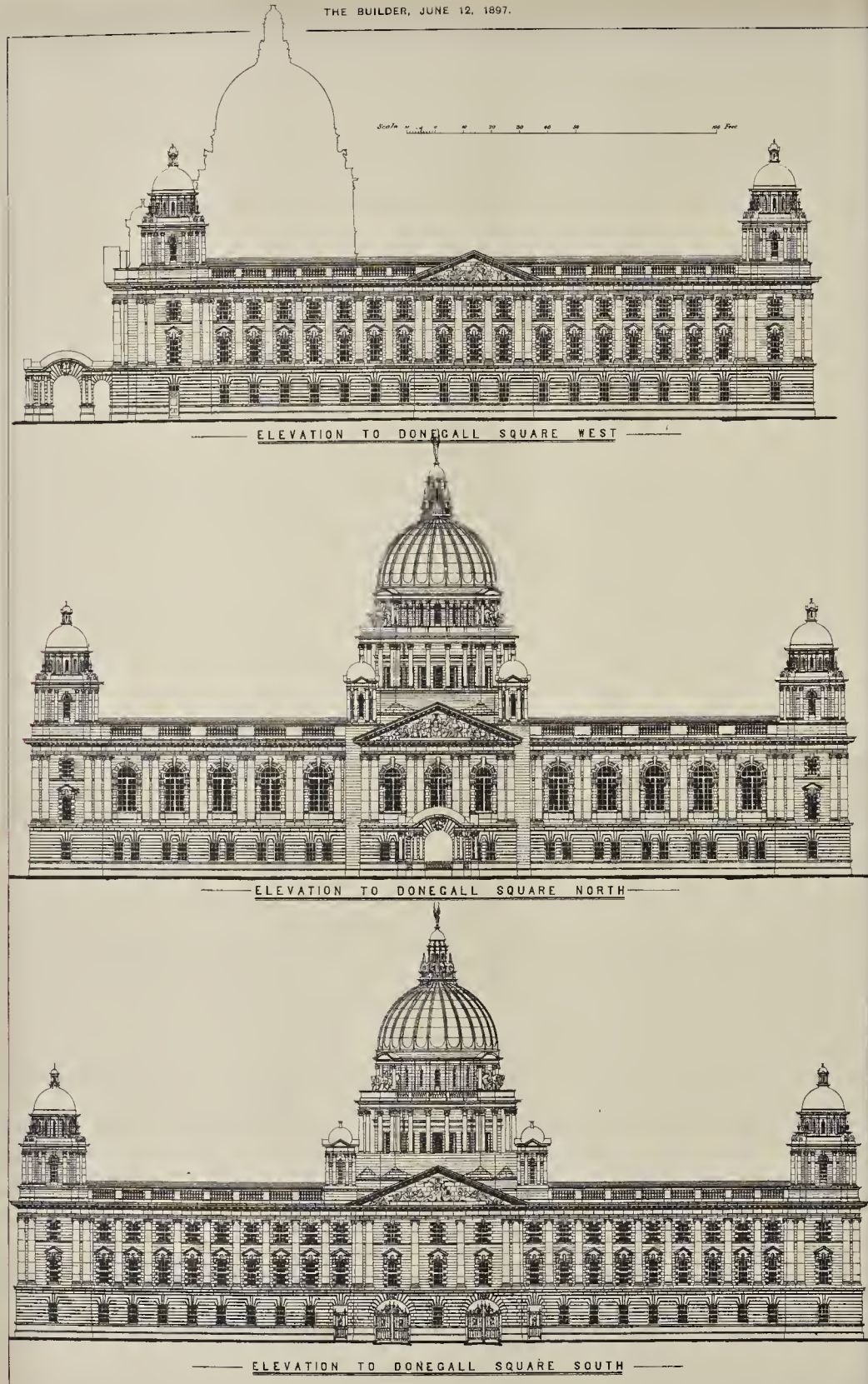
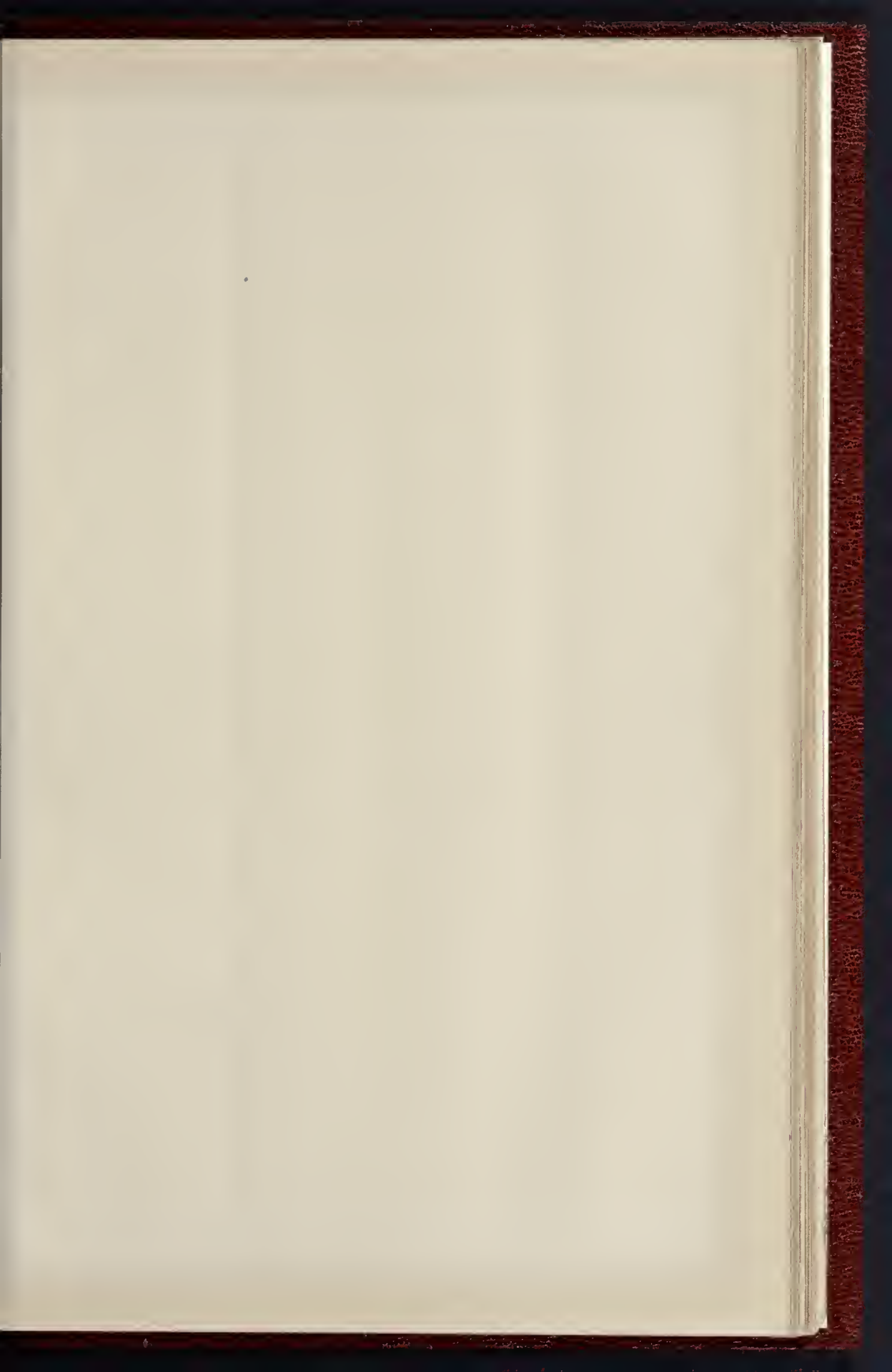


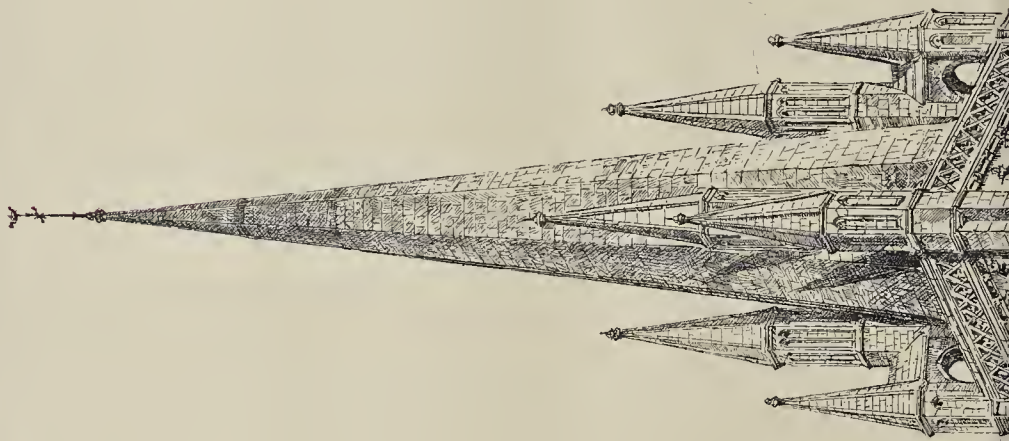
PHOTO-LITHO SPRAGUE & CO. 425, EAST HARDING STREET, FETTER LANE, E.C.

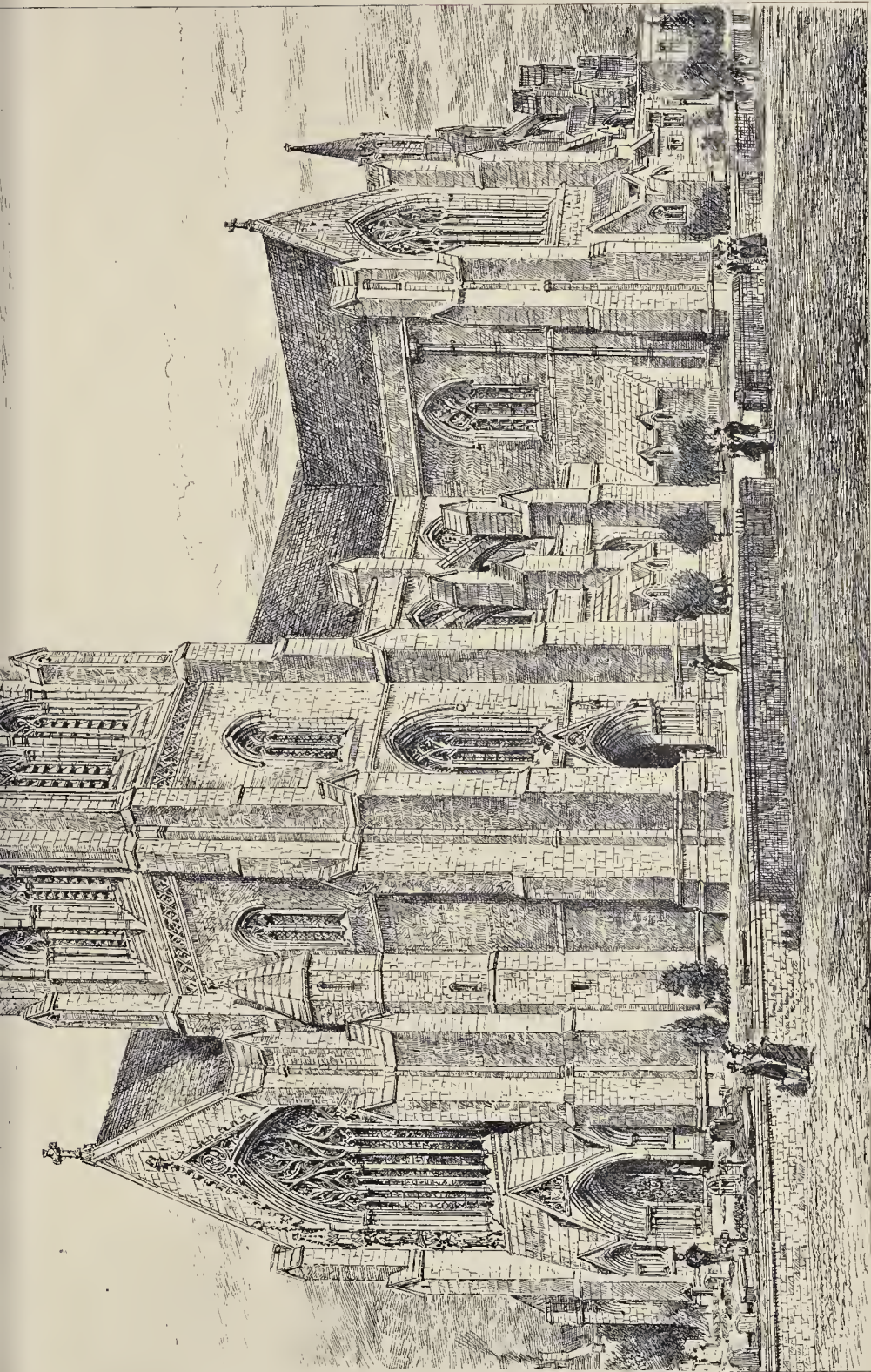
SELECTED DESIGN FOR BELFAST CITY HALL.—MESSRS. THOMAS & SON, ARCHITECTS.

ELEVATIONS.



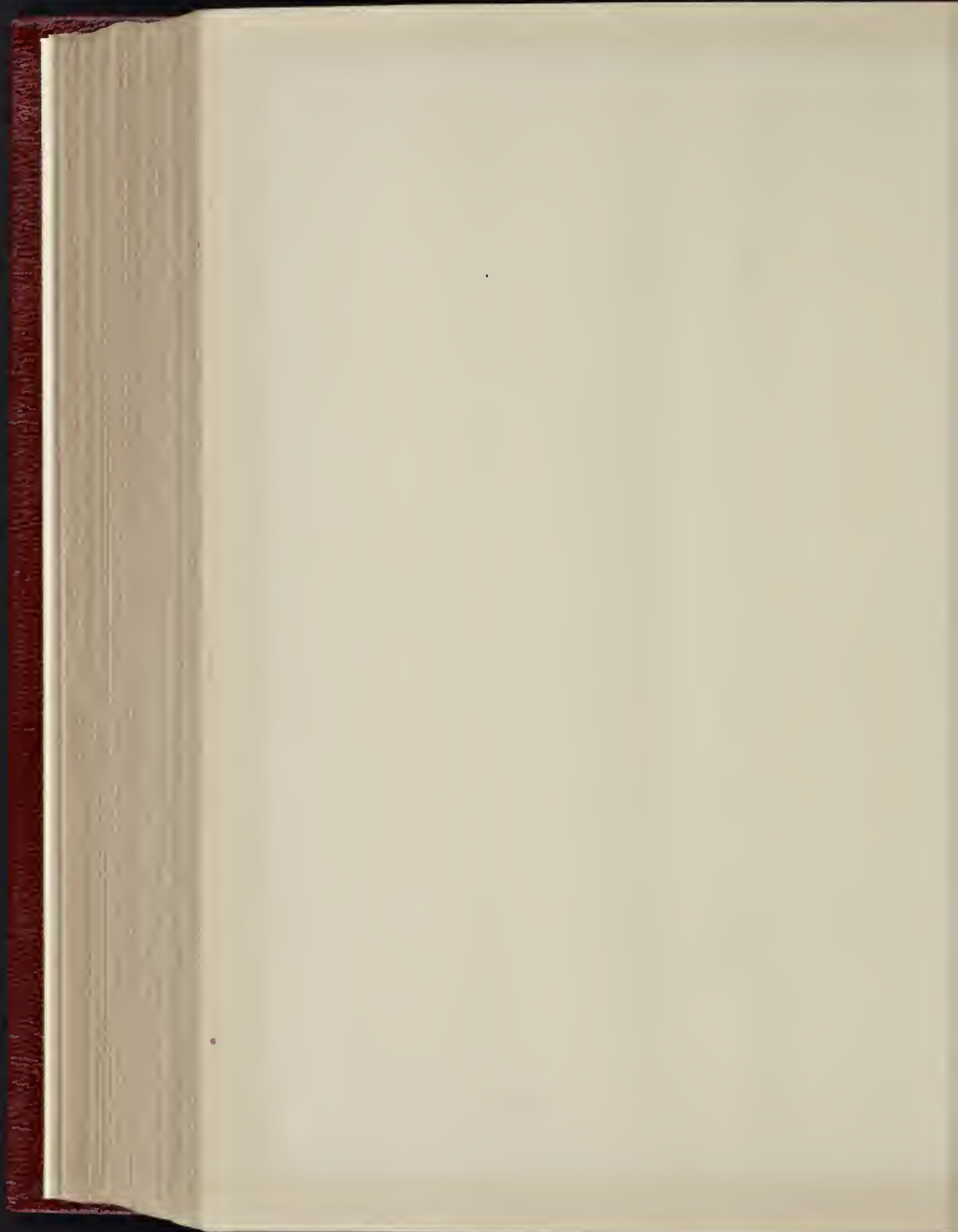
THE BUILDER, JUNE 12, 1897.



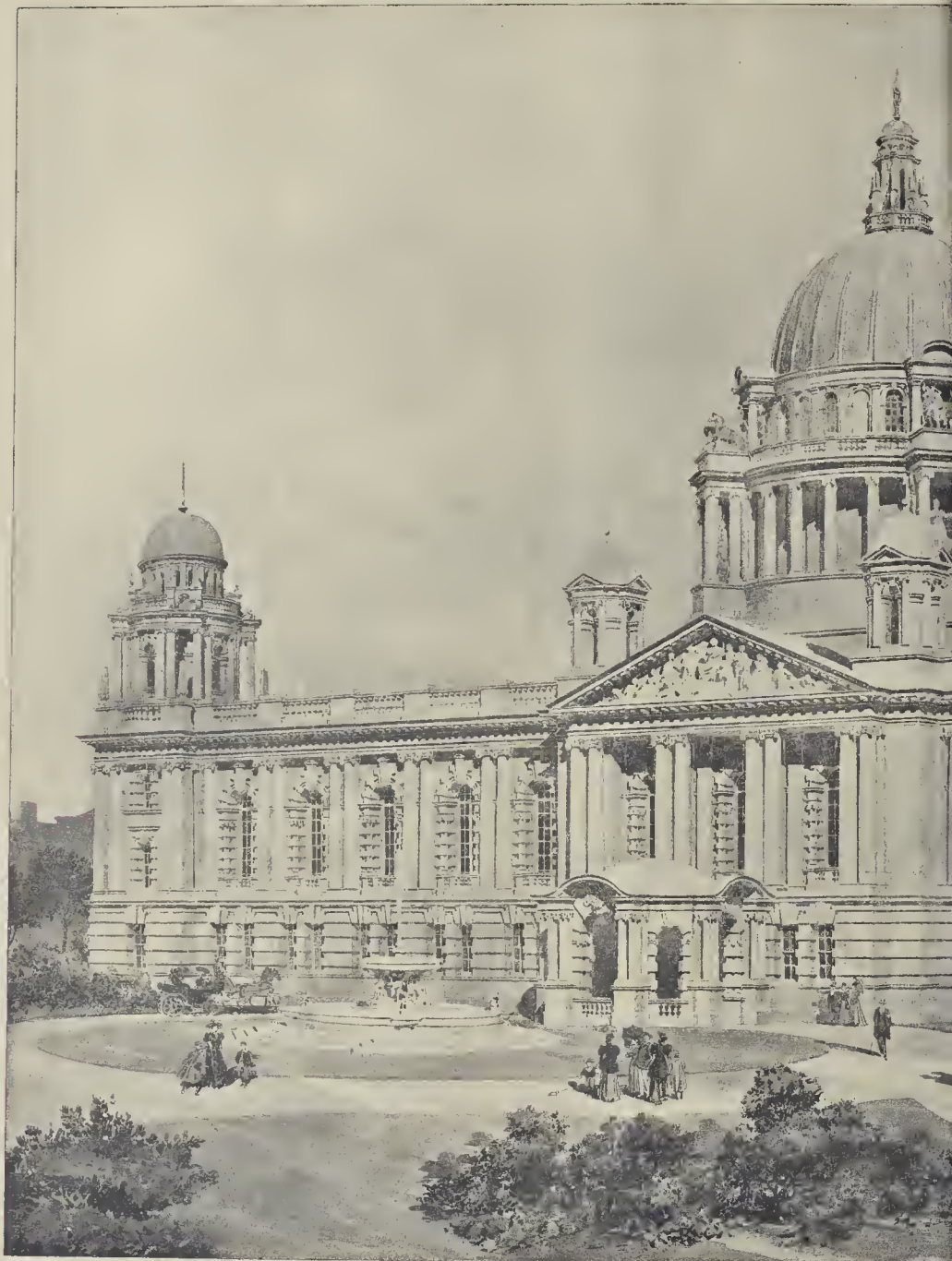


ST. ALBAN'S CHURCH, BLACKBURN: EXTERIOR.—MR. E. GOLDIE, ARCHITECT.

PHOTO-LITHO. SPRAUER & CO. 485, EAST-HARDING STREET, LITTON, E.C.







SELECTED DESIGN FOR BELFAST

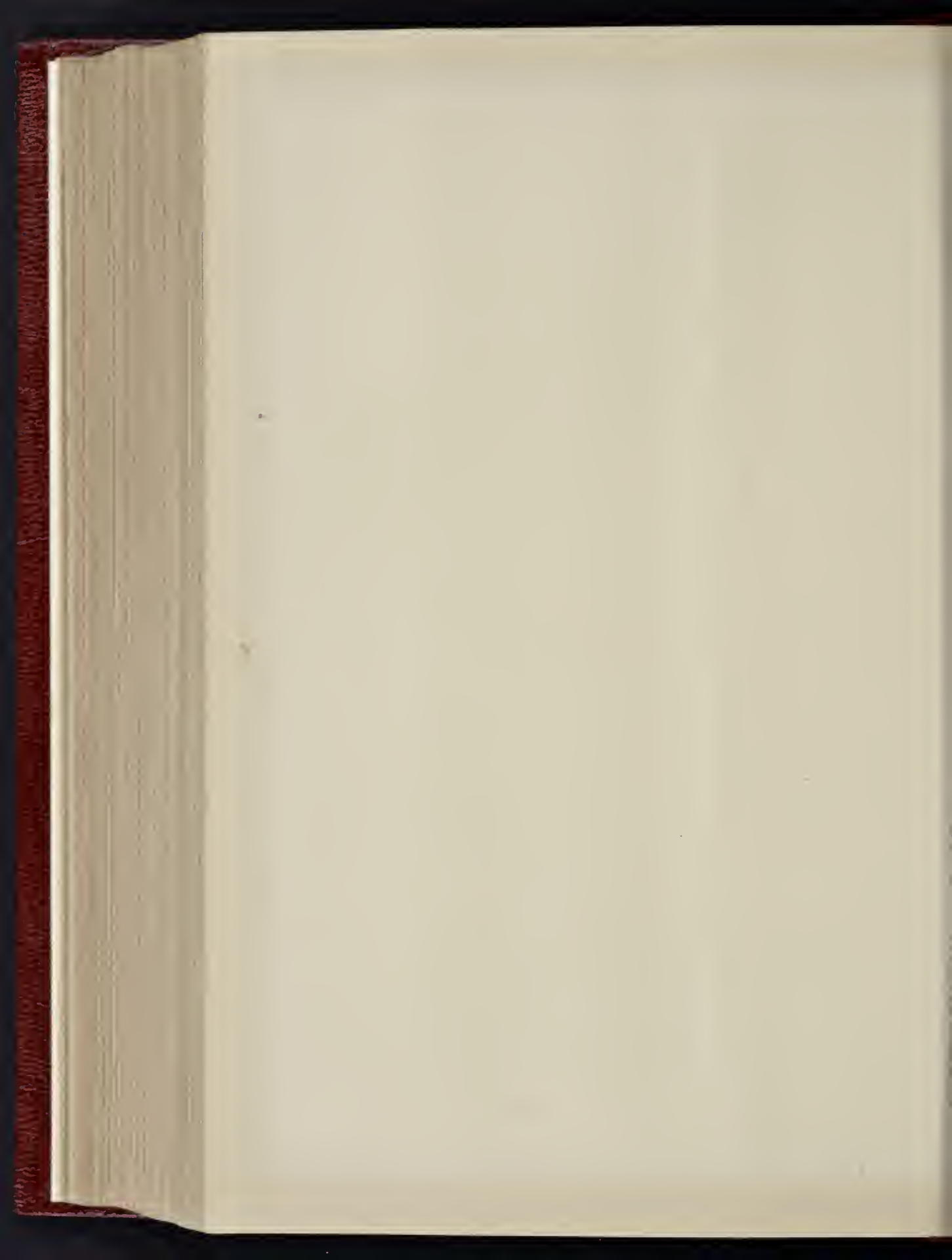
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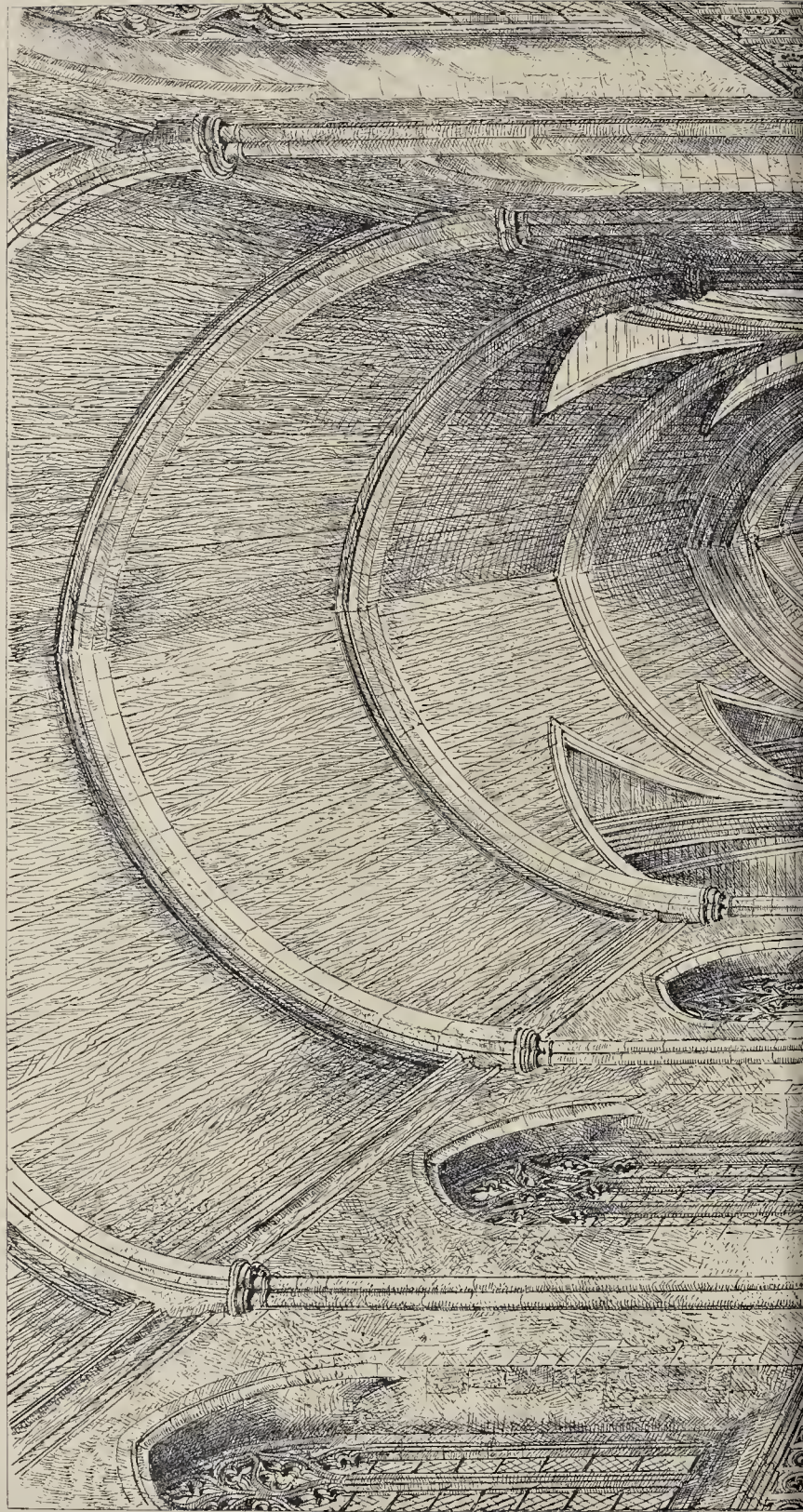
L.—MESSRS. THOMAS & SON, ARCHITECTS.

VIEW.





THE BUILDER, JUNE 12, 1897.



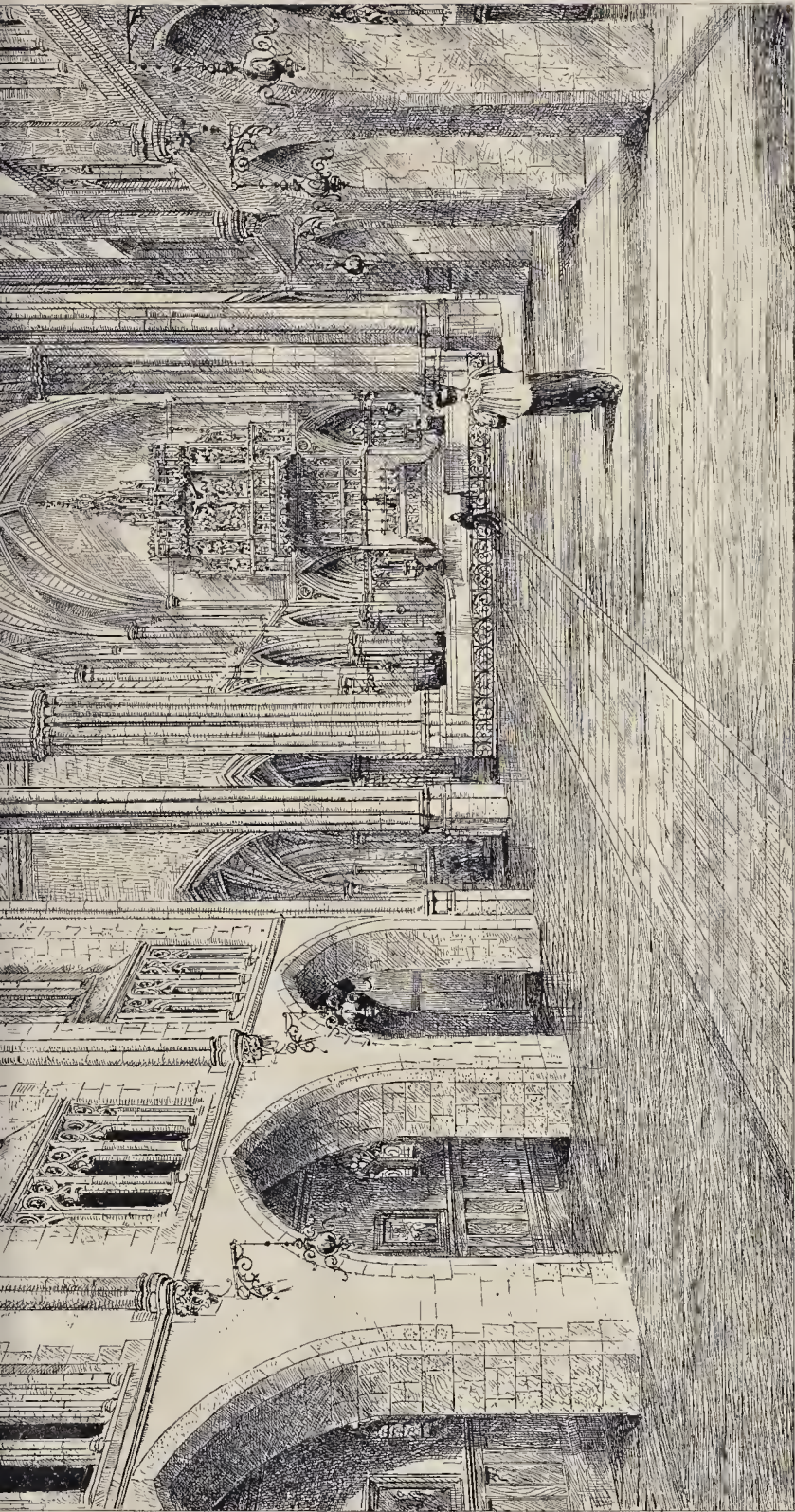
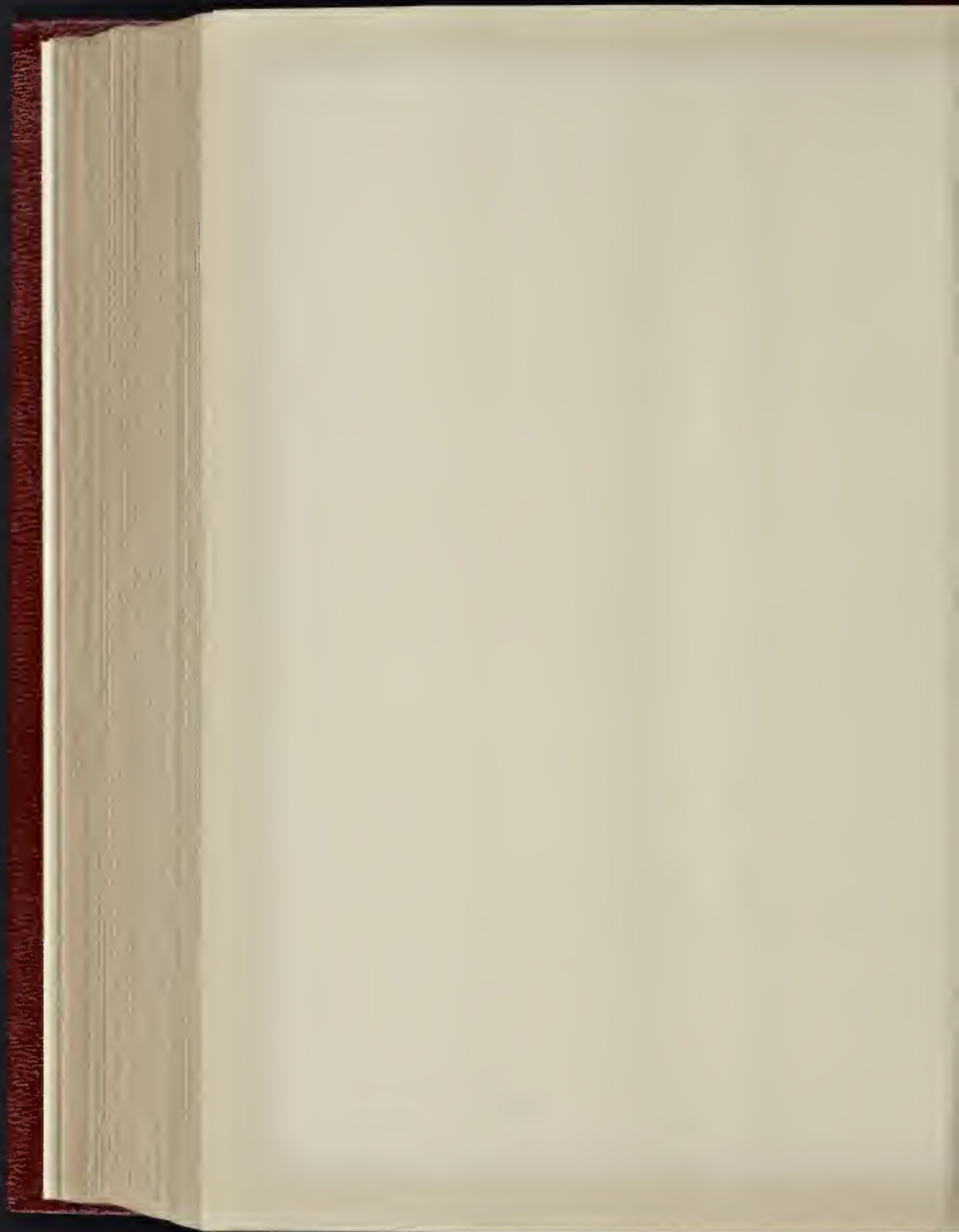
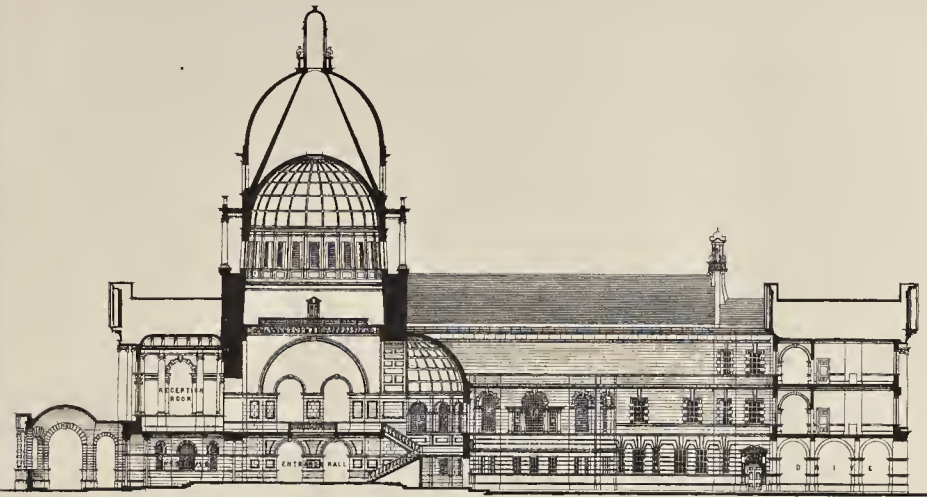


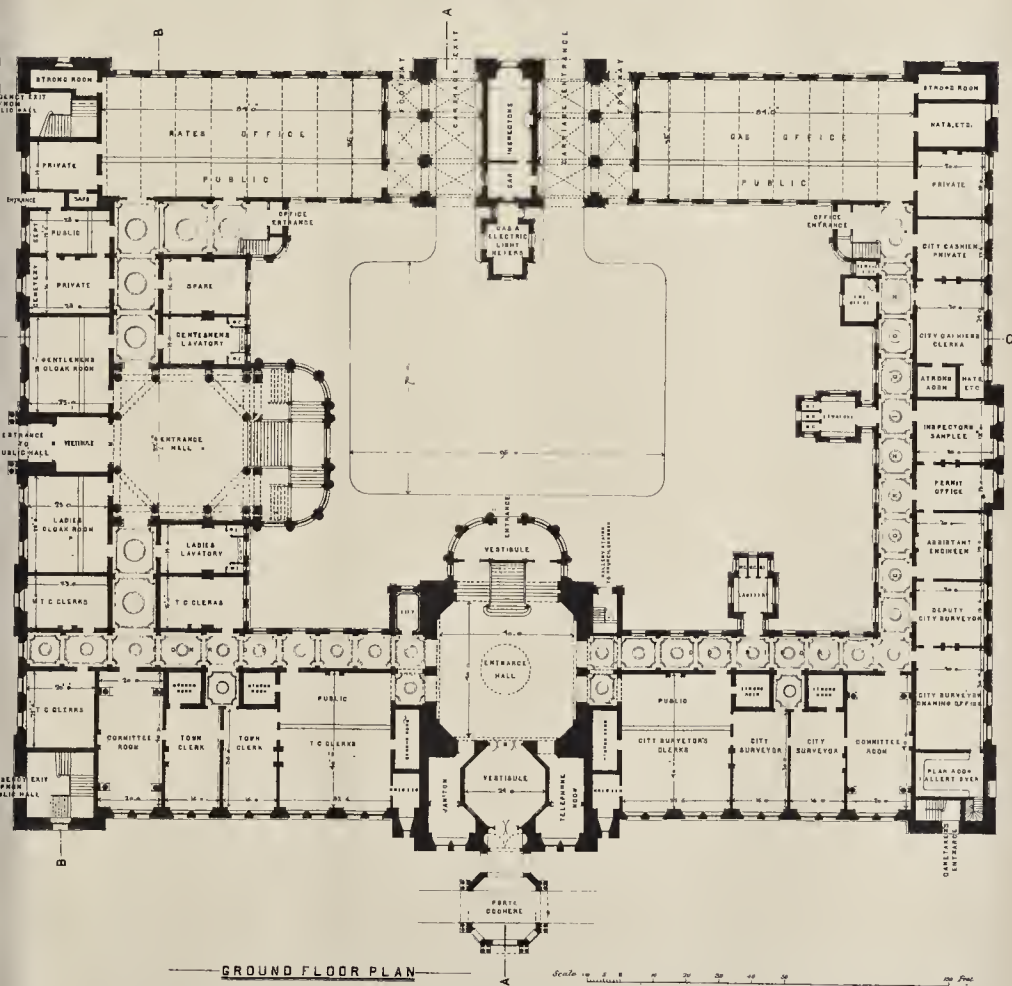
PHOTO-LITHO SPAGGI & CO. 433 EAST HARDING STREET, PITTSBURGH, PA., U.S.A.

ST. ALBAN'S CHURCH, BLACKBURN: INTERIOR.—MR. E. GOLDIE, ARCHITECT.





SECTION AA

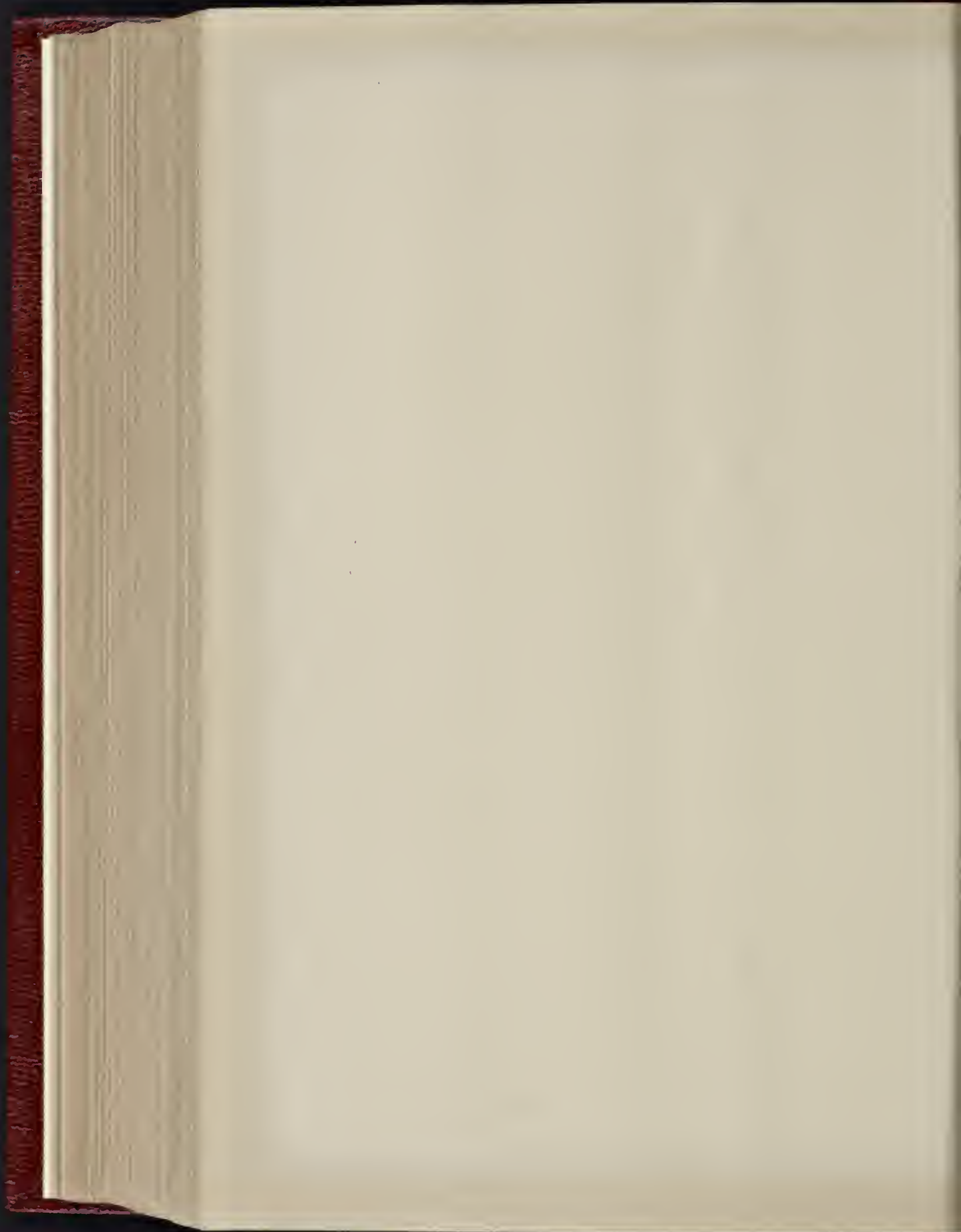


GROUND FLOOR PLAN

PHOTO-LITHO. SPRINGUE & CO. 485, EAST HARGING STREET, FETTER LANE, E.C.

SELECTED DESIGN FOR BELFAST CITY HALL.—MESSRS. THOMAS & SON, ARCHITECTS.

PLAN AND SECTION.



survey of the work of Mr. Reynolds-Stephens' collection of illustrations showing that he is an unusually all-round artist, succeeding as well in decorative work as in painting. His charming design for a silver bonbonnière, in the sculpture-room, we have already noticed.

In the *Architectural Record* Professor Good-year continues his series of articles in which he is endeavouring to prove that all the faulty setting out in various Renaissance buildings is due to intention and a system. The argument appears to us to get more preposterous as it goes on. Mr. Barr Ferree contributes Part X. of his valuable series on "French Cathedrals." Mr. J. Beverley Robinson contributes an article on "Modern Vault Construction," meaning thereby the construction of vaulted strong-rooms. The works of Messrs. Cady, Berg & See, the well-known firm of American architects, are the subject of an article by Mr. Montgomery Schuyler. The most original work of theirs illustrated is the Jarvis Hall of Science, with its round towers at the angles; a building aptly expressing in its severe style of treatment the practical purpose for which it was erected.

The *National Review* includes an article by Mr. H. H. Statham on "London as a Jubilee City," a review of the architectural merits and defects of London, and its want of the qualities of space and stateliness which should distinguish a capital city. Mr. D. S. MacColl contributes a short article on the Royal Academy, not dealing with individual pictures, but with the spirit and management of the Academy generally, and in a very severe tone, though we do not know that there is anything said that is not true enough. We cordially concur in the strong comment on the attitude of the Academy towards the late Alfred Hunt. The writer suggests that some of the injustices and very extraordinary refusals of work by men of real talent which occur perhaps every year, are the result not of jealousy or ill-feeling but of "sheer over-worked incapability of dealing with the mass of claimants." This is a charitable view which is perhaps more true than would be generally suspected.

The *Century* devotes an article to an important sculpture memorial which we were not acquainted with, a military memorial to Colonel Shaw, who was killed in the American War. The composition is a remarkable one, a bas-relief showing the officer on horseback among his troops, as if walking past the archway formed by the frame of the sculpture. The rest of the article is occupied by some account of the works of the sculptor, Mr. St. Gaudens, who appears to be an artist of no ordinary gifts and versatility. Readers will remember his portrait bas-relief of Stevenson the novelist, exhibited in London a year or two ago. Some of his designs for monumental and architectural sculptured figures are strikingly original. The same number contains an article on "A great modern observatory," that at Harvard.

Under the heading the "Field of Art" *Scribner* gives some pithy remarks on the influence of tradition in architecture, winding up with the conclusion, in which we entirely concur, that "since the beginning of the world no man has ever designed a good building independently of tradition." The same number contains a description and a good many illustrations of the new Library of Congress, of which we may have more to say.

The *Fortnightly* contains an article by Mr. H. H. Statham on "The Paris Salons."

Knowledge contains an article by Mr. R. G. Blaine, M.Inst.C.E., on Progress in Mechanical Science during the Queen's reign. Professor Lobley's series of articles on "The Age of Mountains," with sections of strata, is continued.

The *Cornhill* contains an article on "St. Paul's," chiefly on the monuments. The writer's artistic and architectural perceptions may be judged of from the fact that he waxes eloquent over "the superb recesses which seem really to have transformed the character of the whole interior of the building." It has indeed! That kind of remark is a typical example of the perception of the general English public on matters of this kind.

The *English Illustrated* contains an article on the Ben Nevis Observatory and the work done there.

The *Pall Mall Magazine* contains an illustrated article on Lyme Hall, the celebrated



Shop Door, Bristol.

house of "The Leghs of Lyne," in Cheshire; and one on "Hyde Park in Days gone by," with reproductions of some old engravings of the place and its former habitues.

SHOP DOOR, BRISTOL.

This is an illustration of a decoratively treated door in a new shop front in Bristol (at the bend in the street below College Green), of which Mr. Milverton Drake is the architect.

The plinth and base to the pedestals are in Labrador granite; the pedestals and lower portion of the piers are granite, with bronze bands dividing the granite from the upper portion in red Mansfield stone. The fascia plates are of solid bronze with aluminium letters.

Correspondence.

To the Editor of THE BUILDER.

R.I.B.A. ELECTIONS.

SIR,—Kindly allow me to remind members of the R.I.B.A. that the adjourned discussion on the election of Fellows follows the ordinary business on Monday next, and that it is most desirable that all those taking exception to any of the proposals should attend.

H. V. LANCHESTER,
Hon. Sec. Associates' Committee.

WATER-CLOSET PLUMBING.

SIR,—In my previous letter I omitted to mention that in quite numerous cases the air cock of a valve closet is so badly adjusted that the water of the basin never reaches the overflow. In these cases the overflow is either trapped with "slops" or not trapped at all.

NORMAN WRIGHT.

The Student's Column.

SPECIFICATIONS.—XXIV.

ALTERATIONS.

IN specifying work that has to be done to carry out alterations, it is a great mistake to attempt to divide the work strictly into the several trades as is ordinarily done in specifying for new work. It is far better to specify the whole work connected with any particular piece of alteration, dealing with the work in all trades.

As it frequently happens in carrying out alterations that part of the premises only can be given up to the builder at one time, it is important to express clearly to what extent and at what times the builder will be allowed to have access to the different parts of the premises. There will, therefore, generally have to be some special clause defining the *modus operandi*, thus:—

Contractors are to commence with the additions to the existing buildings shown on the plans. These are to be completely finished, and possession of the same given up by the day of

The existing building consists of three distinct blocks, the work in each of which is to be carried out and completed before the contractors can be allowed to enter upon the others. Commencing with the building nearest the street the blocks are designated as follows:—Front block, central block, and rear block. The contractors will be allowed to commence work in the front block one week after giving up possession of the new additions. The works in the front block are then to be entirely completed, and possession of the same given up by the day of

In a similar manner the contractors will be allowed to enter upon the central block one week after possession has been given up of the front block. The works

of the central block are to be completed by the day of , and the contractor will be allowed to enter upon the rear block one week after possession has been given up of the central block.

The contractors are to provide, fix, and remove temporary efficient screens of canvas and paper to shut off parts of the buildings in which they are working from those in the occupation of the employer.

The names of rooms, &c., shown on plans are their new designation.

State whether the contractors are to be allowed to make use of water and gas, but stipulate that they are to pay for same, and arrange how the amount of payment is to be fixed. Specify if any temporary corridors or staircases or passage-ways are necessary, how these are to be arranged, and in what way they are to be formed. Also that the contractors are to remove same and make good any damage that may be caused.

The general description of quality of materials and workmanship should precede the detailed specification of the various works that are to be carried out in the various parts—of some typical items of which examples will now be given.

Front Block.

Basement.—Carefully take out and remove the present window of the heading chamber together with the arch and sill, and brick up opening with 18-in. brickwork in cement, properly bonded to old work for which toothings are to be drawn, and pin up over same to old work. Fill up area outside old window opening with hard dry brick rubbish, finished with 6-in. bed of Portland cement concrete floated in cement to receive new tile floor above. Cut out opening for new window where shown on plan, &c. (Describe all the works connected with this new window opening in all trades).

Ground Floor.—Form opening in cross wall of new entrance hall 7 ft. by 9 ft. extreme. Make good jambs in brickwork in cement, and turn relieving arch over in three half brick rings in cement, angles roughly chamfered to receive new plaster moulded arch. Make good flooring through opening to match existing floor.

Form jambs of new opening in two-coat work in Keene's cement finished with rounded angles, and run in Keene's cement moulded arch 18 in. girth to detail. Make good plastering of existing walls to the new opening, and provide and the short piece of skirting to each jamb to match, and properly mitred to the old skirting of rooms.

Remove the present staircase and make good the plastering and flooring. Cut away wall on each side of existing opening to form new opening 10 ft. wide and 9 ft. high; make good jambs in brickwork in cement. Insert a Bressummer formed of No. 3 9 in. by 3 in. deals bolted together with $\frac{3}{4}$ in. bolts to carry wall over, and resting on 3 in. tooled York template at each end. Fill in the opening thus formed with 2 in. framed, panelled, and moulded partitions, the upper part open and prepared for glass with mitred shifting beads fitted with brass caps and screws, and glazed with British polished plate glass about $\frac{1}{4}$ in. thick, bedded in flannel. Form door in same to match partition, hung with a pair of 4 in. wrought-iron butts, and fitted with 6 in. mortice locks, p.c. 7s. 6d., with brass furniture both sides. Make good all work disturbed around new opening.

Take down and remove the existing wall separating from Shore up upper portion of wall, and insert rolled steel girder, weight lbs. per foot run, to be obtained from Messrs. , cost of which is included in the p.c. amount provided for iron work. Build in to receive ends of girder 3-in. tooled York templates, 14 in. by 9 in. Fix under middle of this girder cast-iron column, 6 in. diameter, ft. long, weighing lbs., which will also be supplied by Messrs. , and the price of which is also included in the provisional amount already referred to. Excavate for and form good and firm foundation for this column of 18-in. bed of Portland cement concrete, 3 ft. 6 in. by 3 ft. 6 in., as shown on plan, the bottom of same being 3 ft. below level of floor, and build on same 14-in. pier in blue Staffordshire bricks in cement, covered with 4-in. tooled York stone base to receive iron column, which is to be bedded on a sheet of 7-lb. lead. (Continue description of works connected with this alteration by describing the treatment to be adopted in casing or otherwise of the steel girder and column.)

Cellar.—In the formation of new cellar shown on plan the existing external wall of scullery is to be underpinned in the following manner. The whole of the footings and concrete under existing wall are to be removed, and the new wall of cellar is to be carried up as shown on section in 18 in. work in cement tightly pinned up to lowest course of existing wall with slates, tiles, or hard stone in cement. The concrete under the new wall is to be composed of five parts of ballast to two parts of sand, and one part cement by measure. This work is to be carried out in one yard lengths, alternate lengths throughout the length of wall to be first of all built, completed, and pinned up, and then followed by the remaining lengths which are to be tooled and bonded to those first built up. All brickwork in underpinning is to have buttered joints and to be fully flushed up at each course. (If there is damp ground on other side of the wall which is going to be underpinned it will, of course, be necessary to specify the precise method of guarding against this difficulty.)

Raising Roof of Shed.—Remove the roof of shed between scullery and boundary wall, take off coping and top course of wall, and raise same a height of 3 ft. 6 in., as shown on drawings, in brickwork in cement, and form zinc flat over shed, with $\frac{1}{2}$ in. by 2 in. rafters on 4 in. by 3 in. plates, and covered with inch rough boarding, with edges shot for zinc, and cover same with No. 15 gauge Vieille Montagne zinc, with 2 1/2 in. drips and 2 1/2 in. rolls where shown on plan. Put to this roof inch wrought and beaded fascia, and 4 in. ogee moulded cast-iron eaves gutter, and 3 in. rain-water pipe discharging into slipper shown on plan.

Removal of Sink and Drain.—Remove sink in present scullery, take out and remove the whole of the drain from same for its entire length under the existing building, sprinkle bottom and sides of trench of same with fresh burnt lime at the rate of one bushel to the yard. Ram bottom of trench and fill in with lime concrete up to, and make good, present cement floor of scullery. Search for junction of drain from this sink with main drain in yard, and cut off and disconnect the old drain from scullery sink. Clean out with brush the length of drain, disconnect and afterwards sweep through same a bushel of fresh lime and hermetically seal ends of this old drain with slates and cement. The water supplies to this scullery sink are to be diverted to supply new sink described among general works under "Plumber."

First Floor Water-closet.—Take down and remove the present pan closet together with seat and other fittings, disconnect and remove supply pipe to same and waste preventer of cistern. The connexion with main cistern to serve for supply to new water-closet, but with this exception the whole of the plumbing connected with the present water-closet is to be taken down and removed. Take out and remove present soil pipe and casing, also the drain for same running under present library, the trench of which is to be treated in a similar manner to that described for scullery sink. Take down and remove present dwarf partitions between water-closet and bath-room; take up the floor of present water-closet and relay with new 1 1/2 in. yellow deal tongued flooring. Make good plastering, skirting, and any other works disturbed. (Then proceed to specify the work of the new water-closet in the ordinary way.)

Cold Larder.—Excavate site of new cold larder to a depth of 2 ft. below corridor floor, and form trenches for foundations of new walls to the depth shown on drawings. The concrete of these foundations to be as described for new additions. Cut a chase $\frac{1}{2}$ in. wide, and $\frac{1}{2}$ in. deep in old wall, where new walls of cold larder join them. Carry up new wall in good, hard stock bricks, the work generally to match adjoining work. The damp course to be as specified for new additions. The external walls of cold larder to be built where shown as cavity walls of two sections, the outer $\frac{1}{2}$ in. thick, with 2 1/2 in. cavity, and the sections are to be bonded with wrought-iron wall ties, tarred and sanded before being used, and built in 3 ft. apart in every third course. The window opening to have gauged arch in red brick, and red brick on edge sill, set in cement, with double tile course under projecting $\frac{1}{2}$ in. from face of wall. Window opening to have 9 in. by 3 in. lintel, $\frac{1}{2}$ in. by 3 in. rebated, and twice chamfered, casement frame, with 5 in. by 4 in. sunk, weathered, and throated oak sill. The sashes to be 2-in. ovolo

moulded casements, hung to open inwards, with a pair of 3-in. wrought iron butts, and fitted with strong malleable iron cocks-pur casement fastening and strong 18-in. malleable iron casement staybar fastening. Fix outside frame fine perforated zinc, No. 15 gauge, with the top edge turned outwards, about $\frac{1}{2}$ in. from top. Floor of this larder to be formed with 6-in. square red tiles, laid and jointed in cement on bed of 6-in. concrete, and the necessary dry brick rubbish to bring up level of same. Cut and form opening for doorway to larder in 14-in. old wall, build in 3-in. lintel, with rough removing arch over, in two half brick rings in cement. Put solid door frame, $\frac{1}{2}$ in. by 4 in., rebated and twice rounded, with wrought iron dowel pins let into 3-in. tooled York stone, threshold 14 in. wide, back jointed to old and new floor. The door to be 1 1/2 in. 4-panel moulded and square door, hung with a pair of 4-in. wrought iron butts, and fitted with rim lock and brass furniture, p.c.

Form roof over cold larder with 6 in. by 6 in. timbers cut diagonally and laid as shown on section, as support for concrete roof composed of five parts of coke breeze to one part of Portland cement, and finished with Portland cement face neatly floated to current. Provide and fix $\frac{1}{2}$ in. ogee moulded cast iron eaves gutter, with 3 in. rain-water pipes, and connect with rain-water drain. Fit up round larder three tiers of 1 in. rubbed slate shelving, 12 in. wide, as shown on plan, with rounded edge and rounded angle next doorway. The shelving to be carried on No. 12 in. wrought iron brackets plugged to wall. Provide and screw into roof timbers No. 12 1/2 in. screw hooks where directed. (Specify also method in which the walls and ceilings are to be plastered or otherwise treated.)

The description of painting and decorative work can usually be included in the general specification unless they are specially varied.)

OBITUARY.

MR. T. P. MARTIN.—The death of Mr. T. P. Martin, architect and surveyor, of Swansea took place recently at Colerford, where he was on a visit. Mr. Martin was a native of Swansea. When the Corporation several years ago decided to put the control of the roads under a separate department Mr. Martin was elected road superintendent, and on resigning this position about seventeen years ago he commenced practice as an architect and surveyor.

GENERAL BUILDING NEWS.

EXTENSION OF PREMISES, NEWCASTLE. — The premises of Messrs. T. Pumphrey & Sons, of the Cloth Market, Newcastle, have been extended. The whole of the ground floor cafe has been appropriated to the use of smokers, and for the convenience of ladies and non-smokers a room on the first floor has been provided, access to which is gained by means of a staircase leading from the front shop. There is a ladies' cloak room in connexion with the upstairs' apartment, and the windows are filled with stained glass. Electric light is used throughout. Plumbing and heating arrangements have been carried out by Messrs. Henry Walker & Sons, and the decorations are by Mr. G. G. Laidler. The general contract work was carried out by Mr. Jackson, the whole of the alterations having been made from designs by Messrs. Oliver and Leeson, architects.

Y.M.C.A. BUILDINGS, READING. — The new Y.M.C.A. Buildings, in Friar-street, Reading, were opened recently by Sir George Williams. The buildings have been erected from the designs of Mr. F. W. Albury, architect, of Reading. The frontage to Friar-street is 28 ft., but the return frontage to Merchant's-place is 83 ft. The front portion of the building is five stories high, while the back part is of two stories. The whole site is basemented. The building contains a kitchen, bath and dressing rooms, lavatories, and a gymnasium, the latter being about 40 ft. by 24 ft. high, with a gallery all round. On the ground story is a restaurant, an entrance lobby and vestibule, and staircase hall on the level of the gallery of the gymnasium, with a second entrance from Merchant's-place. There is a separate entrance to the gymnasium. On the first floor is a lecture hall, with seating accommodation for about 200. There are also a reading room, and a secretary's office on the first floor. The second story consists of rooms available for classes or games and a parlour. The upper floor is appropriated to the resident caretaker. Mr. Fidler was assisted in the erection of the building by his foreman, Mr. Blackwell, who generally superintended the works. The brickwork was executed by Mr. H. W. Godwin, the granite work of the lower story was supplied by Messrs. Heslop & Wilson, of Aberdeen, the stonework by the Corsham Quarrying Company, the principal staircase by Mr. Alfred Walker, of Leeds, the joinery by Mr. Elliot, of Newbury, the stove

and chimney pieces, baths, and lavatories, by Messrs. Callas, Reading, the heating arrangements by Messrs. Devy & Son, and the painting and ornamental glazing by Mr. Harry Child.

PROPOSED TOWER, ST. JOHN'S CHURCH, CARLISLE.—It is proposed to erect a new tower for St. John's Church, Carlisle, from the designs of Mr. Higginson, architect, as a Diamond Jubilee memorial.

UNITARIAN SUNDAY SCHOOL, GATEacre, LIVERPOOL.—The opening of the new Sunday school in connexion with Gateacre United Reformed Chapel, took place recently. The new building is situated near to the chapel, and is a brick structure, with stone facings, erected from the designs of Messrs. F. and G. Holme, architects, Liverpool, by Mr. G. Dale, of Gateacre. It includes a room capable of holding 200 persons, and two other rooms, with the usual accessories.

METHODIST CONNEXION CHAPEL, HARFIELD, STAFFORDSHIRE.—The contract for the new Methodist chapel at Harfield, which is situated on the Shelton New-road, has been placed in the hands of Mr. Cornes, Hanley. The architect for the work is Mr. Ambrose Wood, of Hanley. The building will consist of a sanctuary and chapel, containing two vestries and a choir gallery. The front will be faced with red brick, and the chapel will seat 200 people.

WESLEYAN CHAPEL, CHELMSFORD.—On the 2nd inst. the memorial stones were laid of new Wesleyan chapel and schools in the High-street, Chelmsford. Mr. J. H. West, of the firm, is the contractor, and the architects are Messrs. Gordon, Lowther, & Gunton, of London. The new buildings, which are being erected on a site adjoining the stone bridge, will comprise a chapel capable of seating 650 adults on the ground floor, with a gallery over the north and west end of the nave. There will also be a children's gallery in each transept capable of holding 100. The west end of the chapel will face the High-street, and at the rear will be the boys' and girls' Sunday Schools.

NEW Y.W.C.A. BUILDINGS, LOWESTOFT.—The new Y.W.C.A. buildings, which have been built in Regent-road, Lowestoft, have just been opened. The architect is Mr. Clarke, of Lowestoft, and the builders, Messrs. Brett & Sons, of Lowestoft.

NORTH OF SCOTLAND BANK HEAD OFFICE.—Alterations are being carried out at the head office of the North of Scotland Bank, Aberdeen. The work is being carried out under the direction of Mr. Marshall Mackenzie, A.R.S.A. The walls of the vestibule are to be lined with polished granite slabs. The polished dado will extend from the floor to a height of about 8 ft., and the jambs and lintels of the two doorways are also to be made of polished granite. Granites of three different shades will be used, namely, from Rubislaw, Kennay, and Corennie quarries. This part of the work has been entrusted to Messrs. J. Macdonald & Co., Limited. Messrs. James Bannoachie & Sons, have undertaken the internal decorative work.

ST. THOMAS'S INFANT SCHOOL, HUDDERSFIELD.—A new infant school in connexion with St. Thomas's Day Schools, Manchester-road, erected by the firm of Messrs. Starkey Bros. (Limited), in Regent-road, is the Canon Snowden, M.A., was opened recently. The school, which occupies a site near the west end of the church, is Early English in style. It will accommodate 125 children. The architect is Mr. T. H. Farrar, of Halifax, and the contractors (all of Huddersfield) are—Messrs. John Graham & Sons, masons; Messrs. Moody Broadbent & Sons, joiners; Messrs. Crossley & Gold, plumbers; Mr. W. P. Lovitt, slater and plasterer; and Mr. S. Kendall, painter.

RE-OPENING OF SKELMORLE U.P. CHURCH.—This church, after alterations and enlargement, has been re-opened. The additions to the church comprise a chancel and a transept, which have been carried out from the designs by Mr. William Leiper, Glasgow. The sitting accommodation has been increased to nearly 600 sittings. The organ has been reconstructed and added to by Messrs. Merrilless & Son, of Glasgow. The contractor for the mason work was Mr. William Steel, builder, Greenock; joiner work, Messrs. Hutchison & Grant, Glasgow; plumber work, Messrs. Archibald Watson & Co., Glasgow; painter work, Messrs. A. & J. Scott, Glasgow and Skelmorlie; plaster work, Mr. Quinton Tannock, Greenock; glazier work, Mr. George Hunter, Glasgow; smith work, Messrs. George Adam & Son, Glasgow; heating, by Messrs. James Boyd & Sons, Paisley; tile and marble work, by Messrs. Keen & Wainrop, Glasgow. Mr. James Mair acted as clerk of works.

CATHOLIC APOSTOLIC CHURCH, BUXTON.—This building, erected in Darwin-avenue from the designs of Mr. W. R. Bryden, of Buxton, has just been opened. It will accommodate about 150 people.

NEW FREE CHURCH, FEARN, ROSS-SHIRE.—A new church for the Free congregation of Fearn was opened recently. There is a nave and two transepts, while galleries extend around the greater portion of the church. Siting accommodation is provided for between 800 and 900 persons, and there is also a hall adjoining which contains seats for Mr. Macdonald, Liverpool.

CONGREGATIONAL CHURCH, PONKEY, RHOS-LLANERCHRUGOG.—A new Welsh Congregational Church was recently opened in Bank-street, Ponkey. The chapel is built of red Ruabon facing bricks and

terra cotta, part of the facade being of Cefn freestone. The size of the chapel is about 48 ft. by 36 ft., and the vestry is 20 ft. by 15 ft. There is also a boiler-room measuring 12 ft. by 10 ft., and the chapel has sitting accommodation for about 230. The cost is about 1,100. The architect is Mr. Gummow, Wrexham, and the builder, Mr. J. Davies, Ruabon.

PROPOSED PUBLIC BUILDINGS, ILFORD.—At the Ilford Urban District Council offices, recently, Col. A. C. Smith, R.E., held a Local Government Board inquiry into the application of the Council to borrow 15,000*l.* for the provision of public buildings, comprising a large hall, offices, and technical institute and library; 2,275*l.* for purposes of street improvements; 740*l.* for purposes of public baths; and 620*l.* for works of sewerage. There were present amongst others, the Clerk to the Council (Mr. J. W. Benton), the Surveyor (Mr. Shaw), the Sanitary Inspector (Mr. King), and Mr. B. Woolard, the Architect for the proposed buildings.

WESLEYAN CHURCH, SMETHWICK.—A new Wesleyan church, which has been erected in Waterloo-road, Smethwick, was opened on the 3rd inst. The church is built upon a site fronting Waterloo and Sycamore-roads, and it is constructed of brickwork, with stone dressings, the interior walls being finished with plain (coloured a neutral tint) and stone, and the roofs covered with red tiles. The main entrance-porch faces Waterloo-road. This gives access to lobbies. A similar and separate entrance situated in the tower, and immediately adjoining, gives access to the gallery by a staircase. The plan of the church consists of nave, with aisles and chancel, in which seats are arranged for the choir. The organ-chamber is placed on one side of the chancel, and the ministers' vestry upon the opposite side; also the choir vestry, with lavatory accommodation. The church is about 90 ft. in length, 45 ft. in width (inclusive of aisles), and 31 ft. high. The floor is laid to a gradient towards the pulpit. The seating accommodation is for about 650 persons. The aisles have been laid with wood blocks, and the floors of the entrance-porch, lobbies, passage at rear of chancel, lavatories, &c. are laid with tessellated tiles. A feature of the exterior is a stone spire springing from a tower situated next the main entrance, and rising to about 80 ft. in height. The interior woodwork is of pitch-pine, and the roof of nave, aisles, and chancel are open-framed. The heating, upon the low-pressure system, is by Messrs. Holden & Son. The wrought-iron fencing and gasfittings have been carried out by Mr. Edwin Glover. The stained glass throughout has been supplied by M. T. H. Hays, of Smethwick. The builders were Messrs. J. Harley & Son, of Smethwick, and the architects were Messrs. Ewen & J. Alfred Harper, of Birmingham. The cost of the structure is about 3,500*l.*

FREE LIBRARY, CAMBRIDGE.—A branch library has been erected near the railway bridge, Mill-road, Cambridge. The building is carried out in red brickwork, red terra-cotta, and red Mansfield stone, with a slate roof. The building consists of one large room 107 ft. long by 24 ft. wide. On the north side there are eight large windows, the top portion being arranged to open, and in addition, there is a lantern, with glazed side and end lights, turning the whole length of the building. The whole of the building is heated by hot water on the low pressure system. The floor, except over the basement, consists of wood blocks. A lobby has been arranged with eight doors, giving separate entrance to the reading room and lending library, and is paved with oak wood blocks. Over the entrance there is a gable. On each side of the gable a lion in red Mansfield stone, supporting a shield with the Borough arms thereon, is fixed. The architect was Mr. F. Waters, and the builders were Messrs. Coulson & Loftis.

SANITARY AND ENGINEERING NEWS.

LOUGHBOROUGH SEWAGE WORKS, &c.—The members of the Birmingham branch of the Institution of Civil Engineers visited the works at Loughborough for the disposal of the sewage and refuse of the town, recently carried out by Mr. A. W. Cross, C.E., the late Borough Surveyor. The party was met and conducted over the works by Mr. A. H. Walker, C.E., the Borough Surveyor, and Mr. A. S. Butterworth, C.E., of Coventry, the late resident engineer. The afternoon was occupied by a drive to the Swithland reservoir and waterworks of the Leicester Corporation, where luncheon was provided by Mr. B. Eversard, C.E., the engineer for the works. Having spent some time there, the drive was continued by the Hall Gates Storage Reservoir to the Cropstone Waterworks, after inspecting which, under the guidance of Mr. F. Griffith, C.E., the party proceeded to Leicester.

WEDNESFIELD SEWERAGE SCHEME.—Col. Coke, Inspector to the Local Government Board, held an inquiry at Wednesfield recently respecting an application of the District Council to borrow 7,500*l.* for sewerage works. Mr. J. W. Stirk, Clerk to the Council, and Mr. Berrington, engineer for the works, appeared in support of the application, and Dr Reid represented the County Council. The proposed works were explained, and there was no opposition to the scheme.

NEW RESERVOIR, BATH WATER WORKS.—On the 8th inst., in the Monkswold Valley, about seven miles to the north-east of Bath, and on the borders of Gloucestershire and Somerset, the new reservoir constructed by the Bath Town Council was opened by the Mayor (Mr. G. Woodvijs). The work is over nine acres in extent, and contains 51,000,000 gallons. Mr. W. Fox, of Westminster, has been the engineer, and Messrs. W. Neave & Son, of Paddington, the contractors. The reservoir has cost over 35,000*l.* No filtering beds are provided, but a carefully fitted straining well is constructed at the point of outlet.

STAINED GLASS AND DECORATION.

MEMORIAL WINDOWS, ST. THOMAS'S CHURCH, DOUGLAS.—A stained glass window, in memory of Mrs. Jane Dalby, of Douglas, is to be erected in the church of St. Thomas. Communion rails, which are part of a scheme for the redecoration of the chancel of the church, are also to be placed in the building. An engraved medallion, also, of the Queen's head is to be put up at the entrance to the chancel in commemoration of the Diamond Jubilee. The medallion is to be erected by Messrs. Gawthrop & Sayre, of London; and the window is being constructed by Messrs. Heaton, Butler, & Bayne, London.

WINDOW, GODMANCHESTER CHURCH.—Another of the windows on the south side of the Parish Church has been filled with stained glass to the memory of the late General Baumgarten. It is a three-light window. The work has been carried out by Messrs. Morris & Co., of Merton, Surrey, and the design is by Sir E. Burne-Jones.

WINDOW, CHURCH OF MARSEKE-SWALEDALE, YORKSHIRE.—The Bishop of Richmond recently visited Marske-in-Swaedale for the purpose of unveiling a window, which has been placed in the village church by Mrs. Cameron, of West Hartlepool, in memory of her husband, the late Colonel Cameron. The work has been carried out by Messrs. Percy Bacon Bros., London.

FOREIGN.

FRANCE.—M. Huet, the principal director of Public Works at Paris, has just retired, and the department is now going to be divided into two distinct services: one including the public roads, the drainage, and water-works—in a word, all that belongs to the technical part of engineering (M. Deiraune will be at the head of this department); the other will include the foot-ways, the promenades, all architectural works, and works of Art. At the head of this department will be M. Bouvard, the architect of the 1900 Exhibition.—**M. Ernest Barrias**, sculptor, has been commissioned to execute the monument to the celebrated chemist Lavoisier, which is being erected by public subscription, and will be placed in the Place de la Madeleine, on the axis of the Rue Tronchet.—At the Ecole des Beaux Arts, the jury on the first class architectural competition has awarded the first medals to MM. Perret and Paul Guadet, pupils of MM. Guadet and Paulin; Garret and Barber, pupils of MM. Blondel and Scellier de Gisors; and Philipps, pupil of M. Pascal.—**M. Denis Puchet**, the sculptor, has finished the model of the monument of Saint-Beuve. He has represented the famous critic in a meditative attitude. The pedestal, which has been designed by M. Scellier de Gisors, will be treated in a sober architectural manner, and simply ornamented with some inscriptions. This monument is intended for the Luxembourg gardens.—A new Lycée is being completed at Saint Germain-en-Laye, and will be inaugurated next October.—The municipality of Sens has just opened a competition for the erection of a new Hotel de Ville, which is to be placed on the site of the present Mairie. The minimum expense is calculated at 300,000 francs. The competition will be closed on September 15.—The definite installation of the new Musée Cernuschi has necessitated the rearrangement of several halls which had been given up to Japanese and Chinese china. The alterations will be finished by the month of October.—It is quite decided that a commemorative chapel shall be erected on the site of the terrible catastrophe in the Rue Jean Goujon.

GERMANY.—There seems to be an increasing tendency at Berlin for speculative builders to engage a number of small contractors to carry out various parts of their work, and in the event of financial difficulties, the latter mostly become seriously involved. As a rule the small contractor is an artisan or a foreman who has made some headway in his trade, and it is very regrettable that he should constantly be made the dupe of the speculator. It is curious that the paternal Government at Berlin has not found some means to prevent the constant repetition of this kind of thing.—The German Press is congratulating the Berlin authorities on having been able to buy the picture by Holbein, which was lately sold in London, and they very rightly express their wonder at our parting with one picture after another by artists whose work is not particularly well represented in this country.—The foundation stone has been laid of the first of three new churches at Lichterfelde, being erected under the patronage of the Empress. The architect is

Herr Dolbach, who will carry out the building in the Gothic style. The church is to be set free.—We have referred to the new Berlin Building Act dividing the superficial area of every site into "zones," each of which can only be built on to a certain extent. The definitions of these "zones" are now under discussion, and there appears to be considerable variance as to the amount of ground to be left uncovered on building sites in the city proper. The Government proposes that a "zone" of six metres, taken parallel to the frontage line, can be built on to the extent of 100 per cent., and a following "zone" of twenty-six metres may be covered to the extent of 70 per cent., whilst ground further back from the street than thirty-two metres is only to be built on to the extent of 60 per cent. The Municipality, on the other hand, advise that the first "zone" should have a depth of seven metres, and the second to have thirty-one metres, and they also wish the proportion to be increased in the second instance to 80 per cent.—It is not improbable that the old Castle of the clerical Knights at Mayence will be shortly restored. A commission has been formed to report on the matter. We understand that the Municipality of Mayence has voted 30,000*l.* for the purpose, and that the Local Government has proposed an additional vote of 15,000*l.*—Lübeck is to have an equestrian statue of Emperor William I. An influential committee will act as assessors, and premiums to the extent of 300*l.* are to be awarded. A similar monument is to be erected at Eisenach, from the designs of Herr Zeysig.—The annual meeting of the Deputies of the Amalgamated Societies of German Architects is to be held at Kottenburg this year on the 10th and 11th of September. The meeting has had to be postponed owing to the military manoeuvres taking place in that district during August.—There is a considerable feeling at Berlin that the old Building Academy, which is a particularly ugly structure, should be pulled down, as it spoils the aspect of the Castle, the new cathedral, and the monument to Emperor William.—We regret to record the death of the oldest German architect, Franz Mertens, who died last month at the age of ninety, and whose work had a considerable influence in the development of modern German architecture.

SYDNEY.—On April 15 the Public Works Committee further examined Mr. W. L. Vernon, Government Architect, with regard to the proposed Parliament Buildings. The model of the buildings shown in the private room of the Committee was partly explained by Mr. Vernon, but his examination had not concluded when the Committee rose. The cost of the buildings alone would be 530,000*l.* The basement would be of trachite, and the remaining portion of the best Sydney sandstone. He would like the whole building to be of trachite, but there was the question of cost. The internal walls would be of brick, but in the more public parts he would recommend the use of colonial marble. For this, however, it would be necessary to offer some inducement to quarry-owners to open up their quarries. The height of the dome would be about 200 ft.—*Sydney Morning Herald.*

MISCELLANEOUS.

AN ANTIQUARIAN SOCIETY FOR NOTTS.—The Duke of St. Albans presided over a meeting at Nottingham, on the 1st inst., when the Thornton Society, an antiquarian organisation for Nottingham and Notts, was formally inaugurated. The objects of the society were explained by Mr. Phillimore. It was proposed to have a simple working constitution, with rules similar to those of the Bristol and Gloucester Archaeological Society, and the objects of the society were, in the first instance, to watch over antiquarian remains in the county, so that no harm be done to them, whether they were historical or mediæval in character. It was also proposed to have excursions, the first to Thornton; and many old and valuable documents had been presented to the society. The Duke of St. Albans proposed the formation of the society, and expressed his pleasure that such an organisation was about to come into existence in Notts, where there were many objects of antiquarian interest. There was now a house at Red Hill, in the parish of Daybrook, which few knew was once the residence of the Bourbon family for hunting purposes during the French war. All these small things, as time went on were forgotten, but a society of that kind would keep them still in the light. The Mayor of Nottingham seconded, and the proposition was carried.

TEMPLE BAR AND STATE PAGEANTS.—Messrs. Partridge & Cooper have sent us a short pamphlet on this subject, written by Mr. Henry Johnson and illustrated by Miss Elsie M. Cluff, which will be of some interest at this moment. It is well written and the illustrations are good.

WICKEN CHURCH, NORTHAMPTONSHIRE.—Referring to our paragraph as to the restoration of this church (page 517 and 6) Mr. E. Swinfen writes to say that though it is quite true that the "rederos is of oak," that part of the work does not belong to the present restoration but was given to the church some twenty years ago, being carried out by his designs, and decorated by Messrs. Clayton & Bell.

A "SELF-SHARPENING" PENCIL.—The makers of the "Blaisdell self-sharpening paper pencil" have sent us some specimens for our opinion. The title is as misleading as such catch expressions usually are. The "self-sharpening" portions are only the holder or covering of the pencil, which, instead of cedar wood, is made of paper, tightly rolled in spirals, portions of which are detachable at regular distances with the point of a penknife, and that section of the paper can then be unrolled and more lead uncovered. It saves the trouble of cutting the wood and the litter of splinters, but the business of sharpening the lead is of course left just as before; and when the patentees state in their circular that with this pencil "the fingers are not soiled with blacklead" in cutting, they are stating what they must know perfectly well is not the fact. The Blaisdell pencil is a clever invention and has real advantages, and it is a pity the patentees should have thought it necessary to state imaginary ones which do not exist. We may observe that the pencil is a good deal heavier than a cedar-mounted one of the same size.

ELECTRIC LIGHT SUPPLY, MANCHESTER.—The Manchester Corporation having applied to the Local Government Board for sanction to borrow 130,000*l.* for the purpose of extending the electric lighting works and system, Colonel J. T. Marsh, R.E., held an inquiry in the Mayor's Parlour recently. It was stated that the present demand for the electric light in Manchester far exceeds the supply. The capacity of the plant was equivalent to the supply of current represented by 128,000 lamps of eight-candle power, but the demand for the current down to a very recent date was represented by 161,504 lamps, showing a deficiency of 33,504 lamps. The principal new works proposed to be constructed consisted of two direct driven electric generators of 2,500 horse power, six Lancashire boilers, similar to those already provided, and five tubular boilers; also two economisers, each having 480 tubes. In addition to these works a very large outlay upon additional mains would be necessary. On March 31st the total outlay on electric lighting was 309,107*l.* 10*s.* 10*d.*, and the estimated cost of works which were included in previous applications for loans, and which had not yet been executed, was 49,800*l.* 0*s.* 2*d.* The further estimated outlay was 130,000*l.*, making a total of 548,907*l.* Alderman Higginbottom then explained the electric lighting scheme in detail. Dealing with the varying capacity of the plant he said that in 1893 it was 40,000 eight-candle lamps, that in 1894 it was increased by 19,000 lamps, and that in 1895 and 1896 up to March, 1897, it was increased by 72,000 lamps, making a total of 128,000 lamps. Another side of the progress was shown as follows:—In 1893 there were 280 consumers and 32,716 lamps; in December, 1894, the consumers were 624 and the lamps 60,298; in December, 1895, the consumers were 1018 and the lamps connected 92,209; in December, 1896, the consumers were 1406 and the lamps 133,504; and on May of this year the consumers were 1620 and the lamps connected 147,068. There were also awaiting connexion 52 customers and 14,520 lamps, making the total number of consumers connected and awaiting connexion 1676, and the number of lamps connected and awaiting connexion was 161,504. Comparing the consumption of last year with the year ending March, 1896, there was an increase of no less than 973,678 units, or 34 per cent. The whole of the consumption, amounting to 2,775,107, last year was, said Alderman Higginbottom, for private purposes. Public lighting of the three squares had, however, given great satisfaction. The cost of lighting the three squares was 70*l.* a year less than the cost of 63*l.*

NORTHERN ARCHITECTURAL ASSOCIATION: VISIT TO THE LEEDS STEEL WORKS.—The Directors of these works, having invited the members and practising associates of the Northern Architectural Association to visit their works on the 9th inst., to view the manufacture of steel in its various processes from the ore to the finished girder, a large party of architects accepted the invitation. The company placed three saloon carriages at the architects' disposal, and provided lunch upon arrival and carriages to convey the party to the works and back to the station. The Leeds Steel Works received its present title, and was registered as a limited company, in 1888, but previously was known as "The Airedale Iron and Steel Works." Mr. Walter Scott, of Newcastle-on-Tyne, has purchased from time to time the property of the other partners, and may now be practically termed owner of the works, which cover an area of twenty-five acres, the yearly output being 70,000 tons of steel, and the wage roll amounts to 70,000*l.* per annum. The stocking ground is commanded by a 10-ton travelling crane, which has a span of nearly 100 ft. The sheds and yards are intersected by railway lines, on which six locomotive engines and eight steam travelling cranes are continuously at work. The electric light is in full use throughout the night. Mr. Walter Scott, together with Mr. Vaughan, conducted the party through the works.

STREET IMPROVEMENT, MIDDLESBROUGH.—In the minutes of the Streets Committee, presented to the Middlesbrough Town Council, estimates prepared by Mr. Baker, Borough Engineer, for three schemes of street improvement in connexion with the tramways extension were submitted. The streets

named are Ferry-road, Durham-street, Cleveland-street, Queen's-square, Albert Bridge, Exchange-terrace, Albert-road, Grange-road, Linthorpe-road, Linthorpe-square, Harthorpe-crescent, Bridge-street East, Dock-street, Zeland-road, Marton-road, Corporation-road, Newport-road (including relaying set paving), Parliament-road, Calvert-street, Oxford-road, and North Ormesby-road. The first estimate is for paving across the whole width scorie bricks on concrete, with new channels, relaying kerbs, new kerbs and gullies where required—dedicated streets, 27,004*l.* 12*s.* Estimate No. 2.—For macadam, with new channels, relaying kerbs, new kerbs and gullies where required—dedicated streets, 9,720*l.* 5*s.*; undedicated streets, 1,233*l.* 15*s.* 6*d.*; total, 10,953*l.* 0*s.* 6*d.* Estimate No. 3.—Ordinary macadam, with new channels, relaying kerbs, and gullies where required—dedicated streets, 7,146*l.* 13*s.*; undedicated streets, 899*l.* 14*s.* 6*d.*; total, 8,045*l.* 7*s.* 6*d.*

CAPITAL AND LABOUR.

THE THREE TOWNS BUILDING STRIKE.—The Master Builders' Association have received a communication from the Carpenters' Strike Committee dated July 1. The Carpenters state, "We are willing to meet a deputation of your members to discuss trade rules without prejudice. As regards your resolution, 'mobbing' of carpenters, we deny it, and coming from men of the world we cannot think it was seriously meant." With reference to the general bearing of the dispute with the carpenters, the Association by letter advised the members of a circular sent round to the builders who have men on strike, that there are working for them at the present time more than 200 non-society carpenters, exclusive of a considerable number of apprentices, many of whom are competent workmen. Carpenters are still reported to be coming into the town. The notice given by the Exeter branch of the Amalgamated Society of Carpenters and Joiners for id. an hour rise in wages expires on July 1. At present they receive 6*d.* an hour, being 1/2*d.* less than the carpenters in the Three Towns.

EDINBURGH PLUMBERS' WAGES.—A meeting of the Edinburgh branch of the United Operative Plumbers' Association of Scotland was held recently in the Oddfellows' Hall, Edinburgh, to consider the reply from the employers regarding the proposed by-laws. The operatives had previously requested a standard rate of wages of 8*d.* per hour. The masters, however, offered 8 1/2*d.* per hour according to ability for first-class men, and it was agreed to accept this offer, which is to take effect as from July 1. The masters have also conceded time and a quarter for holidays, and they have agreed to adhere to the old rule as to work outside a two-mile radius. A by-law as to arbitration between employers and employed in the event of disputes has been passed as amended by the masters, with the restriction that twelve days be allowed for the completion of the negotiations. A request that three months' notice instead of six months' be necessary before any alterations on the by-laws take effect has been granted by the masters giving the date for their coming into operation at February 1.

THE DISPUTE IN THE NORTHWICH BUILDING TRADE.—On the 3rd inst. the dispute between the Northwich and district bricklayers and their employers was practically settled. With the exception of two of the master builders, all the firms in the district have conceded an advance of 1*d.* per hour, making 9*d.* instead of 8*d.* This is the amount demanded by the men, who have been on strike some weeks.

THREATENED STRIKE OF DUNDEE MASONS.—A meeting of the operative masons of Dundee was held in Plumbers' Hall, Bain-square, Dundee, on the 4th inst., to consider upon a course of action in view of the refusal of the employers to grant an increase of 3*d.* per hour upon the present rate of wages. It was intimated at an early stage of the proceedings that one firm had granted the advance desired. After a discussion, lasting fully two hours, it was decided to test the feeling of the meeting as to whether the men should enforce their demands. The vote was taken by ballot, when it was resolved to come out on strike, and to remain out until the increase should be granted. The number of men affected by the strike is between 500 and 600. The present rate of wages is 9*d.* for hewers, 8 1/2*d.* per hour, and for builders, 9*d.* per hour. At a private meeting of the master builders of Dundee, held the same night, unknown to the operatives, the wages question was again considered, and it was ultimately resolved, it is stated, to raise the wages by 3*d.* per hour to hewers and builders.

NEWCASTLE MASONS AND THEIR HOURS.—A demand having been made by the masons of Newcastle and district to have the working hours reduced to 4 1/2 per week, a meeting of master builders was held at the offices of their Association recently, and it was decided that they could not agree to the proposed alterations.

THE KEIGHLEY BUILDERS' STRIKE.—The Mayor of Keighley recently called together five representatives of the master builders, and five of the labourers now on strike, in order to ascertain the possibility of a settlement. The parties met at the Crown

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Table with 4 columns: Nature of Work, By whom Advertised, Premiums, and Date to be delivered. Includes entries for Municipal Buildings, Art Gallery, and Library.

CONTRACTS.

Table with 4 columns: Nature of Work or Materials, By whom Required, Forms of Tender, and Date to be delivered. Includes entries for alterations, pipe sewers, granites, and various building works.

CONTRACTS—Continued.

Table with 4 columns: Nature of Work or Materials, By whom Required, Forms of Tender, and Date to be delivered. Continues from the previous contracts section with entries for chimneys, foundations, and various building materials.

PUBLIC APPOINTMENTS.

Table with 4 columns: Nature of Appointment, By whom Advertised, Salary, and Applications to be in. Includes entries for Clerk of Works and Architectural Assistant.

Those marked with an asterisk (*) are advertised in this number. Competitions, iv. Contracts, pp. iv, vi, viii, & xix. Public Appointments, pp. xvi, & xix.

Large table of land advertisements with columns for location, details, and price. Includes entries for Fulham, Wandsworth, Tottenham, and various other areas.

Lambeth—16 and 24, Vaushall walk, r. 794 1/2; also l.g.r. 84, ut. 39 yrs, g.r. 127. ...

Hammer-smith—21, Upper Mall, with wharf, &c, r. 387. ...

Old Ford—78, Armagh rd., ut. 58 yrs, g.r. 41. ...

Chesham, Herts.—"The Old Parsonage" and 14 1/2 ft. ...

Hammer-smith—23, Andover rd., ut. 64 1/2 yrs, g.r. 34. ...

Hackney—30, Lansdowne-rd, r. 236; and 83, r. 394. ...

Contractors used in these lists.—P. g.r. for frehold ground rent; l.g.r. for ground-rent; r. for rent; e.r. for estimated rental; u. for unexpired term; p.a. for per annum; s. for square feet; sq. for ground or sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

PRICES CURRENT OF MATERIALS.

Table listing various materials such as timber, iron, and steel with their respective prices and specifications.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us not later than 2.30 p.m. on Thursdays, N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given for any list in which the lowest Tender is under £200, unless for exceptional cases and for special reasons.]

BRIDGNORTH.—For erecting new schools, Higley, for the Higley School Board. Messrs. R. Scrivenor & Sons, architects, 5, Swan...

BRENTWOOD.—For alterations and additions to "The Essex Arms Hotel" Brentwood, for Mr. Mersham, M. J. E. Pinder, architect, Bridge House, South Tottenham, N.—C. E. Todd...

BURTON LATIMER (Northants).—For the erection of a coffee-house and club, for the Burton Latimer Coffee-house, Limited. Messrs. Colles & Fotheringham, architects, Cross Exchange, Market Harborough. Quantities by the architects:—

CHESSHUNT.—For the erection of three villa residences at Cheshunt, for Mr. G. C. Jones, surveyor, Chessington, Essex.—James Riches, 39, Strand, £2,500; James Gillingham, 1, Cavoy, £2,500; J. Haydon, £2,300; C. F. Robinson, Junr., £2,300.

CROMER (Norfolk).—For the erection of a boiler and exhaustor house, &c., for the Gas and Coke Company, Limited, Mr. Percy Collett, C.E., 55, Parliament-street, Westminster, S.W.:

DONEGAL (Ireland).—For the construction of reservoirs and water supply works, for the Union Guardians, Mr. J. L. Denehish, Messrs. C.E. Town Hall, Newry:

HASTINGS.—For the erection of school buildings, Priory road, West Hill, for the U.D. School Board, Mr. F. St. Humphreys, architect, 6, Trinity-street, Hastings:

LONDON.—For new premises at Vine-street, for the Receiver for the Metropolitan Police District, Mr. J. Dixon Butler, Architect. Quantities by Mr. W. H. Thorneycroft:

LONDON.—For alterations to "The White Hart," Rivington-street, Shoreditch, Mr. G. C. Page, architect, 83, Olveston-street, monger lane, E.C. 1:

LONDON.—Accepted for providing and fixing twenty-nine new gold deal window frames at the Wesleyan Chapel, William-street, Westlich, Mr. W. Whincop, architect:—

LONDON.—For alterations to Messrs. Fulring & Son's furniture depository, Woodwich, Mr. J. O. Cook, architect:—

LONDON.—For building new warehouses, Nos. 30 and 32, Farningford-road, for Messrs. John Greenwood & Son, Messrs. Bacon & Lobb, architects, 4, Cophall-chambers, E.C. 1:

LONDON.—For the proposed erection of new casual wards at Paddington, for the Parish of Paddington, Mr. F. J. Smith, architect, Westminster:

LONDON.—For addition and alteration to "The Devon Arms," Marsh-street, Hackney, Mr. Harry Roberts, architect, Lewisham:

LONDON.—For alterations to "The Jolly Sailors," Rotherhithe, Mr. H. Roberts, architect:—

LONDON.—For building warehouse, Cross Keys-croft, London wall, E.C., for Mr. Gerard J. Mathieson, Messrs. Barnes Williams, Barris & Gillin, architects:—

LONDON.—For the erection of club premises, Old Charlton, S.E., for the Charlton Swimming Club, Mr. John Rawland, architect, 24, The Village, Old Charlton:

LONDON.—For the construction of water-works, &c., for the Union Guardians, Mr. R. H. Dorman, County Surveyor, Armagh:—

BRIGHTON.—For work paving, &c., New-road and part of North-street, for the Town Council, Mr. F. J. C. May, C.E., Town Hall, Brighton:—

Table comparing tender prices for paving and construction work in Brighton, listing items like 'Providing and laying 9 in. by 3 in. laying 9 in. by 3 in.' and prices per square yard.

MANORHAMPTON (Ireland).—For the construction of water-works, &c., for the Union Guardians, Mr. R. H. Dorman, County Surveyor, Armagh:—

LONDON.—For new shop front, marble work, &c., at 8, Charlton-street, S.W., for Mr. A. J. Palmer, Mr. Alfred Howard, surveyor, 15, The Outer Temple, Strand:—

LONDON.—For building new skittle saloon at "The Grove Tavern," Lordship-lane, Dalwell, for Mr. Frain:—

LONDON.—For various decorative and sanitary repairs at 54, Newton-square, East, for Mr. W. Morley & Lettis, surveyors, 185, East's Court-road, S.W.:

LONDON.—For new drainage and entire renewal of internal sanitary arrangements, hot-water services, &c., at 165, East's Court-road, Messrs. J. W. Morley & Lettis, surveyors, 185, East's Court-road, S.W.:

LONDON.—For alterations to the "Vale of Health" Hotel, Huppstead, N.W., for Mr. Chas. Peters, Mr. Albert E. Prichard, architect, 8, Broad-street Buildings, E.C. 1:—

LONDON.—Accepted for erecting new coachbuilders' shop at Messrs. Durrance Bros., East-road, E.C. 1:—

LONDON.—For rebuilding the "White Hart," Rivington-street, Shoreditch, Mr. G. C. Page, architect, 83, Olveston-street, monger lane, E.C. 1:—

LONDON.—Accepted for providing and fixing twenty-nine new gold deal window frames at the Wesleyan Chapel, William-street, Westlich, Mr. W. Whincop, architect:—

LONDON.—For alterations to Messrs. Fulring & Son's furniture depository, Woodwich, Mr. J. O. Cook, architect:—

LONDON.—For building new warehouses, Nos. 30 and 32, Farningford-road, for Messrs. John Greenwood & Son, Messrs. Bacon & Lobb, architects, 4, Cophall-chambers, E.C. 1:—

LONDON.—Accepted for constructing a new power lift at Abbey Buildings, Westminster, for Mr. W. P. Mitchell:—

LONDON.—Accepted for alterations, additions, and new sanitary works, &c., at No. 154, Marlborough-road, Mr. C. Stanley Teuch, architect:—

LONDON.—Accepted for alterations, &c., to "The Victoria," Kensal Rise, Mr. H. W. Budd, architect:—

LONDON.—For alterations and additions to the "Crown and Shears" public-house, Muttons, E.C., for Messrs. Hoare & Co., Limited, Messrs. Perry & Reed, architects, 9, John-street, Adelphi, W.C. 1:—

LONDON.—Accepted for erecting house and stables, Steele-rd., Tottenham, for Mr. A. Woodward, Mr. J. E. Pinder, architect, 18, Bridge House, South Tottenham, N.—

MANORHAMPTON (Ireland).—For the construction of water-works, &c., for the Union Guardians, Mr. R. H. Dorman, County Surveyor, Armagh:—

Table comparing tender prices for paving and construction work in Brighton, listing items like 'Providing and laying 9 in. by 3 in. laying 9 in. by 3 in.' and prices per square yard.

MARNHILL (Dorset).—For the erection of a bridge, Little King's Mill, for the Dorset County Council. Mr. W. J. Fletcher, C.E., County Surveyor, Wimborne:—

Table with 2 columns: Name and Amount. Includes R. Curtis, S. Curtis, H. Bartlett, Dorman, Lang, & Co., N. Harris, Bridport.

MIDDLESBROUGH.—For the erection of a large block of business premises (exclusive of all fixtures and fittings). Linthorpe-road, for the Co-operative Society, Limited. Mr. W. G. Roberts, architect, 6, Albert-road, Middlesbrough:—

PENGE.—Accepted for making up Phoenix-road and laying sewer and drains for Mr. W. R. Quested. Mr. Albert E. Fridmore, surveyor, 2, Broad Street-buildings, E.C. 1:—

PETERSFIELD (Hants).—For the construction of a reservoir, or the Urban District Council. Mr. H. T. Keates, surveyor, Petersfield:—

PONTYPOOL.—For the erection of house and shop, Crane-street, for Messrs. Wood & Co., Mr. N. M. Brown, architect, Somerset-road, Newport, Mon.:—

ST. ALBANS.—For erecting a house in Hill Side-road, for Mr. T. H. Johnson. Mr. Griffith, architect, London:—

ST. ALBANS.—For a pair of semi-detached villa-residences, Upper Witley-road. Mr. S. D. Edmunds, architect, 50, Hill-street, St. Albans:—

SOUTHEND-ON-SEA.—Accepted for the erection of a pair of houses. Mr. Arthur T. A. Bowyer, architect, 92, Leadenhall-street, E.C. 3:—

STOKE-ON-TRENT.—For making new streets for the North Staffordshire Cricket and Athletic Club, Limited, at Stoke-on-Trent:—

SURBITON.—For decorative and sanitary works to Newbury House, Beaufort-road, Surbiton, Surrey, for Miss E. Forster. Mr. Walter J. Ebbetts, architect, Savoy House, 115, Strand, W.C. 2:—

SUTTON.—For additions and alterations to Stanley House, Mulgrave-road, Sutton, Surrey, for Mr. Wm. Berrell, C.E. Mr. Walter J. Ebbetts, architect, Savoy House, 115, Strand, W.C. 2:—

TICEHURST (Sussex).—Accepted for the erection of a Wesleyan Chapel. Quantities by Mr. A. Wither, Parock, architect and surveyor, 66, St. Anne's-hill, Wandsworth, S.W. 1:—

C. B. N. SNEWIN MAHOGANY, WAINSCOT, WALNUT, TEAK, VENEER, and TIMBER MERCHANT, Nos. 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, & 17, BACK HILL, HATTON GARDEN, and 29, RAY STREET, FARRINGTON ROAD, E.C.

WALTHAMSTOW.—For erecting lavatories and additions to Grosvenor House, Hoe-street, for the Urban District Council of Walthamstow. Mr. Geo. W. Holmes, Engineer:—

Table with 2 columns: Name and Amount. Includes Barratt & Power, W. Lawrence, Waltham Abbey, Stuart & Dayman.

WEALDSTONE (Middlesex).—For the erection of a factory at Wealdstone, Harrow, for Messrs. Hamilton & Co., Messrs. G. R. Tassell & Sons, surveyors, 30, John-street, Bedford-row, W.C. 2:—

WORKINGTON.—Accepted for additions to Victoria Schools, for the Workington School Board. Messrs. W. J. Scott & Co., architects, Victoria-buildings, Workington:—

TO CORRESPONDENTS. A. H.—S. W.—W. C.—A. E. P.—Amounts should have been stated.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors. We cannot undertake to return rejected communications.

Any communication to a contributor to write an article is given subject to the approval of the article when written, by the Editor, who retains the right to reject it if unsatisfactory.

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Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 42, Poultry, E.C. —The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. Asphalte Contractors to the Forth Bridge Co. [ADVT.]

SFRAGUE & CO. PHOTOLITHOGRAPHERS, 4 & 5, East Harding-street, Fetter-lane, E.C. [ADVT.]

QUANTITIES, &c., LITHOGRAPHED accurately and with despatch. METCHIM & SON, 20, Parliament-st. S.W. "QUANTITY SURVEYORS' TABLES," For 1897, price 6d. post 7d. In leather 1/- Post 1/1 [ADVT.]

SZERELMEY STONE LIQUID. THE TEST OF TIME. OVER FORTY YEARS' GENERAL EXPERIENCE HAS PROVED THAT SZERELMEY STONE LIQUID ABSOLUTELY WATERPROOFS AND PRESERVES BRICKS, STONE, CEMENT, PLASTER, STUCCO, &c. Adopted by Governments and Public Bodies throughout the world. SZERELMEY & CO., Rotherhithe New-road, S.E.

THE French Asphalte COMPANY. Suffolk House, Cannon-street, E.C. SUPPLY THE BEST MATERIAL AND WORKMANSHIP FOR BUILDINGS, DAMP COURSES, AREAS, ROOFS, WASHHOUSE AND DAIRY FLOORS, &c., &c. This Asphalte was chosen to be laid at Sandringham, on the new General Post Office, and other important buildings.

TWELVE GOLD AND SILVER MEDALS AWARDED. IRON CISTERNS. F. BRABY & CO. VERY PROMPT SUPPLY. LARGE STOCK READY. Particulars on application. CYLINDERS FOR HOT-WATER CIRCULATION. LONDON: 352 to 364, EUSTON-ROAD, N.W., and 218 and 220, HIGH-STREET, BOROUGH, S.E. LIVERPOOL: 6 and 8, HATTON GARDEN. GLASGOW: 47 and 49, ST. ENOCH-SQUARE. BRISTOL: ASHTON GATE WORKS, CORONATION-RD.

The Builder.

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Portion of Remains of the Roman Wall, Northumberland	Double-Page Ink-Photo.
Competition Design for National Telephone Company's Shops and Offices, corner of Wellington-street, Strand.—Mr. A. F. Vigers, Architect	Single-Page Photo-Litho.
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Recent Excavations on the Roman Wall in Northumberland.



URING the past three years extensive explorations have been made on the line of the Roman Wall in Northumberland by a committee formed in connexion with the

Newcastle Society of Antiquaries. Sections through the Vallum, or earth wall, extending to the Murus or stone Wall,* were made at Heddon on the Wall and Down Hill, and the evidence furnished by the use of the spade proved fatal to the theories of many of the local antiquaries as to the origin and use of the Vallum, which still remains a mystery that can only be solved by systematic and careful sections made at various points over a large extent of its course. By far the most important work done by this committee is the excavation which, during the past two years, has been in progress at Æsica.

A list of stations on the line of the Wall is given in the "Notitia," a Roman army-list of not later date than the early part of the fifth century. The names of twenty-three stations are mentioned, commencing at Wallsend (Segedunum), the eastern extremity of the Wall, and going westward. Eleven of these stations in direct sequence have been satisfactorily identified by inscriptions discovered in the camps, of which Æsica is the ninth. Considerable doubt exists as to the identity of many of the other twelve camps mentioned, which lie towards the western end of the Wall.

The best access to Æsica is from Haltwhistle, a station on the Newcastle and Carlisle Railway, from which it is distant about two and a half miles almost due north. It is approached by a road which zigzags up a steep hillside at the east end of the village. On arriving at the summit of the hill the outlook to the north is a picturesque and an interesting one. Stretching away to the far distance, eastward, over the moorland, lie

the almost white line of the military road from Newcastle to Carlisle, made by General Wade in 1752, not many years after the suppression of the last Jacobite Rebellion, and the parallel green lines of the ditch and mounds of the Vallum, or earth wall, which forms the southern portion of the barrier drawn by the Romans from the Tyne to the Solway.

A little further north an outcrop of basaltic rock, known locally as the Great Whin Roll, stretches away in wave after wave to the next Roman camp, Borcovicus, finding its highest point at Winshields, 1,230 ft. above the sea-level, and carrying in an almost unbroken line the Roman Murus, or stone Wall, which crests its steep hills, and clings to the precipitous sides of the rugged gaps which separate them.

Deep down in the glen below, the Haltwhistle burn rushes dark and full of the peaty waters from the moorland wastes where it takes its source. Close to the bridge by which Wade's road crosses the stream are seen the lines of an important Roman camp yet unexcavated, which may furnish future explorers with interesting evidence as to the nature of the Roman occupation of the north of England before the building of the Wall, it having been made to defend the defile of the Haltwhistle burn before the erection of the Wall and the camp of Æsica on its north side, which would render it useless and cause its abandonment.

Passing alongside the steep southern rampart of this camp, and crossing the burn at a ford, may be traced the line of the Stanegate, an early Roman road in existence long before either Vallum or Murus. Further to the west the Devil's Teeth—as the Nine Nicks of Thirwall, a range of basaltic hills, are locally called—rear their bold crests, culminating in Mucklebank, the highest of the range, on the western flank of which an interesting wall turret was excavated in 1892 (by Mr. J. P. Gibson). While the Murus caps the crest of all these hills, the Vallum pursues a direct and straight line from camp to camp in the valley immediately to the south of the range. The gray distance on the line of the horizon is filled with the heath-clad slopes of the Tyndale Fells, and beyond lies Crossfell, a northern outlier of the Pennine range. Æsica lies about a mile to the north, on the southern slope of a gentle hill, of which it covers about 3½ acres.

It is most convenient to describe it by commencing at the principal or southern gateway (Porta Decumana) and proceeding around the inside of the camp walls.

The arrangement usual in most of the camps on the line of the Wall is here departed from, as the south gateway is not placed at the centre of the southern rampart, but at a point considerably to the east of it. A road leading to the modern farmhouse, which stands in the north-east angle of the camp, has almost entirely destroyed the double portals of the gateway, but the lower portions of the guard chambers on each side of it still remain, the masonry of that to the east being of earlier and more substantial work than that of the western one; in the latter was found a large hoard of very fine fibule, rings, chains, and other articles of jewellery, at about 2 ft. from the floor level. Probably they were the possessions and adornments of the wife of the Præfect of the cohort of Spanish auxiliary troops (*Cohors Secunda Astorum*), which was so long quartered at this camp, and were gathered together during one of the Caledonian raids, ready to be carried away by their owner, who was, doubtless, overwhelmed in the destruction of the guardhouse tower, where she had taken shelter in readiness to quit the camp.

Adjoining the east end of the eastern guard chamber is a circular chamber of masonry, with a small flue, containing soot, leading into the bottom of it. A similar chamber exists at Borcovicus, in almost the same relative position to the south gateway there, which Dr. Bruce suggested was a mediæval kiln for drying corn, erected by some moss-trooper, who had made the building his residence. As another was also found at the principal gateway of Amboglanna, it seems improbable that three moss-troopers should occupy the gateways of three Roman camps, a considerable distance apart, and should erect three kilns in them. The small size of the chamber would render it of little or no use for such a purpose as drying corn, so that there can be little doubt that these are, like the rest of the buildings, entirely of Roman origin.

A trench was driven in 1894 along the southern intervallum without any satisfactory result, but at the south-east corner of the camp is the base of an angle turret, which is rounded on its outer face and square on its inner face, like the angle turrets in other

* In this article the great stone wall, extending from Tyne to Solway, and known as the *Murus*, which is frequently also described as "Hadrian's Wall," is distinguished from other walls by the use of a capital W. The controversial question as to who was its builder is left untouched by the writer.

camp. It stands at present 6 ft. high. From its north side to the western gateway of the camp the inner face of the wall stands perfect to about the same height, and has been cleared of soil down to its plinth. The existence of a western gateway at *Æsica* was doubted by Dr. Bruce, and even by Mr. McLauchlan, an engineer who about the middle of the present century spent two years in a careful and systematic survey of the wall and its camps, which was made and published at the cost of the Duke of Northumberland. The discovery of this gateway, which far surpasses in interest any previously found on the line of the wall, clears up some points hitherto obscure, and adds much to our knowledge of the Roman occupation of the North. It is built on the usual plan, having two inner and two outer portals separated by pillars of heavy masonry, and it is flanked on each side by the base of a tower which was used as a guard chamber. In this, much more clearly than in any previous excavation *per lineam vallis*, can be traced the flow and ebb of the successive Roman invasions, three periods of building and three epochs of disaster and destruction being clearly visible on the existing remains. The different quality and character of the masonry used in these successive periods is very marked. The earliest, seen in the lower portion of the southern guard chamber and the portals of the gateway, consists of massive well-squared stones. The original floors were found overlaid with debris containing much charcoal, pointing clearly to the first destruction of the camp by fire. This debris had not been cleared away, but had been levelled down, and the floors of the second occupation, which were formed of flagstones, were laid upon it. Some alterations were then made in the plan of the gateway, the southern outer portal having been built up with roughly squared stones, and the northern portal much widened by cutting away a portion of the central pillar. Two sets of pivot holes for the gates still remain, those of the second occupation being on a level of 18 in. higher than those of the first. At a much less interval above the second floors are found those of the third period, pointing to a shorter lapse of time between the second destruction and re-occupation of the camp than existed between the first expulsion and re-entry of the Romans. [See the lithograph illustrations in the present issue, from photographs of various portions of the remains.]

During the third occupation the north remaining portal had been entirely blocked up by what appears to have been the base of a tower, occupying the site of both portals, and placed on the debris of the second destruction, many feet above the earliest floor level. Rubble work is employed in the final building up of the north portal. A number of sugarloaf-shaped stones, about 15 in. high, have been found among the fallen stones at the angle and gateway towers, and have probably been used as corner pinnacles to the towers; if so used they might, in an emergency, be detached from their position and hurled down on any foe attacking the walls.

Between the west gateway and the north-west angle of the camp is an extensive range of buildings erected against the inside of the western wall. Behind a stone trough near a hearth in one of these, which seems to have been a smithy, were unearthed about

twenty silver denarii of the earlier Emperors. In an adjoining building a quantity of charred wheat was found, the grains of which still retained their shape. Possibly this was the identical granary referred to in an inscription found in this part of the camp in 1767, which stated that a granary, which had become ruinous through age, had been restored during the reign of Severus Alexander by the second cohort of the Astures. The consuls' names given show the date of the inscription to be A.D. 225.

Specially interesting is the point where, at the north-west angle turret, the great Wall joins the camp. In exploring this corner at first it seemed as if a modern field road, which had been made right through it, had destroyed it; but on cutting deeper the foundation of the western side was found, and the north, south, and east walls remained standing nearly 5 ft. high.

The masonry of this angle turret and that of the Wall were found to be of similar character, and bonded into each other. It had been suggested that if this angle turret proved to be of the same masonry as the Wall, it would certainly join it at right angles, as the walls of the mile castles which were built along with the Wall invariably do, instead of the Wall striking the rounded camp angle at a tangent, as it does at Borcovicus, where this arrangement as often been cited as proving the Wall to be of later date than the camp, as is doubtless the case there.

It does not, however, follow that evidence based on a rounded angle turret *alone*, as is the case at *Æsica*, is sufficient to prove the camp earlier than the wall, as a little consideration of the different uses of mile castles and camp angle turrets will show. The mile castles are walled enclosures about 60 ft. square placed against the south side of the wall, which always forms their northern boundary. They are placed at intervals approximating as closely to a Roman mile as the selection of a suitable site permitted. For their north and south sides they have arched gateways with roads running through them, which formed the only communication with the country beyond the wall, except that afforded by the gateways of the camps. Inside them have been found traces of wooden erections that would afford shelter to the guards who kept watch in them, and relieved the sentries posted on the wall at intervals of three hours. As the sentries' roadway on the top of the wall would be carried over the top of the northern arched gateways, it is improbable that the mile castles would be higher than the wall itself, and there would be no advantage in making any other than a simple right-angled junction between wall and mile castle.

In the various representations still existent of camps on the Trajan and Antonine columns at Rome, their angle towers and those of the gateways are always shown considerably higher than the ramparts connecting them. The very large accumulations of fallen masonry found on the sites of the angle and gateway towers at *Æsica* prove that the same arrangement existed there.

An engine of war placed on the north-west tower would enfilade not merely the north and west walls of the camp, but also a considerable stretch of the great Wall to the west of the camp. The rounded angle would give additional strength to the portion of the tower exposed above the Wall, and would also render more easy the training of

a ballista or other engine placed on the top of the tower, especially when it was being used at short ranges. The finding of a large heap of rounded stones, suitable to be used as missiles, at the base of this tower, seems to make it certain that it served as a platform for a small ballista.

These reasons seem sufficient to account for the usual plan of having rounded corners to each angle of the camp having not been departed from, even when Wall and camp were built simultaneously, as seems to have been the case at *Æsica*, without taking into account the spirit of military red tapeism which probably exercised an influence even in the well organised armies of Rome.

The extensive quarrying of the north wall of the camp in search of building materials for the erection of the present farmhouse has made it impossible to get a satisfactory plan of the north or Prætorian gateway of the camp, but sufficient remains were found to prove that it was opposite to the south gateway and, like it, was placed much nearer to the eastern than to the western rampart.

A large vaulted chamber cleared out near the centre of the camp bore traces of previous exploration.

The excavations have so far been chiefly confined to the line of the camp, ramparts, and gateways, except in the north-west quarter of the camp, where a long trench revealed many traces of buildings of poor masonry made from reused materials during the latter part of the Roman occupation. As it was found impossible to keep the whole of the excavated ground permanently open, these were measured, laid down in the plan, and covered up again.

During the course of the excavations, large quantities of pottery were turned up, chiefly consisting of the grey smother-kiln ware, made in the neighbourhood of Upchurch, where an area of twenty-four square miles, covered with potters' debris, shows the extent and importance of the Roman potteries formerly existing there.

A few small fragments of the particoloured Durobrivian ware and much of the beautiful red Samian ware were also found. Two fragments of the latter had on them, scratched through the glaze, graffiti of names of centurions that have also been found on centurial stones in that district. Millstones were found, varying in size, from those that could be turned by a female slave up to those that would have required an ox or ass to drive them. Most of them were made of the local grits, but a few of them were "made in Germany" of the volcanic rock found near Andernach, where an extensive manufactory of millstones from the same stone still exists. Unfortunately, no altars were discovered, and the fragments of inscribed stones turned up were few and unimportant, the portions of the camp explored being those least likely to furnish buildings containing important inscriptions. In addition to the hoard of jewelry found in the south gateway, many bronze objects, such as fibulae, buckles, studs, and cooking utensils, were turned up and removed to the Black Gate Museum, at Newcastle; among them, a brooch in the form of a hare, which is ornamented with blue enamel, and is almost an exact replica of one at present in Chester Museum.

Weapons and implements of iron, much corroded, were turned up in great profusion—among them a sickle similar in shape to

those recently rendered obsolete by the use of machinery in the reaping field—but much smaller in size. The fashion in which the Romans used their sickle is shown on the Trajan column, where a reaper is represented turning down the corn and striking it with a sharp-edged sickle. It seems odd that in Ireland, where no Roman settlements existed, this fashion should have been followed, while in the north of England the serrated sickle which was used by being drawn through the standing corn towards the reaper was most common.

Lack of funds prevented the Excavation Committee from continuing its work during last summer, but it is hoped that donations may be forthcoming to enable them this summer to resume their work in the central portion of the Camp, where possibly the Forum and the Prætorium may still be found.

NOTES.

Election of Fellows of the Institute.

THE tendency of the resolutions passed on this subject at the meeting of the Institute

on Monday last (which resolutions are given in another column), will be, we hope, to draw closer the bonds between the Institute and the Allied Societies in the provinces, which is in every respect to be desired. The two most important resolutions are those which empower the Council to elect, without ballot, a practising architect unanimously recommended by the representative architectural society of his district, and to similarly elect the President or President-elect of any allied societies, "who are eligible and apply for admission." The first-named resolution has tacked to it the saving clause (not included in the resolution as originally proposed) "his work being of sufficient merit," which leaves to the Council the option of rejecting the application on the ground of insufficient merit shown in the candidate's own work as exhibited in his own drawings. With this proviso, it is not likely that the power thus given to the Council will be used in favour of any one who is not a desirable addition to the ranks of the Fellows, and it will meet a not unreasonable complaint raised, we believe, by some of the Allied Societies, that an architect whom they recommended from a full knowledge of his work and acquirements was liable to be voted against, on some mere ground of policy, by London members who in reality knew nothing about him. It is to be hoped that another recommendation included in the same set of resolutions, viz.: "that it is desirable that Associates who are eligible should come forward for election as Fellows," will not be overlooked by those to whom it applies. To those who make what seems to us the rather selfish objection that they will gain nothing by becoming Fellows, it may be replied that they will benefit the Institute of which they are members, and therefore themselves indirectly—if it is necessary to use the argument of self-interest. But surely there are motives a little higher than that to be considered.

Judicial Wrath against Architects.
THE report of the case of Moorwood, Sons & Co. v. George Longden & Son, which will be found in our legal column, affords another significant example of the stereotyped hostility of the Bench towards archi-

fects, and the apparent incapability on the part of learned judges to understand the architect's position as between client and tradesman. The architect in this case selected certain goods from the plaintiffs for a building in his charge, stating the names of the contractors who were to pay for them. For some reason, which does not become evident in the report of the case, the defendants demurred to or deferred payment, and the plaintiffs brought an action to recover the money. On the architect admitting that he ordered the goods, the judge tells him he ought to pay for them, and indulges in an absurd tirade against the "tyranny" of architects and the folly of tradespeople in trusting them. The matter is of course perfectly simple; the architect must select the goods, as he is the only judge of what is best for his client; and unless he ordered something not provided for in the contract, which does not appear to have been the case in this instance, the contractor repudiated his responsibilities. Whereupon the judge abuses the architect.

MUCH has been said in respect to the many temporary structures which have been erected on the occasion of the Jubilee celebrations, and which, quite irrespective of the control exercised by the London County Council as regards the construction, must be considered highly unsatisfactory on account of the materials used, and the lack of proper facilities for entrance and exit. It would, however, be well to call attention to the fact that so many of our more permanent structures, which resemble in many ways the provisional grand stands complained of, are distinctly dangerous, and here we have particularly in mind the vast expanse of seating accommodation provided at the Crystal Palace on the occasion of the Handel Festival. Any one who has watched the departure of an audience after the performance, will have been struck by the great difficulty encountered in reaching the open, especially from the back of the area and the galleries; and what is here said as regards the audience, holds good for the performers on the amphitheatrical staging. It is unnecessary to specify in detail the many faults in regard to complicated entrances, insufficient staircases, &c.; and how easily a fire could originate in this structure, and how rapidly it would spread. Take, for instance, the open boarding of the floor with its accumulation of filth and dust alone. People will smoke in the Crystal Palace, although it is prohibited, and a match thrown in an unfortunate manner between the boards, might easily cause a conflagration. Of course, the Crystal Palace Company have a certain equipment of fire appliances, and also a staff of firemen; there is further a small station of the M.F.B. adjoining the Crystal Palace grounds, but of what avail would the firemen and their appliances be should an outbreak occur whilst the Handel Festival was going on? Whose duty is it to control the safety of a building of this description? There are other buildings also, notably the Agricultural Hall, which has a staging during the Military Tournament of particularly inflammable character, and where the facilities for approach and exit are also much too scant in case of panic. It is high time that Parliament should give attention to the protection

of the public at its entertainments, and the nomination of a Royal Commission of Inquiry, as has already been done in other countries, since the Paris Bazaar fire, would not be out of place.

The Water Bill.

A CORRESPONDENT of the *Times* has within the last few days published some suggestive criticisms of the Government's new Water Bill. He asks why, if public money is to be spent in assisting those who use water to carry on litigation against water companies, the principle should not also be extended to litigation with railway companies and other public bodies? Why, also, is the Bill to be confined to the Metropolis? Why is the person who lives in a provincial town, where the water supply is in the hands of a company, not to have the assistance of public funds? The fact is that the Bill is a barefaced stopgap. The Government have no policy in regard to the water supply of London, and hope by means of this Bill, and by the appointment of a Royal Commission, to put off the question for an indefinite time.

The Cambrian Railway Accident.

IT would appear from the Inquiry into the lamentable disaster on the Cambrian railway that it was not due, as was naturally supposed at the outset, to the effect upon the rails of the sudden change of temperature. It is, of course, essential that special attention should be paid to the gauge of the line when the temperature is variable, but the theory that the gauge had been affected by the heat has, unhappily, to be discarded for one reflecting still more seriously upon the officials responsible for the stability of the permanent way. The Board of Trade Inspector has not hesitated to express his opinion that the road generally was in a very unfit condition for running heavy traffic, and spoke very strongly on the subject on the opening day of the Inquiry. This opinion of Colonel Yorke's may have been subsequently somewhat modified, and the previous good record of the Cambrian line makes one hesitate to think that the permanent way has been habitually kept in a dangerously loose and unstable condition. The other theory which has been put forward to account for the derailment of the carriages—the injudicious sandwiching of a light van between heavier vehicles—again reflects upon the officials concerned: and the accident evidently cannot be regarded as an unavoidable one. The evidence at the Board of Trade Inquiry, which concluded on Tuesday, was rather contradictory, and anything but reassuring.

Student's Work in Joinery.

THE exhibition of specimens of practical work of candidates at the Technological Examinations, lately held by the City and Guilds Institute, shows some painstaking work. In the examination in carpentry and joinery this is specially to be noted. These form part of the Honours Examination, it being compulsory to pass in practical work for this certificate. There are about 150 exhibits, and the subjects chosen range over a wide area. We notice especially such subjects as ventilation turrets, roof trusses of all kinds, various types of domes and pendentives, and different forms of staircases, while joints of different types are largely entered. There is still a tendency on the part of some can-

didates to cover bad workmanship by varnishing their exhibits, although the regulations point this out as a defect. A vestibule screen shows some excellent workmanship, marred by, or rather wasted, on a very poor design, and it seems a question whether it would not be kinder to supply good working designs in this section, rather than encourage craftsmen to execute works which are detrimental to the progress of artistic feeling in the craft, or else to insist that some good "old example" should be copied. Why the study of old work should be confined to architects we know not, since it is evident that great good would accrue to the craft of carpentry and joinery if the "classics" of the subject were practically studied. However, we may congratulate the City and Guilds Institute on being the means of inducing craftsmen to produce works which, so far as workmanship is concerned, are indeed excellent. The work in other sections, such as Plumbing, Cabinet-making, Weaving, Plasterers' Work, and Bookbinding, does not call for special note, beyond the passing remark that we should like to see these subjects more generally taken up by the apprentices and others working in the trades.

PROFESSOR McKendrick's paper in the Proceedings of the Royal Society of Edinburgh on "The Skin as a Telephone Receiver" contains an account of an important application of electricity. By a very simple apparatus, deaf people can perceive sounds by their fingers, and thus replace, to a certain extent, the sense of hearing. A microphone transmitter is put in series with the primary of an induction coil, and wires from the secondary terminals dip into tumblers containing salt water. Sounds made in the room cause currents in the microphone circuit, and these currents induce currents at a higher pressure in the secondary coil which are readily perceived by the thrills they give the fingers. Musical sounds are particularly easy to recognise. It is possible to teach a perfectly deaf person to discriminate between all the various thrills and so enable him to replace by touch the sense of hearing. This experiment can be easily verified, and although the sense of touch is not very sensitive to electric currents, yet Professor McKendrick's device of a microphone and an induction coil magnify the effects so as to make even the slightest differences in sound apparent. It seems also as if we were within a measurable distance of "seeing by touch." The electric resistance of a selenium cell is very sensitive to light, and so by a somewhat similar arrangement we could tell the amount of illumination in a room by the shock felt on touching the terminals of an electric circuit containing this cell. This, however, is only a very small step in the direction of solving this beneficent problem.

We read that the Corporation of Tamworth have bought this ancient castle for 3,000*l.* of the Marquess Townshend, a descendant of the first Marquess, High Steward of the borough, the celebrated military commander to whom Quebec surrendered after the victory won by General Wolfe. The castle has its origin in a Mercian fortress, the stronghold of Offa, Ceruulf, Beornwulf, and other kings of

Mercia, who there had a mint. Having been dismantled by the Danes, it was reinstated by Ethelfleda, daughter of Alfred the Great, who also erected the keep of the castle which formed, during a long period, the seat of the over-lords of Tamworth. William I. bestowed it upon Robert Marmion, of Fontenay; it passed, 1291, to the Frevilles, then to the house of Ferrers, and so, by marriage, to Lord Townshend.

Some Jubilee Decorations.

THE designs for the illuminations and decorations in celebration of her Majesty's Diamond Jubilee which have been on view at the Imperial Institute are interesting. They are exhibited by Messrs. Defries Bros., Limited, and are executed principally by their chief artist, Mr. F. Felloe, the chief exception being that by Professor Legros for the Bank of England. The designs are executed on dark grey paper, producing a night effect, the colouring being effected by "body" colour. The novelty in the decorations generally may be said to be a laudable desire for decoration by day, and illumination by night, and for work which has any permanency this seems quite right, and the combined system is a novelty in all the schemes exhibited. Many of the schemes designed have not been carried out, owing, in some instances, to cost. In some of these which were designed for the street only, the street lamps were to be made use of, and it seems a pity that some comprehensive scheme of this sort could not have been attempted. Fleet-street and Ludgate Hill are being treated with square columns, coloured purple and gold, and mounted by tall tripods bearing flowers. In a similar way Temple Bar was to have been treated, but the scheme fell through. Marlborough House gateway is to be treated in cut crystal formed as laurel leaves, and in an arched form. One of the more ambitious schemes is that of the Gresham Life Assurance Office. The Company's arms are employed. The Royal arms, with crown and laurel branches, are placed centrally, and formed of cut crystal; while at the angles of the building are shields bearing the monogram V.R.I., with panels of 1837—1897. We have no room to refer to the many schemes which are exhibited for semi-public buildings. Of all the schemes, that for the Bank of England is, in its main lines, most effective. It consists of a series of small lamps, made into festoons, and placed along the whole front. Over the main entrance is placed a crystal medallion, with the monogram V.R.I. and dates. Beyond the illuminations is an allegorical painting on canvas, with a backing of wood, by Professor Legros, of a figure of Britannia in a chariot drawn by two horses, flanked by children holding dates. Figures representing Industry and Commerce appear on either side of the chariot. The height of the central group is 20 ft. Along the parapet on either side are stars with crystal and amber points, and the angles of the building are treated with two immense Grecian honeysuckle ornaments in deep ruby colour, the scrolls being finished in amber. The whole design differs from many of the others because the architectural lines of the building are interfered with, which is an unnecessary thing to do; otherwise we should regard this as the most successful of the schemes which Messrs. Defries have executed. Many of the designs

have been well thought out and show a great improvement on those carried out at the last Jubilee ceremonials.

Society of Fine Arts.

THERE are two new collections of water-colour drawings on view at the Society of Fine Arts Gallery this week. Mr. F. A. Rawlence's series illustrative of the Riviera seem specially intended to convey the idea of brilliancy of colour in the vegetation, in which they are very successful in spite of a rather marked mannerism of style. The collection includes a few architectural subjects, of which the best is "The East Gate, Bordighera" (36). The pictorial element is not very strong in most of the drawings, but "The Campanile, Camparossa" (59) is an exception in this respect, and is a striking composition. The collection by Signor Carliandi, of drawings of Rome and the Tiber Valley, belongs to a much higher order of work. From the interesting preface to the catalogue, written by the artist, we gather that he has had a special and life-long knowledge of the Campagna, and that De Wint is his artistic ideal. His drawings show the influence of De Wint both in their broad and grand style and in a rather sober reticence of colour, in regard to which the drawings may perhaps be considered rather as translations of the scene into his own artistic scheme than as accurate representations of the colour of the actual scenes. That, however, is quite a legitimate standpoint for a painter to take; he records his own impression of the scenes in accordance with his own artistic ideal, and gives us a picture of the grandeur and desolation of the environs of ancient Rome, as in "My Favourite Tomb on the Appia," "On the Pavement of the Via Latina" (33 and 34), "The Remains of the Imperial Palace at Ostia" (1), "The Street of the Tombs at Ostia" (10), &c. The treatment of the sky in many of the drawings is exceedingly fine; notice especially "Autumn Tints on the Appia" (14). "The first peep of St. Peter's from the Castel Giubileo" (17) is a fine and poetic work; a shallow slow river in the foreground, and the great cathedral forming a dark purple dot in the distance. This is a collection of drawings which should not be overlooked, the work of a powerful and original artist, deeply impressed with the melancholy interest of the scenes he portrays—scenes haunted by the ghost of Imperial Rome.

THE Goupil Gallery exhibits a collection of small landscapes by Mr. J. Buxton Knight, an artist with a very broad style which occasionally becomes exaggerated into what may be called roughness of execution and a too palpable loading on of pigment. For instance, in "Blue Bell Wood" (14) it strikes one that, for an artist who professes to paint direct from nature, there is a great lack of the brightness of colour which one would find in the actual scene; the bluebells are not blue enough. But Mr. Knight is a fine painter of scenes in which an extent of country combined with a large expanse of sky form the main elements, as we see in "The Golf Ground" (3), "At Worthing" (36), "Gipsy Land" (48), showing an exceedingly fine sky, and "Morning on the Common" (45), a true effect of morning light, when one gets far enough away to lose the look of paint. "Greenwich

Hospital" (28) is an exceptionally good water-colour sketch of the building seen from the river.

The Handel Festival.

THE Twelfth Triennial Handel Festival at the Crystal Palace,

as far as the first two days are concerned (the third performance will not have taken place till after these remarks are in print), has been one of the most successful in an artistic sense, both in regard to chorus and solos. The performance of the *Messiah* on Monday may be said to have been an exceptionally good one; and when it is considered that the size of the orchestra is such that chorus-singers at one side cannot hear the voices of those at the other side until an appreciable interval after the sound has been emitted, and that conscientious attention to the bâton can alone give a chance of keeping perfect time together, the clear execution of such a chorus as "All we like sheep" by this immense mass of singers was a remarkable feat. The "Selection Day" on Wednesday introduced two or three very fine compositions, both among choruses and airs, which are not often heard; but the loss of our great English organist, the late Mr. Best, was much felt in the organ concerto. The seating of the auditorium has been improved by raising the back portion of the area on a slope. Of course the acoustic conditions of the place of performance, both in regard to its structure and its plan, are unfavourable; a great deal of sound escapes which ought to be reflected and concentrated towards the audience; and of course the best and most intelligible execution of music is not to be attained with so numerous and unwieldy a chorus, and in a space far too large for the adequate hearing of solo voices. But, on the other hand, at special points in the choruses such stupendous effects are realised that it is worth while to have them from time to time, in spite of all contingent drawbacks. The "Hallelujah" chorus in the *Messiah*, for instance, the broad, simple, and massive character of which renders it so suitable for performance by an immense body of voices, attained a sublimity of effect which was quite overwhelming, and which we do not think can have been realised under any other circumstances.

ROYAL SOCIETY CONVERSAZIONE.

The June soirée of the Royal Society, held on Wednesday last at Burlington House, was, as usual on "ladies' night," a complete success. This year the evening was, more than ever, given over to effective displays, in which electricity played the most conspicuous part. It was natural that at this season the most ancient of learned societies should decorate the entrance hall to its apartments with tokens of loyalty to the Sovereign, and "Vivat Victoria Regina" was written large in tubes filled with the recently-discovered elements, argon and helium.

Lord Kelvin showed the electrical effects of uranium, more particularly the work done (which he calls quasi-"perpetual motion") by contact between uranium and zinc, or aluminium, or air. Experiments on cathode and some analogous rays were exhibited by Professor Silvanus Thompson; the most interesting, perhaps, from a scientific point of view, were the "diacathodic" rays, which are non-deflectable and evoke a dark orange fluorescence in glass, in a tube in which the ordinary cathodic rays are directed against a gauze screen which is itself negatively electrified: the diacathodic rays pass through as a blue cone. Dr. Alexander Muirhead had an exhibit reminding us that Dr. Oliver Lodge practised signalling by Hertz

waves, but the Branly tube was now adapted to a Kelvin recorder. Experiments with Röntgen rays were made by Mr. Campbell Swinton, who demonstrated that the penetrative value of the X-rays produced by a focus tube can be varied without altering the vacuum by altering the distance between the cathode and anti-cathode, or by varying the size of the cathode, or by altering the position of the cathode relatively to the glass walls of the tube, or by means of a variable magnetic field. The same experimenter, amongst many other things, exhibited an improved adjustable tube for practical X-ray work, with which it is easy to obtain rays of exactly the best penetrative value for any special purpose as required, and also to maintain this penetrative value at any desired degree. This latter is eminently satisfactory as furnishing a clue to a method of standardising the power of penetration by the rays. Messrs. Carver and Barnard showed some experiments, illustrating a new method of controlling the electric arc in its application to photomicrography, by which, absolute constancy in the position of the source of light is secured. Interesting electric figures were exhibited by Lord Armstrong, showing the effect produced by discharges over surfaces of a resinous or bituminous nature. The discharge leaves no appearance on the surface until dusted with sulphur and red lead, when the positive parts of the figure come into view in yellow tints, and the negative in red. An exhibit of a somewhat similar character, showing static effects produced by convective electric discharges, was made by Mr. J. W. Swan. Dr. J. H. Gladstone and Mr. W. H. Hibberd had photographs illustrating the absorption of Röntgen rays by certain elements and their compounds, including carbon and various hydrocarbons, copper and its oxides, ferrous and ferric chlorides, mercury proto- and peracetate, lithium, bromide, &c. Two induction coil contact makers and breakers, designed by Sir David Salomon, gave excellent results.

One of the most interesting exhibits, from our standpoint, was that of Mr. A. F. Bilderbeck Gomes, consisting of four examples of Bonnard's process of colour photography. By the action of light passing through a positive print upon a surface coated with treacle and bichromate of potash, the surface is rendered more or less sticky according to the action of the light. Metallic oxide pigments are dusted on in a certain order, and adhere in their proper places. The film is then made consistent by the use of a preparation of collodion, it is floated off the surface, and whilst wet and elastic, applied to the surface of any piece of porcelain. It is then burnt in as in the ordinary method of hand painting. Considerable skill is required in dusting on the metallic pigments at the right moment, and the colours have to be "touched up," but the process is fairly rapid, a quarter of an hour being sufficient to finish the whole, even where twelve or fourteen colours have to be applied. Sir H. Trueman Wood exhibited illustrations of the Dansac-Chassagne process of producing photographs in colours, but much of the interest was lost in the circumstance that the details of the method are not known at present. Photographic prints (silver) are treated with a solution containing albumen and certain metallic chlorides, and afterwards with blue, green, and red colouring materials. The process is stated to be entirely automatic.

Messrs. Edser & Stansfield exhibited an apparatus showing the phase change of light reflected at a glass silver surface. It consisted of a modification of Michelson's differential refractometer, the interfering rays being reflected at the back surfaces of the end mirrors. Mr. Shelford Bidwell illustrated a peculiar phenomenon brought about by rotating discs, demonstrating apparent transformations of colour. This has recently been described in the "Proceedings of the Royal Society" (May 13, 1897). The phenomenon depends upon the rapid production of negative after-images under curious conditions. In a thin metal disc there is cut an opening having the form of a sector of about 60 deg.; the front surface of the remainder of the disc is divided radially into two equal portions, one of which is made black and the other white. The disc is illuminated by a good light, and is caused to rotate in such a direction that the open sector is preceded by black and followed by white. A coloured object placed behind the rotating disc, and viewed intermittently through the open sector, appears to assume a tint complementary to its actual hue. Thus, for example,

a picture of a rose represented as having a green flower and red leaves is seen as a pink flower with green leaves.

Crystals of diamonds, separated from carbonised iron, produced with certain modifications by the method described by M. Moissan, were exhibited by Professor Roberts-Austen.

It is not within our province to describe the natural history exhibits; but Professor H. G. Seeley exhibited a micro-section of a tooth of a theriodont reptile, which goes far to show that that division of the reptilia is closely related to certain mammals included amongst the marsupials.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS: ANNUAL ELECTIONS.

At the business general meeting of this Institute, on the 14th inst., the Council for the year of office 1897-98 were declared to be duly elected as follows:—

President.—Professor Aitchison, A.R.A.
Vice-Presidents.—William Milner Fawcett, M.A.Cantab, F.S.A.; Henry Louis Florence; Ernest George; and Edward Augustus Gruning.

Hon. Secretary.—William Emerson.
Members of Council.—John Belcher; Thomas Blashill; James Brooks; John McKean Brydon; William Douglas Caröe, M.A.Cantab, F.S.A.; Thomas William Cutler; Campbell Douglas, Glasgow; John Alfred Gutch, F.S.A.; Kettering; Alexander Graham, F.S.A.; Charles Hadfield, Sheffield; Benjamin Ingelow; Edward William Mountford; John Slater, B.A.Lond.; Richard Phené Spiers, F.S.A.; Henry Heathcote Slatman; Paul Waterhouse, M.A.Oxon.; Aston Webb, F.S.A.; and Ralph Selden Wornum.

Associate-Members of Council.—Edward Guy Dawber and Arthur Smyth Flower, M.A. Oxon, F.S.A.

Representatives of Allied Societies.—William Larkins Bernard, Bristol Society; Albert Nelson Bromley, Nottingham Society; Thomas Drew, R.H.A., Royal Institute of Ireland; John Ely, Manchester Society; Leslie Ower, Dundee Institute; Henry Perkin, York Society; Arnold Thorne, Devon and Exeter Society; and Edwin Montgomery Bruce Vaughan, Cardiff, South Wales, and Monmouthshire Society.

Representative of the Architectural Association (London).—Hampton William Pratt.

At the same meeting the following Fellows and Associates were declared duly elected to serve on the respective Standing Committees for the ensuing year of office, viz:—

ART STANDING COMMITTEE.

Fellows.—John Macvicar Anderson; John Belcher; James Brooks; John McKean Brydon; William Douglas Caröe, M.A.Cantab, F.S.A.; Ernest George; Edward William Mountford; Beresford Pite; Alfred Waterhouse, R.A.; and William Young.

Associates.—Robert Shekleton Balfour; Edward Guy Dawber; Owen Fleming; James Sivewright Gibson; Henry Thomas Hare; and John William Simpson.

LITERATURE STANDING COMMITTEE.

Fellows.—Henry Louis Florence; Alexander Graham, F.S.A.; Benjamin Ingelow; John Tavenor Perry; William Alfred Pite; Sydney Smirke; Richard Phené Spiers, F.S.A.; Charles Harrison Townsend; William Frederick Unsworth; and Paul Waterhouse, M.A.Oxon.

Associates.—Arthur Thomas Bolton; Arthur Smyth Flower, M.A.Oxon, F.S.A.; Andrew Noble Prentice; Ravenscroft Elsey Smith; Leslie Waterhouse, M.A.Cantab.; and Percy Scott Worthington, M.A.Oxon.

PRACTICE STANDING COMMITTEE.

Fellows.—Thomas Batterbury; Henry Cowell Boyes; Samuel Flint Clarkson; Edwin Thomas Hall; Thomas Harris; Alexander Henry Kersey; Joseph Douglas Mathews; Walter Hilton Nash; Lacy William Ridge; and Edmund Woodthorpe, M.A.Oxon.

Associates.—William H. Atkin-Berry; Francis Thos. Wilberforce Goldsmith; Frederick Henry Appleton Hardcastle; Henry Thomas Hare; and George Richards Julian; and Augustus William Tanner.

SCIENCE STANDING COMMITTEE.

Fellows.—Lewis Angell, M.Inst.C.E.; Frederic Richard Farrow; John Salmon Quilter; Herbert Duncan Searles-Wood; William Howard Seth-Smith; Percival Gordon Smith; Lewis Solomon; William Charles Street,

Assoc.Inst.C.E.; Benjamin Tabberer; and Keith Downes Young.

Associates.—Henry William Burrows; Max Clarke; Robert Langton Cole; Bernard John Dicksee; Matthew Garbutt, Assoc.M.Inst.C.E.; and George Pearson.

The following candidates for membership were elected by show of hands under by-law 9, viz.:—As Fellows: E. A. Ram (Hong Kong), S. P. Silcock (Warrington), G. E. Halliday (Cardiff), F. G. F. Hooper; as Associates: E. A. Jolliffe, E. H. Payne, E. Nicholson, J. Saunders (Oldham), H. T. Porter; as Hon. Associates: H. W. Brewer, J. Lewis Thomas, Sir J. D. Linton, President of the Royal Institute of Painters in Water Colours; as Hon. Corr. Members: Jean Jacques Winders (Antwerp), A. C. Arthur, Comte de Marsy (Compiègne, France), Jean Theophile Homolle (Paris).

An adjourned special general meeting was then held, Mr. Aston Webb, F.S.A., vice-president, in the chair.

The Chairman opened the proceedings with a statement detailing the reasons for the appointment of the Fellows Committee, briefly sketched the proceedings at the meetings of the committee and the conferences with allied societies, and concluded with a description of the modifications introduced into the report by the Council in deference to the views expressed by members at the meeting of the 31st ult.

Mr. H. Vaughan Lanchester having withdrawn the amendment moved by him at the last meeting, that the report be referred back to the Council, the various clauses of the report were discussed *seriatim*, with the result that it was

Resolved.—That the form of voting papers be altered, so that the names on the list voted against have to be crossed out.

That attention be called to the requirements of the Council as to the drawings, &c., to accompany an application for Fellowship.

That it is desirable that Associates who are eligible should come forward for election as Fellows.

That when the Council of the Institute receive a unanimous recommendation formally submitted by the Council of any Allied Society that a practising member of the profession in their district is eligible and worthy of being elected a Fellow, the Council shall have power to elect him, his work being of sufficient merit.

On this and the two following resolutions the Chairman ruled that, under the terms of the Charter, Associates were debarred from voting; the vote therefore was restricted to Fellows.

It was further

Resolved, That power be given to the Council to admit annually to the Fellowship, without ballot, the President or President-elect of any or all of the Allied Societies who are eligible and apply for admission.

That the Council dispense with the payment of an entrance-fee in the case of non-Metropolitan Fellows during the pleasure of the Council.

That a room be utilised as a tea and smoking room, and that no books from the Institute library be consulted therein with the exception of periodicals and the professional journals.

That it is desirable to hold periodical conferences, meetings, and dinners, a certain proportion thereof to take place in the provinces, with a view to promoting more friendly intercourse with the allied Societies.

That the allied Societies be invited to arrange, when possible, the date of election of their officers and the duration of their sessions, so as to correspond with those of the Institute.

The Chairman, having moved the adoption of the report as altered and amended, and a section of the meeting being opposed to the passing of the resolution numbered 5 in the report (fourth on the amended list set out above), suggested the limitation of the power to elect conferred on the Council by that clause to a period of five years. The clause was then added to as follows: "And further that the operation of the by-law embodying this resolution be limited to a term of five years." The report was then put as a whole, and carried by forty-four votes to twenty-five.

The alterations in the by-laws required to carry out the resolutions arrived at were hereupon put to the meeting, and it was

Resolved, that the following paragraph be added to By-law 9:—

Provided always that when the Council of the Institute receive a unanimous recommendation formally submitted by the Council of any Allied Society that a practising member of the profession in their district is eligible and worthy of being elected a Fellow, the Council shall have power to elect him, his work being of sufficient merit, and that the operation of this provision be limited to a term of five years. The Council may also admit annually to the Fellowship, without ballot, the

President or President-elect of any or all of the allied societies who may be eligible and apply for admission.

It was further Resolved.—That clause (a), By-law 15, be added to as follows:—

Provided always that the Council may, during their pleasure, dispense with the payment of an entrance fee in the case of non-Metropolitan Fellows.

A motion by Mr. Seth-Smith, that a further resolution be added to the report, not being seconded, was dropped.

The proceedings then closed.

The above report has been abstracted from the R.I.B.A. Journal.

INTERNATIONAL CONGRESS ON EDUCATION.

THE fourth International Congress on Technical Education, following that held in 1895 at Bordeaux, and the previous congresses held in Paris in 1880 and Bordeaux 1886, began in London on Tuesday last at the Society of Arts. At the opening M. Léo Saignat, President of the 1895 congress, presided, giving place, after a brief address in French, to the Duke of Devonshire, the new President. In welcoming the foreign delegates, particularly M. Saignat, of Bordeaux, and M. Jacques Siegfried, of Paris, the Duke explained the very different relations in which the Government of this country stands towards educational questions from the more direct official relations which other Governments held towards them. It was now admitted that there were some good points about our own methods, but all Englishmen admitted that we had much to learn from other countries—France, Holland, Germany, Switzerland, America, &c.

The papers of the first day's sitting related chiefly to chemistry.

At the second sitting, Sir John Donnelly presiding, Sir Phillip Magnus read the first paper, "Theory and Practice in Trade Teaching." Some "arts and crafts," said the lecturer, could be taught properly in school, and in Ireland and such countries where trade had languished such schools for carefully selected trades would probably prove serviceable. The great majority of industries were best acquired in the factory and shop, the instruction of the technical school being only supplementary. The Germans were still in the elementary stage of trade teaching, but were beginning to recognise the value of practical work, and of the necessity of a good equipment of suitable appliances in their schools. The City Guilds of London Institute had tried to solve the difficult problem of science teaching to artisans in various ways, and their later experiments in inducing young artisans and apprentices to take up a course of preliminary instruction in which the principles of science were presented in relation to the practice of certain trades had succeeded fairly well. Preliminary courses had been arranged in electrical engineering and lighting, and for apprentices in plumbing and certain other branches of the building trade.

Mr. Sidney H. Wells (principal, Battersea Polytechnic) in the next paper, dealing with the "Training of Technical Teachers," showed that the greatest difficulty encountered was the provision of satisfactory teachers. He had endeavoured to overcome the difficulty by formulating a scheme of scholarships for training instructors in the trades of bricklayers, carpenters, painters, house decorators, masons, plasterers, and plumbers, giving free admission to evening classes for two, three, or four years, with text-books and materials provided. For twelve scholarships offered only nine applicants were found suitable, and two had relinquished their scholarships in the first month. The remaining seven would have their scholarships renewed next year, and others would be awarded in the coming session. Reference was made to a method adopted at some institutes where a professional man or a trained teacher gave the instruction in conjunction with a workshop instructor. Classes in plasterers' work, for example, would be taken by practical teachers engaged in the trade, the instruction being under the direction of the art-master, or classes in brickwork would be conducted under the supervision of an architect, by a practical bricklayer. But such schemes were necessarily costly, and their efficiency depended largely on the training and qualifications of the art-master or architect.

A discussion upon the two papers followed, in which Mr. Woodward (Birmingham), Pro-

fessor Ayrton, and Professor Silvanus Thompson, of the City and Guilds Institute, Dr. Dunn, Mr. Alderman Park (Ashton-under-Lyne), Professor Garnett, Professor J. H. Reynolds (Manchester), and Mr. Mundella, M.P., took part. The views of the lecturers were generally approved.

Professor Reynolds pointed out that when artisan students presented themselves they were often lamentably deficient in the elements of knowledge. He knew of 250 plumbers who had applied for admission to the technical schools of Manchester who knew nothing about drawing and could not do the simplest sum in arithmetic.

Mr. Mundella, M.P., confirmed the experience of Professor Reynolds. It was the fact that students presented themselves at these special classes who knew nothing of drawing and had never had a pencil in their hands. They ought to urge upon Parliament the necessity of prolonging the school age, as in other countries.

The President, in winding up the discussion, said he thought the words in the Technical Instruction Act forbidding the teaching of trades in schools were often misunderstood. The intention of the Act was probably only to prevent the teaching of the practice of any trade or profession. They were not to give such training as tended to develop rapidly and skill, which was the province of the training given to a journeyman or a craftsman. One of the papers presented in the afternoon was by Mr. Edwin O. Sachs on "A German Technical College from an English Point of View," which we print on another page.

Papers were also read in the afternoon, when Mr. Mundella, M.P., took the chair, on "Technical Education in Württemberg" by Herr von Diefenbach, on "Limitations to Technical Instruction" by Sir Joshua Fitch, and two in French, the first on "Technical and Commercial Education in Belgium" by Mons. Edouard Séve (Consul General), and the second on "Private Initiative in Professional Education in Belgium."

In another section, over which Mr. J. W. Sugg (Master of the Clothworkers' Company) presided, papers on "Agricultural Education" by Mr. F. J. Lloyd (King's College), and "Practical Training in Agriculture" by Mr. Harold E. Moore were read and discussed in the morning, and they were followed in the afternoon by a paper on "Technical Education in Architecture and the Building Trades" by Mr. W. R. Lethaby, and by papers on Technical Education in connexion with watch and clock making, electrotyping and kindred industries, glass manufacture, gold and silver trades, &c.

Mr. Lethaby said he recognised no distinction between architecture and building, and defined architecture as "the result of the association of the several building trades." According to this view, the architecture of the Middle Ages was the masonry and carpentry, the smithing and plumbing, and so forth, brought together in the wonderful works of that period. Modern English architecture was the whole product of the current customs of building in England, and London architecture the mass of building from Bow to Putney, and from Hoxton to New Cross. It was in the multitude of ordinary and characteristic buildings rather than in a few exceptional ones that what was typical of London architecture would be found. The question of technical education in architecture was, therefore, not a mere academic one, but one of enormous practical importance to humanity and civilisation.

Architecture, equally with literature, was a form of expression. Literature was but the written word, architecture was the builded word. In architectural thought our modern relation to facts was exactly represented by our current building speech, revealed to ourselves in the corrugated iron shed, the mean meeting-house, the restored cathedral, the sham Gothic church, the sham Renaissance town-hall, the dull workhouse, the silly villa, and the general vulgarity of our streets. In the Middle Ages the masons' and carpenters' guilds were faculties or colleges of education in those arts, and every town was, so to say, a craft university. Corporations of masons, carpenters, and the like, were established in the towns; each craft aspired to have a college hall. The universities themselves had been well named by a recent historian "Scholars' Guilds." The guild which recognised all the customs of its trade guaranteed the relations of the apprentice and the master craftsman with whom he was placed; but he was really apprenticed to the craft as a whole, and ultimately to the

city, whose freedom he engaged to take up. He was, in fact, a graduate of his craft college, and wore its robes. At a later stage the apprentice became a companion or a bachelor of his art, or by producing a masterpiece, the thesis of his craft, he was admitted a master. Only then was he permitted to become an employer of labour or was admitted as one of the governing body of his college. As a citizen, City dignities were then open to him. He might become the master in building some abbey or cathedral, or as King's mason become a member of the royal household, the acknowledged great artist of his time in mason-craft. With such a system was it so very wonderful, after all, that the buildings of the middle ages, which were indeed wonderful, should have been produced? In the modern architecture of London our less noble ideals and less perfect systems were as perfectly reflected in a vast mass of common building produced by farming out to a financial agent called a contractor, who employed to do the work gangs of men having no say in the matter and who, for the most part, had "picked up" their trade. The general sordidness of the building was diversified here and there by a careful design done out of an architect's head, after study of the real mason's art of the past.

The change began when that great wave of reaction set in at the beginning of the 16th century—the revival of learning. Roman law and Roman antiquities were ransacked for pretexts by the new scholars, and scholarship in Roman art was used as a lever to thrust out the customs of the crafts as held by the guilds. Drawing-master designers, commercial travellers in art, coming from Italy, hung about the Courts of France, Germany, and England, and the old master-masons who held the living tradition of the building art were displaced by men who were painters rather than masons. From that time the architect became a painter or a drawing-master of buildings, rather than a graduate of the shops.

On the question of technical schools and craft education, the lecturer said we must break with the literary view of education, according to which the chief end of man was to count statistics and read newspapers. Literary education was only one of a dozen avenues to culture. Craft excellence must once more be made an object of ambition, through which the craftsman, as such, might reach to some of the world's rewards. The only reward obtainable in a craft must not be the getting out of it.

Mr. Lethaby concluded his paper with the following peroration:—

"The architect of the past (best represented by the building foreman of the present) was a mason or carpenter, and I am convinced that ultimately the great crafts should largely reabsorb the architect. In the meantime, however, although the path must be opened out by which the able practical mason and carpenter may become directors of building, it is necessary to educate a class who are specially brought up to direct crafts they do not practise, so that they may direct them as little capriciously as may be. The youth intended for an architect should in every case pass through the elementary stages of the masonry and carpentry schools along with the masons and carpenters, and he should have the run of all the other craft schools under certain conditions. He should, moreover, in a special school of Building, consider the crafts in combination and the conditions and traditions of the several types of arrangement suitable for different classes of buildings. As a return of courtesy and service the school of architecture should be open to the craftsman who wished to know something of building as a whole. The architect's special work is to be an expert in arranging and combining. The quality and details of the masonry are necessarily mason's matters; the curls and twists of the ironwork are the blacksmith's business; plumbing, sanitary and ornamental, is plumber's work; it is a ruinous policy which, instead of throwing on them the responsibility in their several trades, stirs up their instinct to get the better of clerks of works and architects. The architect's essential function is not to guarantee the quality of materials and workmanship he does not fully understand; it is not to design ornament out of his head so that materials which he has never wrought with his hands may be tortured into a semblance of his intention by mechanical workmen; his true function is to arrange and

contrive highly specialised buildings, to act as an intelligence department for the several crafts, and as one having a knowledge of building as a whole to advise his employers. At the present time building should be plain, straightforward, sound, and, as far as may be, reasonable; mere plinths and even baldness do not insult us like heartless bedizenment, or the assumption of the trappings of antiquity."

The sections on Thursday were mainly occupied with questions of the work of County Councils, Polytechnics, Evening Schools, and Commercial Education, the Congress concluding on Friday with papers and discussions by ladies on the technical education of girls and women in the sittings of Section A, papers and discussions on Technical Education in British colonies and dependencies in Section B, and by the concluding general meeting of the Congress.

ARCHITECTURE AT A GERMAN TECHNICAL COLLEGE: FROM AN ENGLISH POINT OF VIEW.*

WHEN I handed in the title of this paper, I was under the impression that the time available for reading it would have been the conventional one hour generally given to a lecture, and I had intended making an attempt to describe the chief features of a well-known German Technical College in all its departments. As it has been found necessary, however, to reduce the time available for each paper to twenty minutes, I am afraid that I shall have to confine my remarks to one of the sections of the institution with which I am to deal.

This institution is the Royal Technical College at Berlin, which, to my mind, is the leading establishment of its kind to be found in the German Empire, or, for the matter of that, in German-speaking countries, Austria included, and the section to which I shall devote my remarks more especially will be the Architectural School or division of that institution. As an architect who has studied there and has enjoyed the facilities of this special division it will be easily understood that I should give preference to the department of which I have had considerable personal experience.

In the first place I would give a brief outline of the origin of this institution. The Berlin Technical College, as it now stands, has been in existence for only thirteen years, for it is since 1884 that it has occupied the premises it now holds. The scheme of organisation on which the establishment was based dates, however, from 1879, the intervening period being utilised chiefly for the preparation of the necessary buildings, which were designed and executed on a lavish scale. The present nature of the institution has grown out of an amalgamation of the old Architectural Academy at Berlin and the Engineering Academy of the same city, which previously had separate existences. They had passed through similar phases of development, both having during the early years of the present century. These establishments were reorganised under the Prussian Government, and both were owned and practically managed as the property of the Prussian people. The new institution is also essentially a Prussian one, on which the Government of that country spends annually a considerable sum of money, and this point as to the ownership of the original, and subsequently of the new, establishment is an important feature to be remembered.

The old Architectural Academy to which I have just referred, though only in working order in the opening days of the present century, officially dates from April 8, 1799, when a charter for a new "Bauschule" literally, "Building School" or better, School of Building Construction, was signed by the then reigning king, Frederick William II. Its organisation was primarily intended for the education of architects and surveyors who proposed entering Government service. The first curriculum of this early period included no less than twenty-three subjects, and, though the qualifications for entry to the classes consisted almost solely in the possession of a good character and elementary education, the scope of the instruction was by no means limited. I should, perhaps, add that this institution was one of the first of its kind on the Continent. The old "Building School" very soon became popular, and consequently its development was

rapid; so much so, indeed, that greater restrictions had to be placed on those wishing to become students. A few years later we hear that one year's practical experience in an architect's or surveyor's office was a primary condition for attendance at these classes. In 1801 no less than fifty pupils attended the schools, and in 1806 the number had risen to seventy. Here I would particularly emphasise the fact that the establishment embodied only the requirements indicated by its title; it was a building school pure and simple—not an architectural school in the modern sense. The classes were essentially of a practical nature. Architecture, as an art, and design, from an artist's point of view, were subjects dealt with by the Prussian Royal Academy of Art, which had then, as it has now, its architectural studio, and to which members of the "Bauschule" might belong. It was not until the year 1828, when Professor Stier was one of the leading masters of the old establishment, that the art side of an architectural education received the attention that it had long merited from the executive, and soon after, in 1835, more suitable accommodation for the development of this side was found in an extensive block specially erected by Schinkel. In 1849 the "Building School" underwent reorganisation, and became a bona-fide architectural academy, managed on university lines, and with all the freedom traditionally associated with German university life; and this not only refers to the organisation of the establishment as such, but also, on the one hand, to the spirit with which the masters treated students, and, on the other, to the manner in which the students applied themselves to their studies. The organisation of 1849 practically remained unchanged until the great amalgamation of 1879 already alluded to. Throughout this period the courses were followed by an examination which entitled the successful candidate to certain claims for Government employment, and gave him the title of a Government architect, even if he did not choose to avail himself of a public office, but preferred to practise privately as an architect or surveyor.

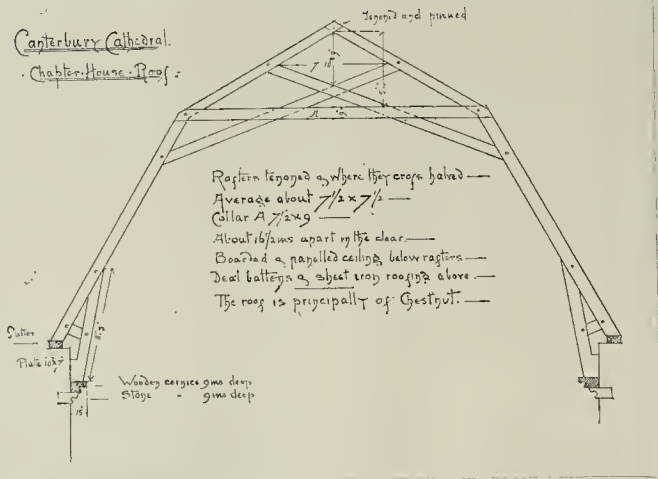
It would lead me too far were I to touch in a similar manner on the interesting development of the Engineering Academy, and hence I shall only note that in 1827 it was first known under the title of the Berlin Technical School. Its development was, as I have said, not unlike that of the Architectural Academy, both as regards classes, conditions of entry, and so on, while in 1850 it was similarly reorganised on university lines, and from that date became an engineering academy proper. Mechanical and mining engineering, naval architecture, and chemistry were comprised in its programme, and each of these sections was, to a certain extent, regarded as a separate department of the establishment.

The amalgamation of these two Academies took place, as stated, in 1879, and resulted in the establishment of the Royal Technical College, which in every way possesses a university status, and is in no way to be compared to what we term a "Technical College" in this country. In order that the college may offer the best opportunities for the most efficient education, the executive retains the leading men of the time for its professorial chairs. The social and educational status of the student is high, for every candidate is expected to have enjoyed a superior education at a first-class school. From a German point of view, the expense of sending a youth to this college is by no means a small matter, though it may seem slight in comparison with English university fees. The whole time of the student has to be given up to his college work, a full course of instruction occupying four years, or perhaps longer. The Royal Technical College has its five distinct branches, i.e. (1) Architecture; (2) Civil Engineering; (3) Mechanical Engineering; (4) Mining Engineering, Chemistry, and Mineralogy; (5) General Technical Science. Each division has its distinct head, who is generally a *savant* of considerable experience elected from among the body of professors of the section in question; and the Chancellor, Vice-Chancellor, and General Council of the establishment are elected on similar lines, subject to the approval of the Government and the sanction of the Sovereign. The professorships are in the gift of the King, the tutorships are granted by the Executive. The students rank with university students, and their characteristics and pastimes are almost identical. The Royal Technical College is housed in what is doubtless the

* A Paper read by Mr. Edwin O. Sachs, on Wednesday, the 16th Inst., at the Congress on Technical Education in London.

finest building ever devoted to an educational establishment of this description; in fact, it is quite a palace, having considerable architectural pretensions. It cannot be too much impressed on those who have witnessed our technical classes carried on in almost squalid surroundings, how important it is that we should give to technical students a home which in every way embodies the achievements of this age of progress in technical science, and does credit to the period of architecture to which it belongs. I should much like to describe the beautiful building and its practical equipment, which might well serve as a model to the world, though its conception is perhaps almost too elaborate and too costly from an economic point of view. I must, however, content myself with saying that its dimensions are approximately 700 ft. by 300, that it has five courts, of which the central one is covered in, and that it has four stories, all of considerable height. Its lecture-rooms are spacious and numerous, and its class-rooms and studios thoroughly serviceable and well lighted. The number of students for which it was intended was 2,000, and to-day, although there are 2,913 on the books, it still admirably fulfils its purpose; but the popularity which its educational facilities have won for it, will, no doubt, soon compel a considerable extension being made. Of these 2,913 students I should here, perhaps at once add, that there are only 306 architectural students fully matriculated, with 221 non-matriculated, making in all 527, whilst the mechanical engineers number together nearly 1,300. I should also, perhaps, add that there are a considerable number of foreigners among the students, Russia, for instance, regularly sending a large contingent.

But, turning now to the courses available for students of the architectural section, I ought first to say that, besides the subjects taught in the architectural division proper, much that is valuable is to be learned from the civil engineer's department, in the general technical classes, &c., and special facilities are afforded to the architectural student for attending suitable lectures in other sections. The architectural division has eight ordinary and twelve extraordinary professors and fifteen tutors, headed, as I have said before, by a divisional chief elected from among the professors. The courses available include a large number of different lectures on various periods of architectural and art history; further, elementary and advanced drawing, freehand, perspective, geometrical, and architectural draughtsmanship, water-colour work and modelling. Then, again, there are classes for the general planning of private dwellings and public buildings of all descriptions, for design in various specific styles, and for divers purposes, the designing of ornament, of furniture, of lead-glazing, metal-work, &c. In addition to these, there are exhaustive lectures on the evolution of particular features in design, such as that of ornament; while among the more practical subjects every form of construction is taught, from the simplest brickwork to the most complicated iron roofing. The characteristics of different materials are also important subjects dealt with, as are heating and ventilation. Special forms of building are also treated as separate subjects, as well as the various equipments. For instance, we find lectures on the necessary appliances for hospitals, prisons, and libraries. Building legislation is, moreover, not overlooked. Turning to the lectures which are given in other sections, we find those on mathematics, physics, statics, geology, chemistry, book-keeping, and general elementary law, included in the curriculum of the general science division, and in another department the housing of the working classes—in fact, there are few German requirements which are not fully attended to at this college. I use the expression "German requirements" advisedly, for sanitation, which really occupies a very secondary position in a German architectural practice, receives scant treatment at this institution. And again, the measuring up and sketching on the spot, which we consider so important, the German architect does not appear to appreciate, and, as a subject of study, it is almost overlooked in the Berlin curriculum. Of course, the student has to select his own subjects, and to distribute them over the four years which he spends at the Technical College, and if we turn at random to the list of subjects taken up by a first year man on, say, Tuesday, we may probably find that in the forenoon he attends lectures of an hour each in mathematics, elementary construction, and a class in elementary



drawing; and in the afternoon, perhaps a lecture of one hour on geology or materials, followed by a class of elementary draughtsmanship of from two to three hours duration, including, say, instruction in the classic orders. If we were then to take a fourth year's student's list for the same day, we might, on the other hand, find a two hours' lecture on the history of architecture, and a two hours' class on design in the Renaissance style; then in the afternoon he may give a couple of hours to practical design, such as the planning of public buildings, and attend an hour's lecture on heating and ventilation. From these examples it will be seen that in the earlier stages of the Berlin student's work, he seeks to obtain a foundation in draughtsmanship and science, while at the latter end of his course, he devotes most of his time to the designing of buildings, some historical study, and to gaining a knowledge of special equipment. It would no doubt be interesting to follow the architectural student's career from year to year or from term to term, but this would take too long, and I therefore only quote a couple of examples from a student's time table.

But now, after these historical and descriptive notes on the Royal Technical College at Berlin, I would ask if there are any advantages in the system of architectural education adopted by the Prussian Government. To my mind, though the opportunities for study are delightful, there is obviously something wanting in the whole system. Every preparation is made for the student to obtain knowledge, yet the result is by no means as satisfactory as might be expected. Does not this arise primarily from the student starting fresh from school without any previous elementary practical knowledge of construction? He has never been on a building in course of erection, and does not know the difference between a piece of oak and a piece of deal. Further, owing to his not having seen an actual moulding cut, he has no idea of the method of its production. For four long years he spends nearly the whole of his time in theoretical study, and, as far as my own experience goes, there are but few men who utilise even the smallest part of their leisure in getting some idea of the nature of practical work. Does not a school where merely the theory of architecture is taught have a tendency to produce an architect of an academic character, though, of course, there may be the usual exceptions of brilliant and talented men, or those who are ambitious and energetic and who do not follow the lines laid down for them? Do not many of the masters, too, in such a school soon lose all touch with practical work, and, though brilliant scientists or historians, on receiving their professorship, do not they lose all sympathy with the movements of the time, and even, by going through the same course regularly year by year, become mechanical and uninteresting in their methods, inspiring no enthusiasm in their pupils whatever? I think there can be little doubt that, as at Berlin, for instance, so always the best and most popular masters are those

who keep in constant touch with current thought and practice.

As to the remedy for any unsatisfactory results, would it not be advisable that a boy should have a whole year's practical work in an office, with the run of some works for at least six months before he starts his elementary studies at the college, and should not every six months of theoretical study be interspersed with three months of practical work? Should not lessons in the measurement of existing buildings, to enable the student to grasp the appearance of what he is putting on paper? Would it not be well, too, that the instructors in design, construction, and in special equipment, should one and all be men actually in extensive practice, and that such subjects as history, the elementary sciences, and freehand drawing, should be left to men whose vocation is chiefly to impart knowledge, yet who should be compelled to keep themselves abreast of modern progress?

We have had under consideration an establishment organised on the most elaborate lines, in which there is but little left to improve, as far as the syllabus of the classes is concerned. The Berlin Technical College has been on its trial for over twelve years, and the results, to my mind, are not at all proportionate to the amount of time and money expended by the architectural student and the Prussian Government. Indeed, as the Berlin Technical College is in many respects a model to those advocating architectural education, so it must also serve as a warning to those extremists who would advocate merely theoretic study as the primary basis of a training in architecture and its actual practice. Much as we can learn from leading men in special technical subjects, the Berlin College only too plainly shows what harm can be done by taking an able man entirely away from his profession and thus preventing him from keeping in touch with that practical work which brought him into prominence.

I would conclude by saying that the architectural school at the Royal Technical College of Berlin is an institution well worthy of our attention, and in many respects of our imitation; but, at the same time, we must observe the disadvantages of too theoretical an education, and its evil effect upon a student destined for actual practice. What I have said with regard to the architectural school, I believe, holds good in many respects for the several engineering divisions of the same college.

CHAPTER-HOUSE ROOF, CANTERBURY CATHEDRAL.

THE accompanying diagram is a measured sketch of the section of the ancient roof of the Chapter-House at Canterbury Cathedral, kindly communicated to us by Sir A. Blomfield.

Some remarks in regard to the roof will be found in a communication from Sir A. Blomfield in our issue of June 5 (page 508, ante).

THE ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

A NORTH WALES district meeting of the members of the Incorporated Association of Municipal and County Engineers was held at Llandudno last Saturday. Mr. F. J. C. May, C.E., of Brighton, President, occupied the chair, and amongst those present were Messrs. H. Percy Boulnois, Liverpool; S. S. Platt, Rochdale; Gamage, Dudley; Farrington, Conway; Jones, Colwyn Bay; Lobley, Hanley; Shawe, Crewe, and others.

Mr. E. Jones, Chairman of the District Council, extended a very hearty welcome to the members to Llandudno, and spoke of the important work of Municipal Engineers in promoting the health, comfort, convenience, and general welfare of the community. He believed there had been a greater advance in engineering science during the Queen's long reign than in any other profession.

The President, in acknowledging the reception, thanked the Chairman of the District Council for the kind way in which he had received the members of the Association, and said that since his previous visit to Llandudno he had come to the conclusion that the local authority was pursuing a wise and liberal policy with regard to the interests of the town.

Mr. E. P. Stephenson, Assoc.M.Inst.C.E., Engineer to the District Council, read a paper on the Municipal Works of Llandudno. He said that the present resident population was estimated at 9,000, and its visiting population in the height of the season, which lasted practically from Whitsunfide to October, was about 16,000 to 18,000. The town was rapidly growing in size, the population in 1871 being 3,605; in 1882, 4,839; in 1891, 7,333; and at present was estimated at 9,000. Almost all building operations were carried on during the winter, and during the present year 121 houses were in progress up to date. The death rate, including the visiting population, was, last year, 17.4 per thousand. The town was governed by an Urban District Council, and the area under that control was 2,838 acres in extent. It had a rateable value of 73,739l., and the total improvement and highway rates for last year were 3s. 3d. in the pound. Previous to 1875 the town was supplied with water from springs on the Great Orme, the hill at the northern end of the town, the summit of which was 679 ft. above Ordnance datum; these supplies, however, becoming inadequate for the increasing population, powers were obtained for a more extensive supply, and the then Improvement Commissioners went into the Welsh hills for their water. They had purchased two lakes, Dulyn, 36 acres, and Melynllyn, 18 acres, with a surrounding watershed of 1,300 acres. The water was said to be as pure as that of Loch Katrine. Dulyn formed the chief supply, and was tapped at a depth of 12 ft. from the overflow giving an available store of 118 million gallons. Melynllyn was also tapped, under his direction, in 1895 to a depth of 4 ft. 3 in. and connected to Dulyn, giving an additional quantity of 21 million gallons. The rainfall in these hills was very great, averaging 97 in. per annum, and owing to the natural formation of Dulyn and the ground below it would be a very easy and comparatively inexpensive matter either to raise the present embankment or to form another but artificial lake on land already belonging to the Council. The water was carried by gravitation for a distance of four miles to a small service reservoir at Llanbedr. Though the town was possessed of such a splendid water supply at its source it had been found by actual experience that during certain portions of the day it was impossible with a 9-inch main to deliver sufficient water in Llandudno, and this being the case the present Council had decided to lay down in four sections a new main, 15 in. in diameter, alongside the existing main. This consisted of a total length of 3 miles 3 furlongs of 15-inch main, including a diversion across the River Conway, over a new bridge which was now nearly completed at Tal-y-Cafn. This diversion answered two purposes—it lessened the length of the main and increased the supply, and also placed the town in a more secure condition as regarded its supply, as the chief water main would then go over the river instead of under it as at present. Other extensions, however, beyond these were necessary, and the Council intended so soon as the supply was increased to supply water to points at higher altitudes than those they at present reached,

chiefly on the Great Orme. The sewage scheme was carried out by Mr. Baldwin Latham as engineer, in 1874, the sewage being discharged into the sea on the Conway Bay side of the town by a main outfall 21 in. in diameter, and carried to a point about 1,200 yd. seaward. When the state of the tide would not allow of discharge the sewage was temporarily stored in an egg-shaped tank sewer. Owing, again, to the increase of the town he (Mr. Stephenson) was instructed in 1893 to give a report upon the sewerage system. This report was referred to Mr. J. T. Wood, of Liverpool, and the joint result was the decision to materially extend the system, mainly upon the original lines adopted by Mr. Baldwin Latham. It was decided (1) to construct a 4 ft. 6 in. by 3 ft. relieving sewer from the uppermost end of the existing tank sewer to take all the sewage from the eastern end of the town; (2) to construct a new and enlarged outfall 27 in. instead of 21 in. in diameter; (3) to make provision for pumping to be used in case of emergency, and raising the sewage so as to discharge into the outfall during any period of high water; (4) to divert a quantity of rain-water finding its way into the sewers. Contracts had been let for the whole of the work, with the exception of the pumping, respecting which there was great diversity of opinion. The private drainage of the town was, on the whole, fair; but very great improvement was now being made under an energetic Sanitary Committee and a capable sanitary inspector. It had been his desire since he left Liverpool to adopt the system of "private flushing" which obtained in that city, viz., to flush every house drain at short periodical intervals free of charge, and he hoped now that the above extensions were carried out, and so soon as the first section of the new water main was laid, to inaugurate a flushing gang to do this work. The gasworks were also the property of the Council, and the average annual profit on the gas and water undertakings for the past ten years had been 677l. Though the gasworks belonged to the town the Council were of opinion that the electric light was also a necessity, and it had now been definitely decided to dispose of the house refuse by destructors in connexion with the electric-light station. Mr. A. H. Preece had been engaged by the Council to carry out the electrical portion of the scheme, and the combined destructor and electric-light station would consist of four destructor cells placed in pairs, back to back, three boilers, one of which would be hand fired, three engines and dynamos and condenser, battery room, offices, stores, and other accessories. The capacity of the plant would be sufficient for 10,000 8-candle power lamps, with fifty street lamps burning at one time. A small infectious diseases hospital had been erected, and with extensions contemplated would give provision for twenty-eight beds. The provision of a public slaughter-house had been under the consideration of the Council for years, and at last the matter had taken definite shape, and plans had been prepared. There was still, however, very considerable opposition to the scheme, many of the butchers in the town desiring that a series of private slaughter-houses under one roof should be erected, which should otherwise be under the entire control of the Council. As there were still so many conflicting interests at work in connexion with the scheme, it remained in abeyance; but as the land had been purchased, and it was the opinion of the Council that there should be a public slaughter-house, and that all private slaughter-houses should be abolished, he hoped that the scheme would shortly be an accomplished fact. Owing to land in Llandudno being so dear, and the consequent dearth of suitable houses for working men, the Council, in 1895, adopted the "Housing of the Working Classes Act, and under this Act were now completing nineteen workmen's cottages. Each cottage consisted of a living room and three bedrooms, with scullery, water-closet, pantry, and coal-house, and would cost, with the land, roads, and sewers, when completed, about 210l. per house. It was expected that they would be let at from 5s. to 6s. per house, per week. There had already been 100 applications for the nineteen cottages, and as the Council were somewhat divided in opinion as to whether they should be let to genuine working men or to those families which were at present living in rooms, or, in some instances, in somewhat insanitary buildings which were being gradually done

away with, there was likely to be considerable discussion before settlement. The means which, so far, had been taken to protect the promenade, and this only in the worst places, had been to construct a series of concrete steps from the promenade level to the shore level, the total length so far constructed, averaging eight steps, was 104 yards; and the cost, including an approach way to the shore, was 512l. Ash wattling had also been used with success near the pier. It was, however, his opinion that some more drastic measure would shortly be necessary to retain the sand and shingle, which appeared to be leaving the bay. The footpaths were asphalted at a cost of 1s. 3d. per yard.

The President said that the system of flushing of private house drains was one which commended itself very strongly to him. He had endeavoured to adopt it, and so far successfully. The Council had acted boldly in taking the question of lighting into their hands, both for gas and electricity. He thought they were wise in proposing to utilise what heat they could obtain from the destructors for electric light, but no doubt they would have to supplement that by other means, as he did not think they would get sufficient. There was no question as to the opposition of butchers to an abattoir. Three years ago they opened one in Brighton, and he was sorry to say up to the present it had not been a success.

Mr. Boulnois, Liverpool, who proposed a vote of thanks to Mr. Stephenson for his paper, said that the flushing of private drains had been carried on very successfully in Liverpool. Not only did the flushing remove any obstructions in the drains, but it acted as a very excellent detective as to whether anything was wrong or not—in fact, it was one of the best inspections they could make as to the condition of the drains. They had in Liverpool a considerable number of gangs consisting of three or four men under an intelligent ganger; the town was divided into sections, and each house visited in turn, a record being kept and coloured on a map in the office. Every house drain was flushed twice a year, at a cost of between 3,000l. and 4,000l.

Mr. Platt, Rochdale, seconded the vote of thanks, which was unanimously carried.

The members attending the meeting then drove to the Penmaenmawr granite quarries of Messrs. Darbyshire, Limited. Mr. Darbyshire personally conducted the party over the quarries, the various levels being reached by the mountain railway, sections of which are constructed at a grade of 1 in 3½. The various sections of the work, including the cutting of sets, blasting of the rock, and cleaning of road metal were inspected. At the close of the inspection the members were entertained to luncheon in a marquee erected in the grounds of Mr. Darbyshire's residence. Mr. Darbyshire, who presided, proposed the health of the President, who responded. Mr. May remarked that they had had a great educational treat in their visit to the works. The amount of engineering skill and intellect with which the works had been designed and carried out must be patent to all. Mr. Lobley, Hanley, proposed the health of Messrs. Darbyshire, Limited, to which the host responded. On the return to Llandudno, a visit was paid to Conway Castle, Mr. Farrington, Borough Engineer, acting as guide.

CHOIR SEATS, ROTHERHAM PARISH CHURCH.—On the 14th inst. the Archbishop of York dedicated new choir seats and chancel screen erected in the Rotherham Parish Church. The scheme also included the re-hanging of the bells, the renovation of the gas coronas and standards, and other improvements. The screen is about 5 ft. 7 in. high, and is executed in Austrian oak. In design the character of the existing carved woodwork of the church has been followed. It is divided, one part being on the north side and the other on the south side of the entrance to the chancel. The old temporary seats, which were poor and inadequate, have been cleared away, and new stalls and platform provided. Two carved seats and desks out of the transepts have been reused for the purpose of the choir, and the new work has been made to harmonise with them. The whole of the woodwork has been entrusted to Messrs. Johnson & Appleby, of Rotherham and Sheffield, from designs by, and under the superintendence of, Mr. James E. Knight, architect, of Rotherham. The contract for the re-hanging of the bells has been placed with Messrs. Mellaby, of Barnby Dun.

VILLAGE HALL, BOWDEN, ROTHERHAM.—A new village hall has just been opened at Bowden, near St. Boswells. Mr. John Wallace, Edinburgh, was the architect.

Illustrations.

CARVED WOOD PANEL.

THIS design was made for the central panel of a small folding fireplace screen, to be carved in English walnut. It is intended to hide a grate when no fire is in it. The drawing is by Mr. Laurence A. Turner, and is exhibited in the Architectural room at the Royal Academy.

WESLEYAN CHAPEL, CROSBY, NEAR LIVERPOOL.

THE great changes in this neighbourhood causing the chapel at Great Crosby, built some twenty-five or thirty years ago, to be in an unsuitable position for the religious work of the district, it was decided to pull down the chapel and erect a new one at Crosby, nearer the railway station at Blundell Sands and Crosby, utilising the old chapel as much as possible for the school-room or lecture-room at the rear of the new chapel.

The building is designed to accommodate about 700 worshippers, and has considerable accommodation in vestries and class-rooms, and a small gallery at the end over the narthex, or main entrance.

The work is externally of Yorkshire stone shoddies, with dressed ashlar quoins and dressings. The construction of the walls gives deep reveals to all window and door openings.

The whole of the woodwork is of selected pitch pine, the roof and principals being all from the tool, and not stained or varnished.

The chancel, of Caen stone dressing, is finished with an arcade and reredos, carved by Mr. Joseph Rogerson. The windows of the chancel are of grisaille work, with a centre subject window by Mr. J. Haldam Heaton. The organ was built by Messrs. Gray & Davidson. The heating is by hot water by Messrs. J. R. Cooper & Sons, the principle adopted being radiators in all the windows under the sills, and well warming the corridors and entrances, to secure a thoroughly-warmed chapel without draughts.

The general contractor was Mr. Samuel Webster, and the clerk of works Mr. S. Gunning. The architect is Mr. J. Francis Doyle, Liverpool, under whose direction the work was carried out.

The drawing is exhibited in the Architectural room at the Royal Academy.

PORTIONS OF REMAINS OF THE ROMAN WALL, NORTHUMBERLAND.

THESE illustrations, reproduced from photographs, are given in connexion with the first article in this issue, on the subject of recent exploration and excavation at the Roman wall of Northumberland.

Owing to a mistake for which we are not responsible, the first illustration is described on some of the plates as "showing portholes of second occupation." It should be "pivot-holes," but the correction arrived too late for insertion in all the copies of the lithograph.

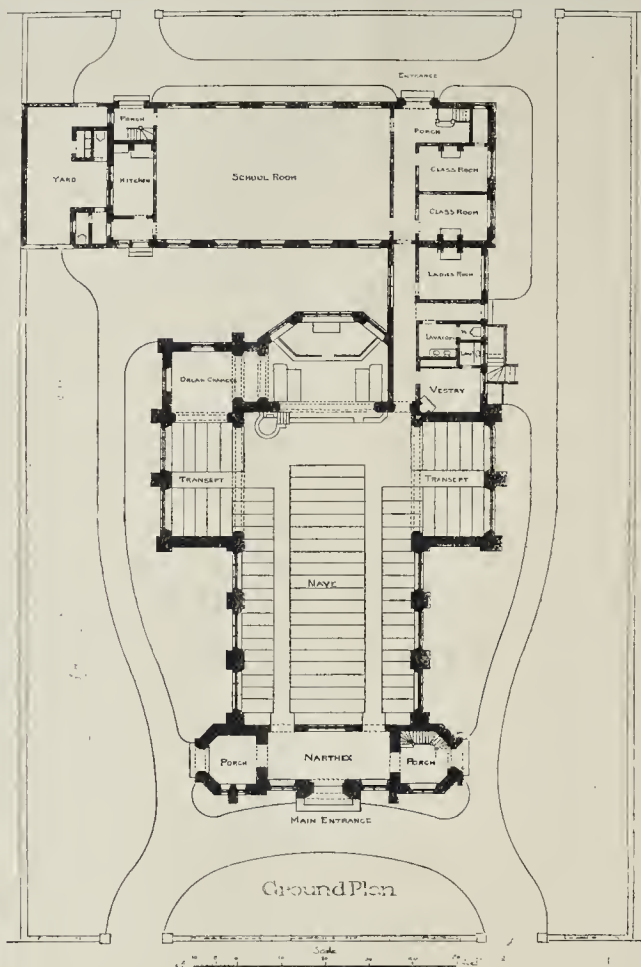
DESIGN FOR THE NATIONAL TELEPHONE COMPANY'S OFFICES.

THIS was a design submitted in competition for the proposed offices of the National Telephone Company, at the corner of Wellington-street. The building was to contain five shops on the ground floor, with basements under; the floors above being all offices, with lavatories, &c., with the exception of the top floor, which was to contain a suite for the caretaker.

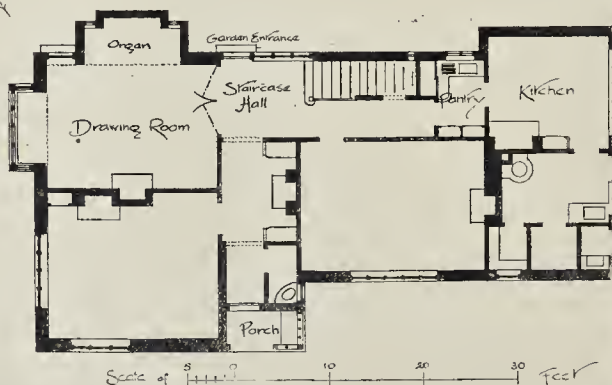
There are three offices shown in the court building, which is only one floor, and eight in the back building, four stories, two offices on a floor; and there is a lift to all the floors in the main building.

It was proposed to face the building with red brick, with all the dressings in Portland stone, including the pilasters, which were to have unpolished gray granite bases; also a green slate roof. All the wood-work to be painted white, with the exception of the shop-fronts and entrance doors, which were to be of oak. The competition was limited to six, and the building not to exceed 10,000l.

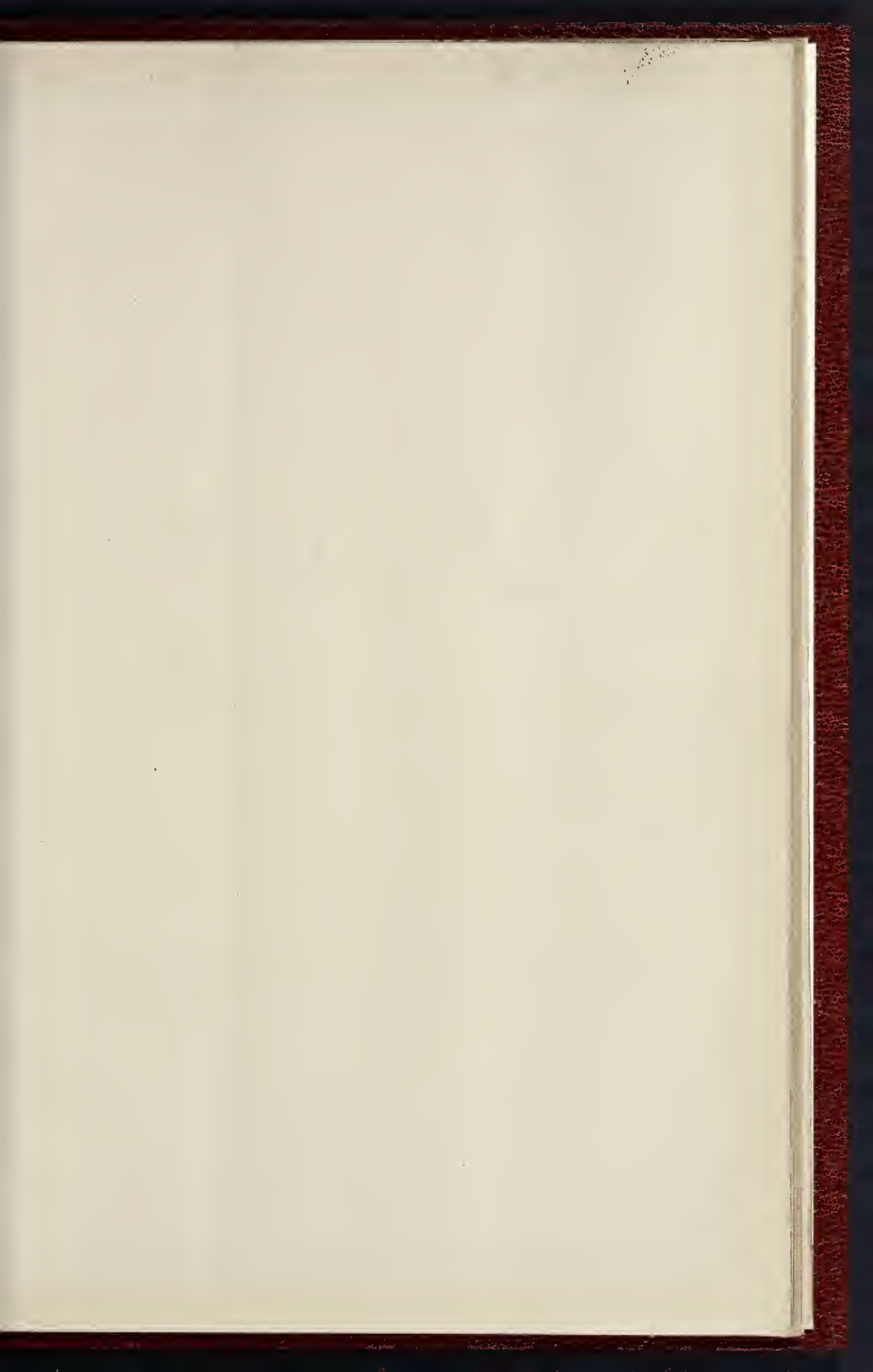
The design is by Mr. A. F. Vigers, and we regret, from an architectural point of view, that it was not selected, as it is a more satisfactory though less showy example of street architect-



Wesleyan Chapel, Crosby. Plan.



"Nethercliffe," Wotton-on-Thames. Plan.



THE BUILDER. JUNE 19. 1897.

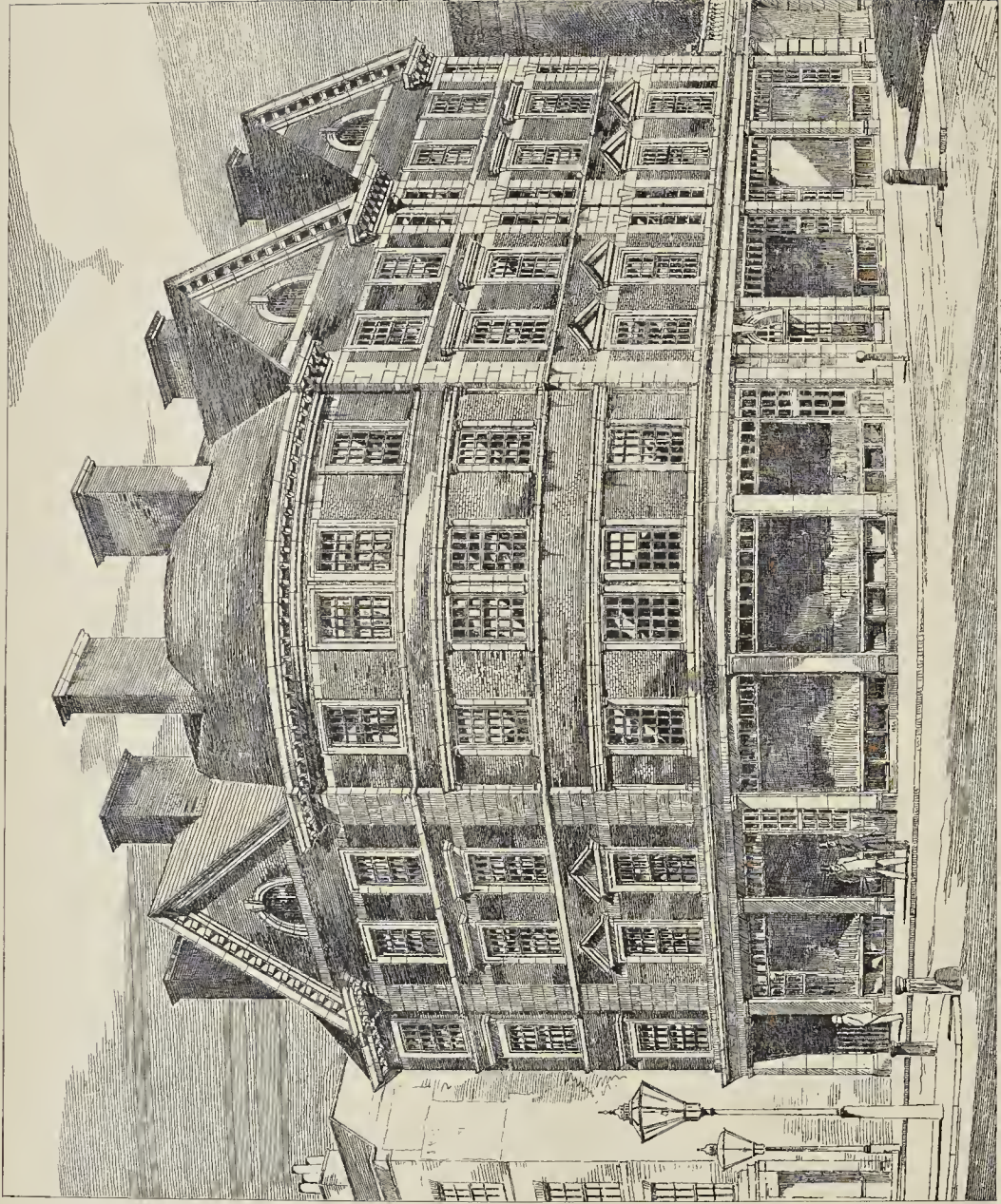
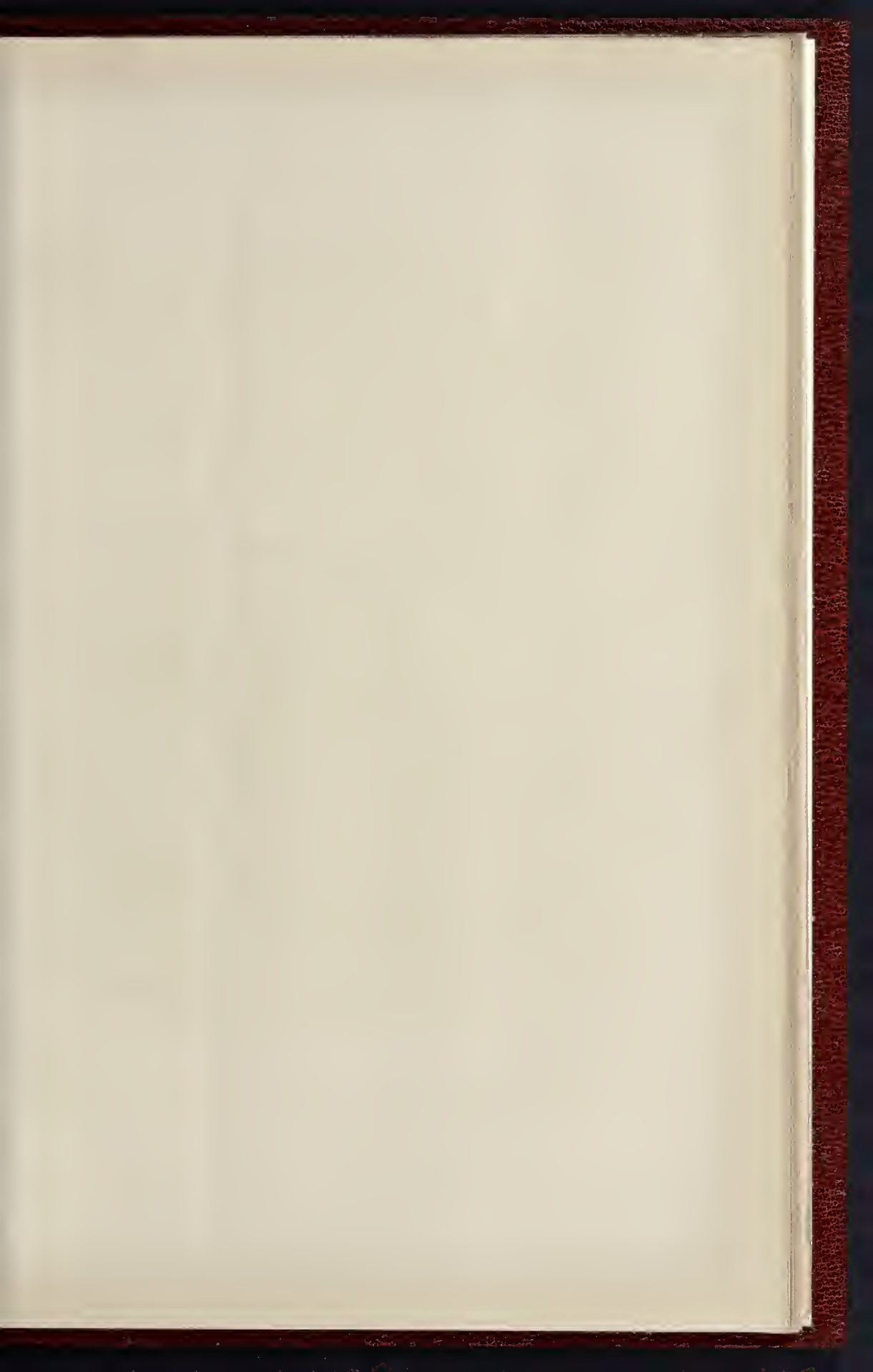
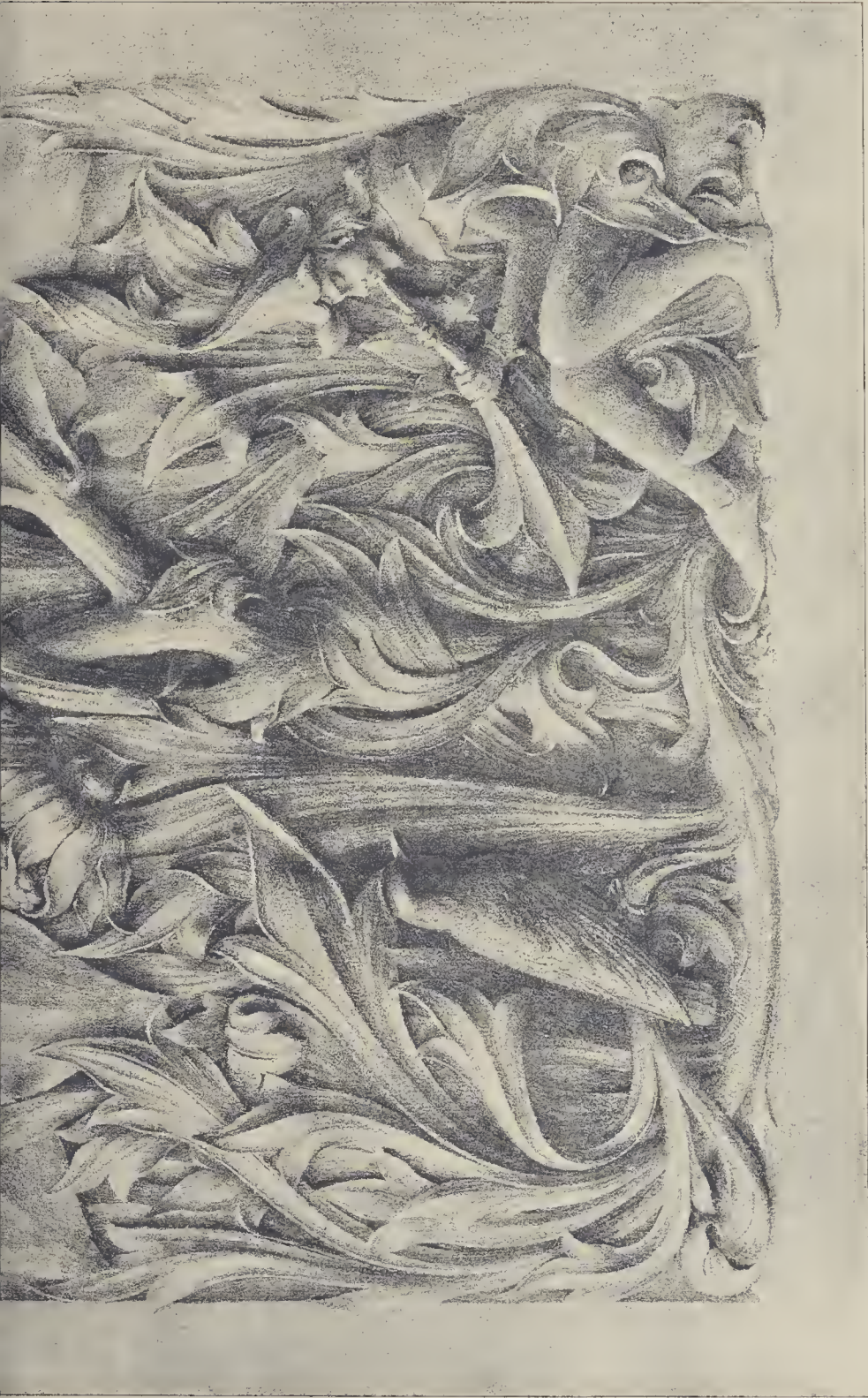


PHOTO-LITHO. SHARPE & CO. 483, EAST-HARDING STREET, FETTER LANE, E.C.



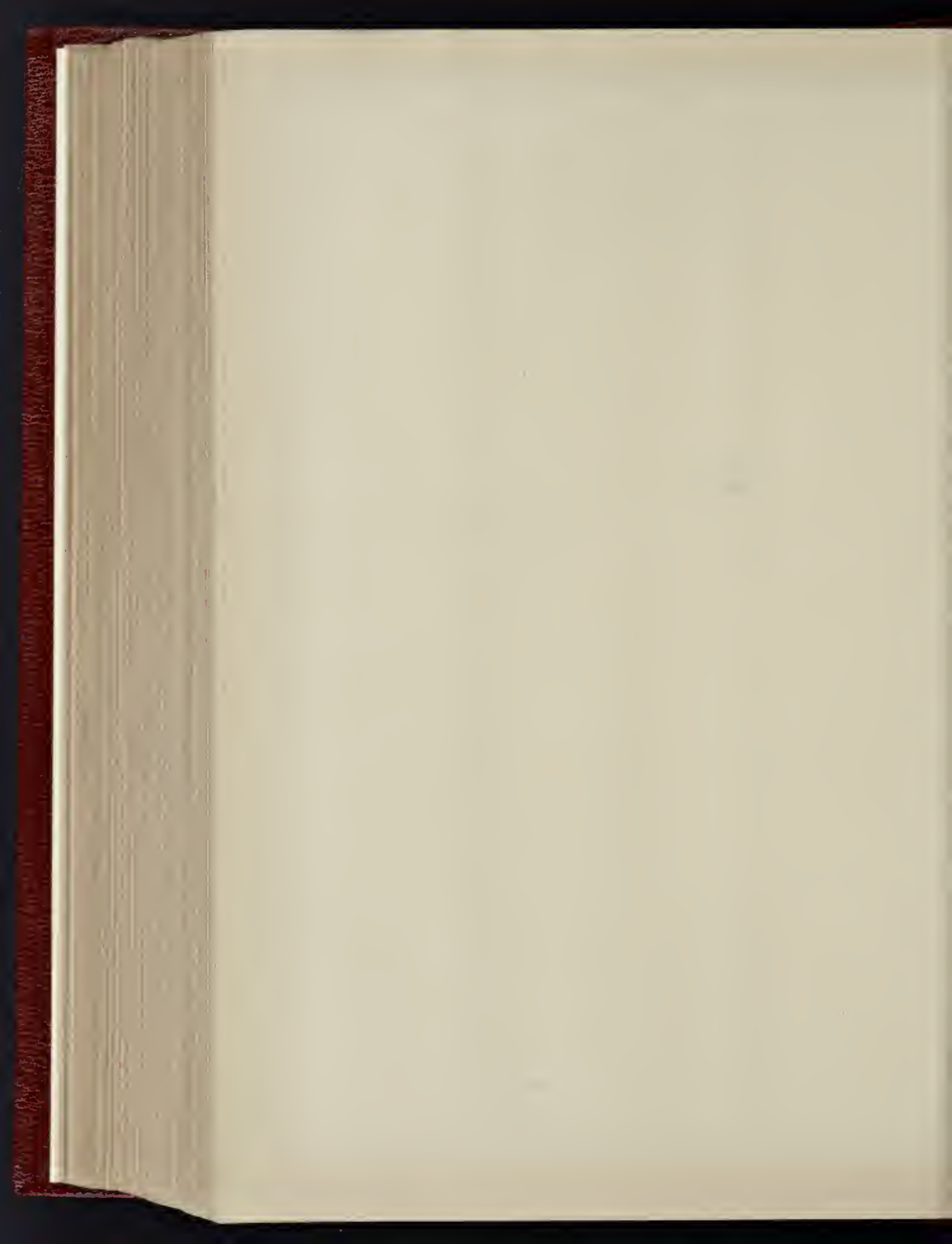
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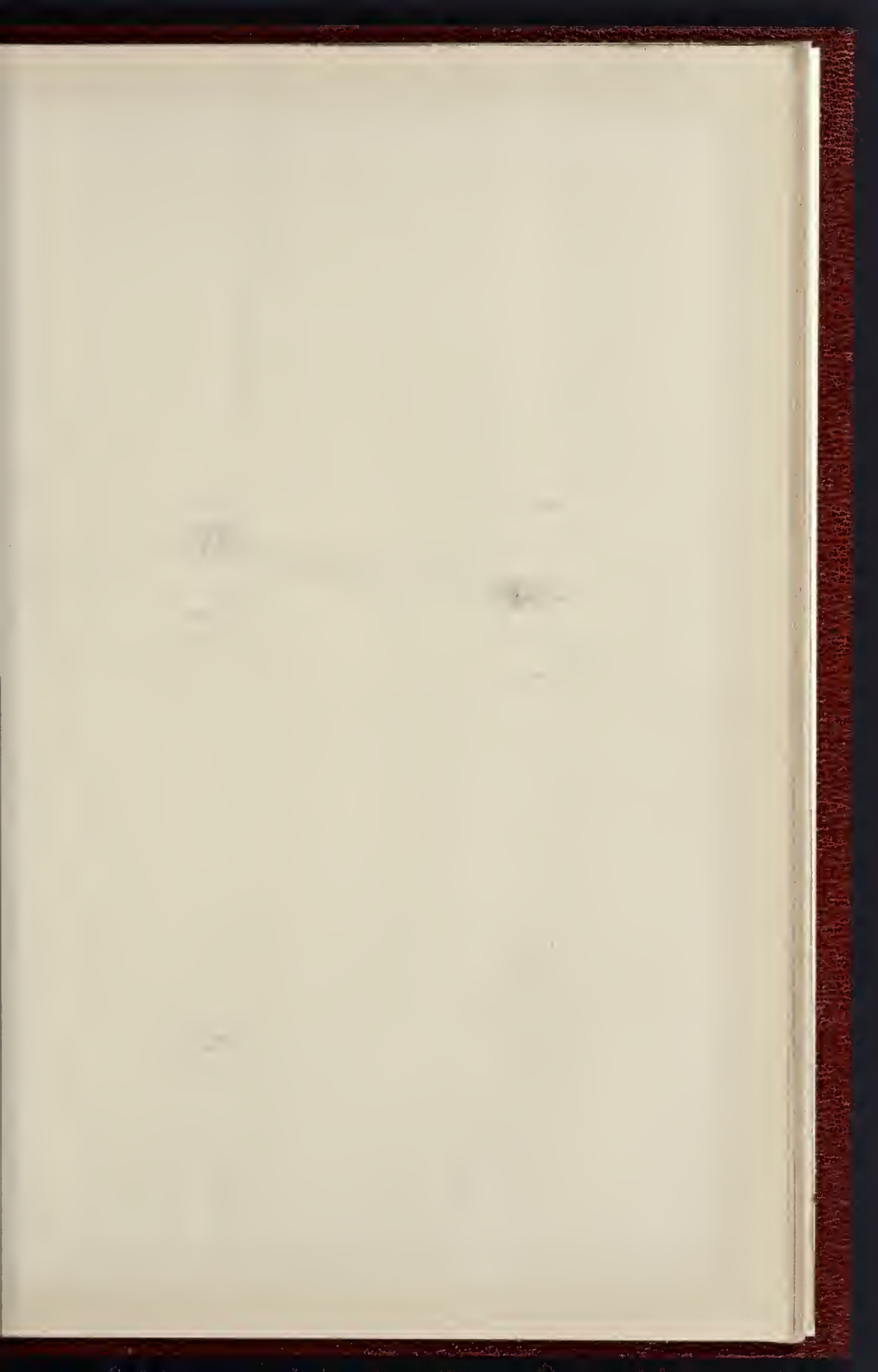




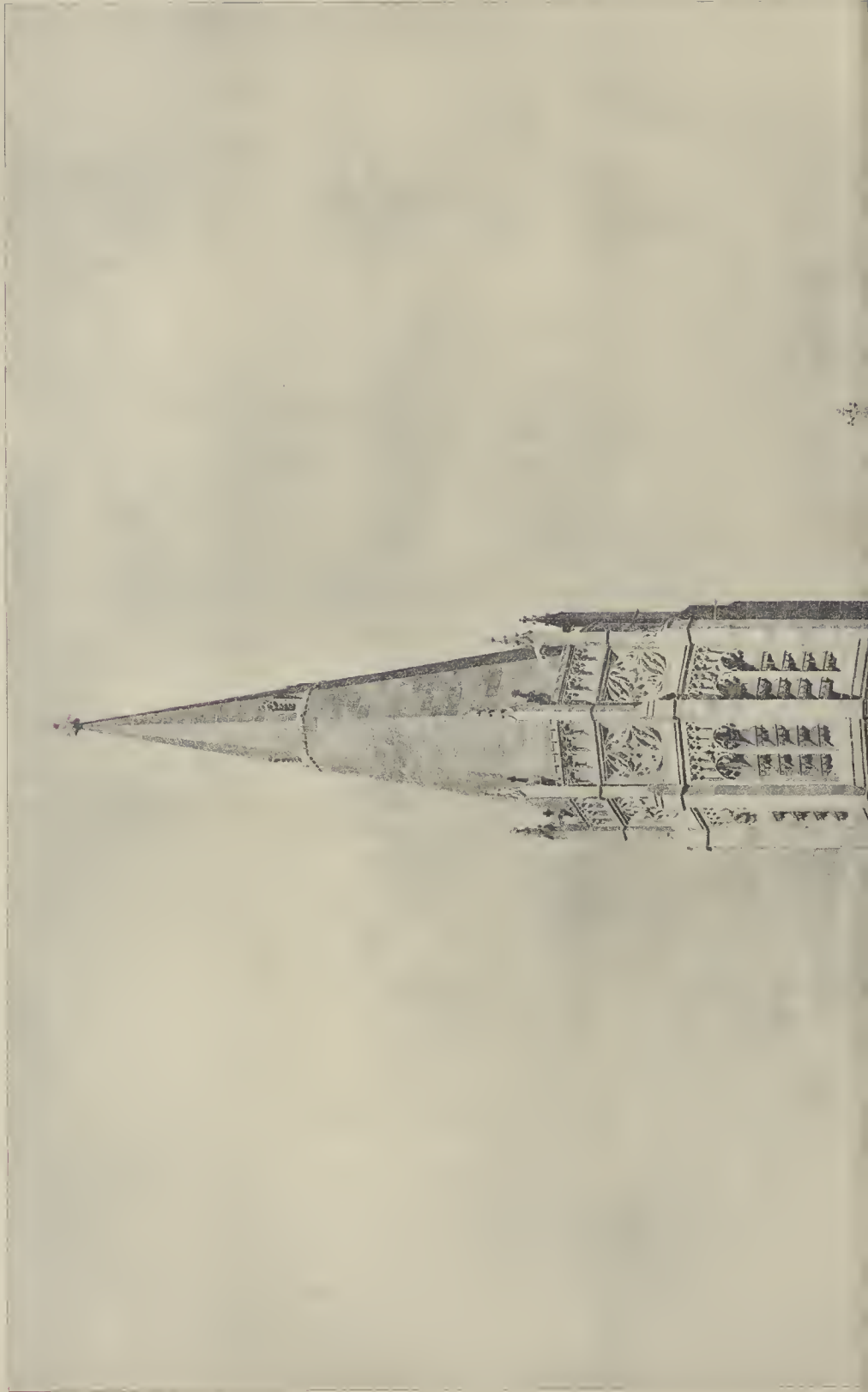
MR. PHOTO STURGLE & CO. 145 EAST WINDING STREET, LONDON, E.C.

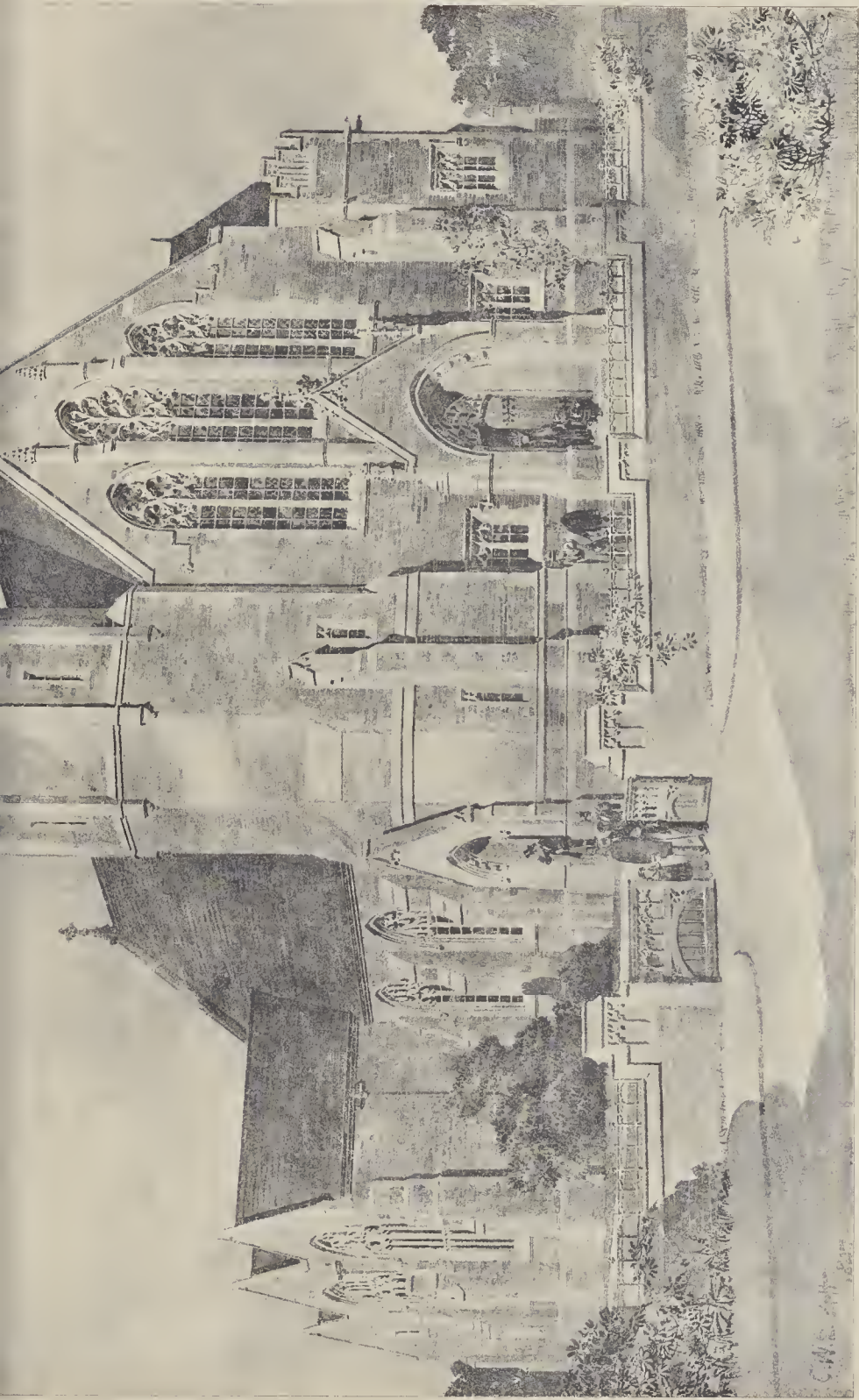
DESIGN FOR CARVED WOOD PANEL.—By MR. L. A. TURNER.





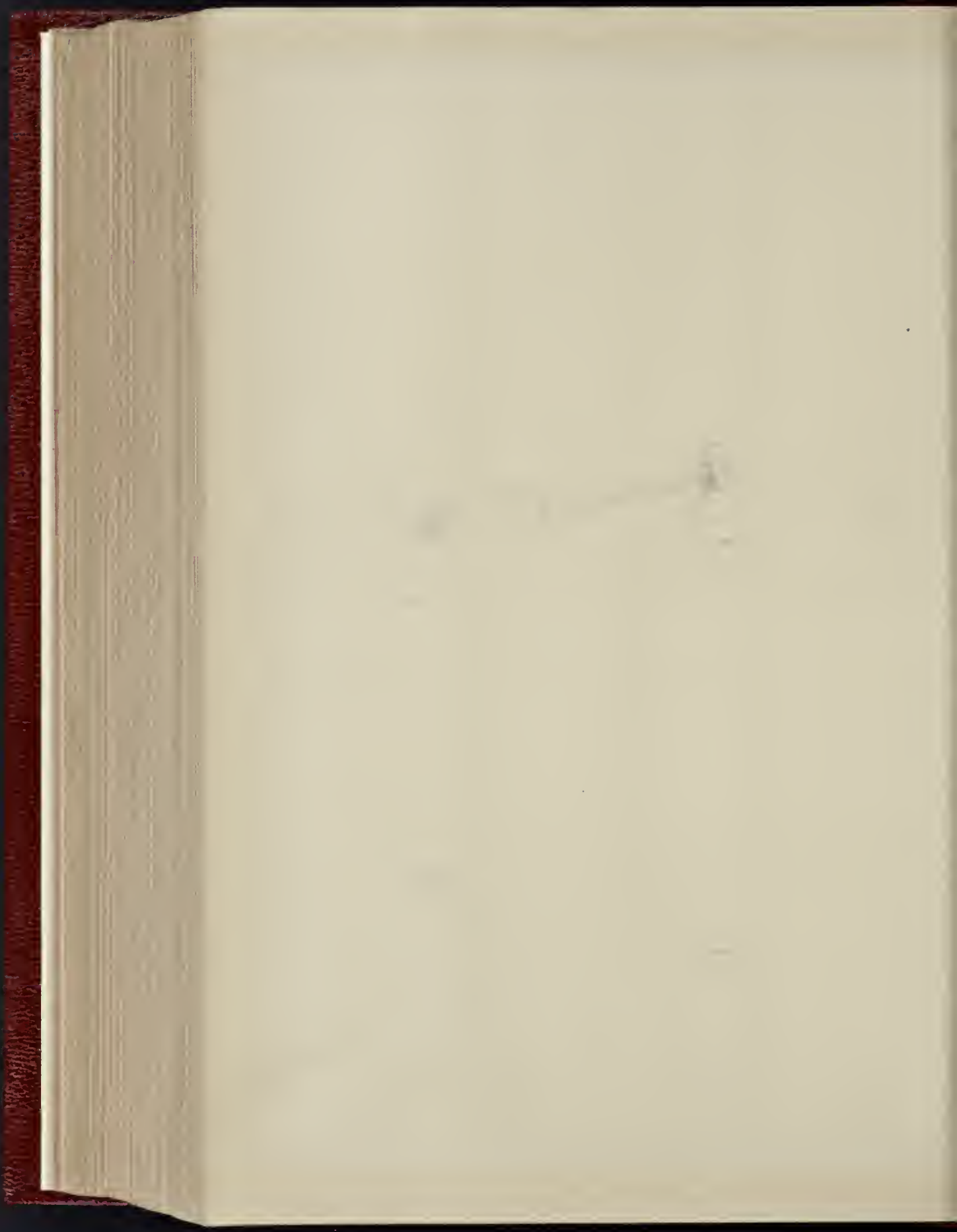
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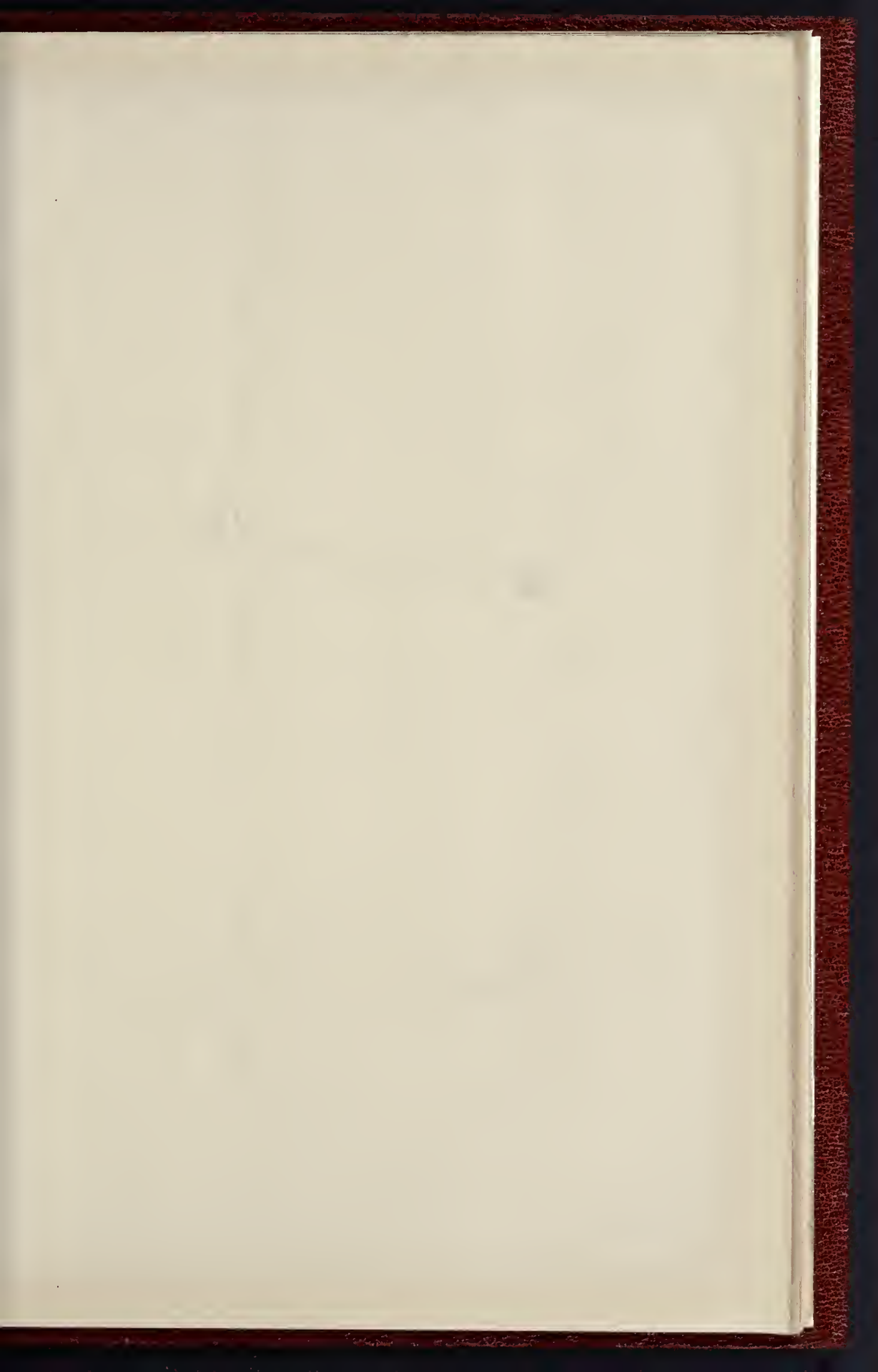




WESLEYAN CHAPEL, CROSBY, NEAR LIVERPOOL.—MR. J. FRANCIS DOYLE, ARCHITECT.

MR. J. DOYLE, F.R.C.S., 11, GRAFTON STREET, DUBLIN.







ESICA: WEST GATEWAY, FROM NORTH-EAST; SHOWING PIVOT-HOLES OF SECOND OCCUPATION.



NORTH-WEST ANGLE TOWER, ESICA.

PORTIONS OF REMAINS OF

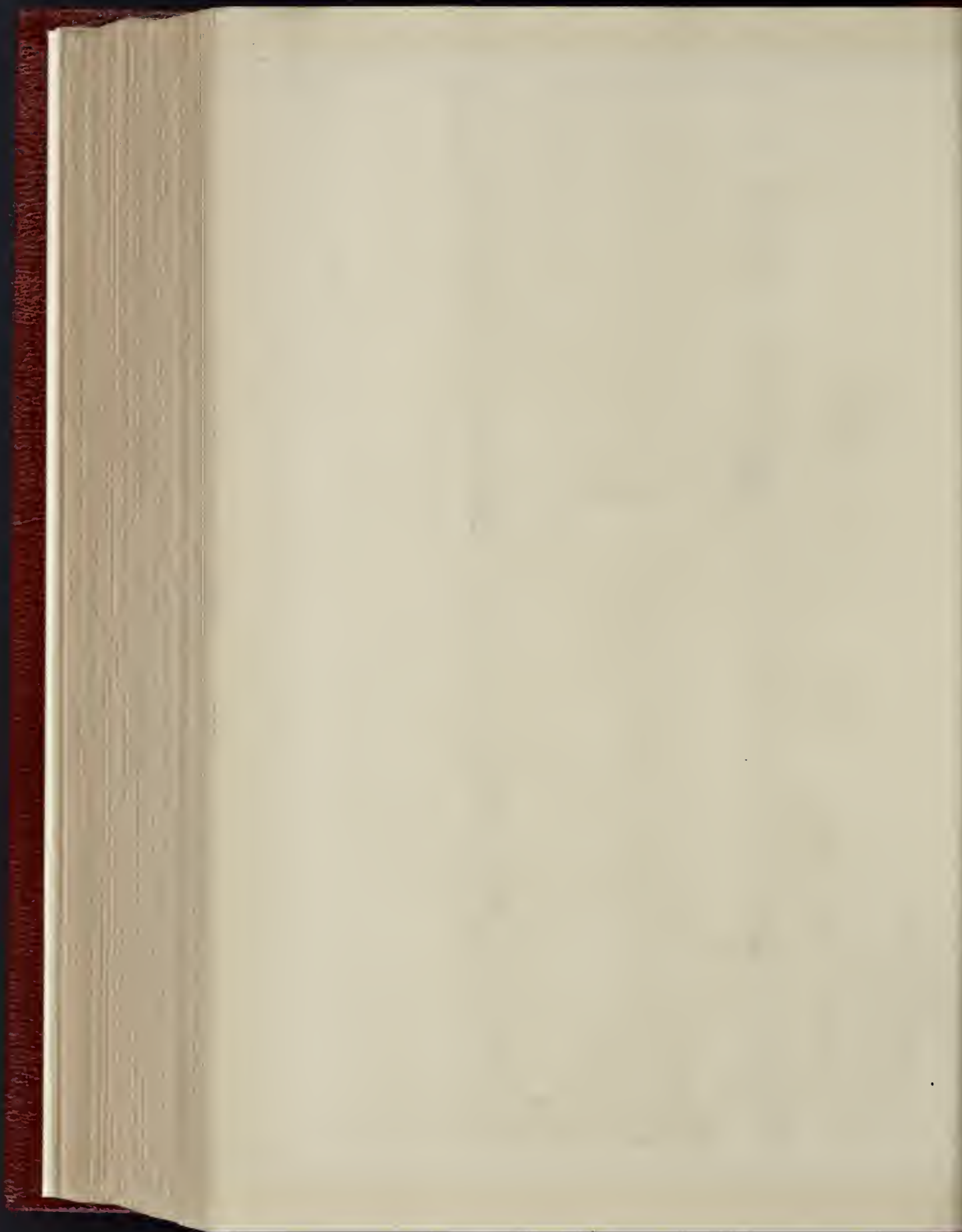


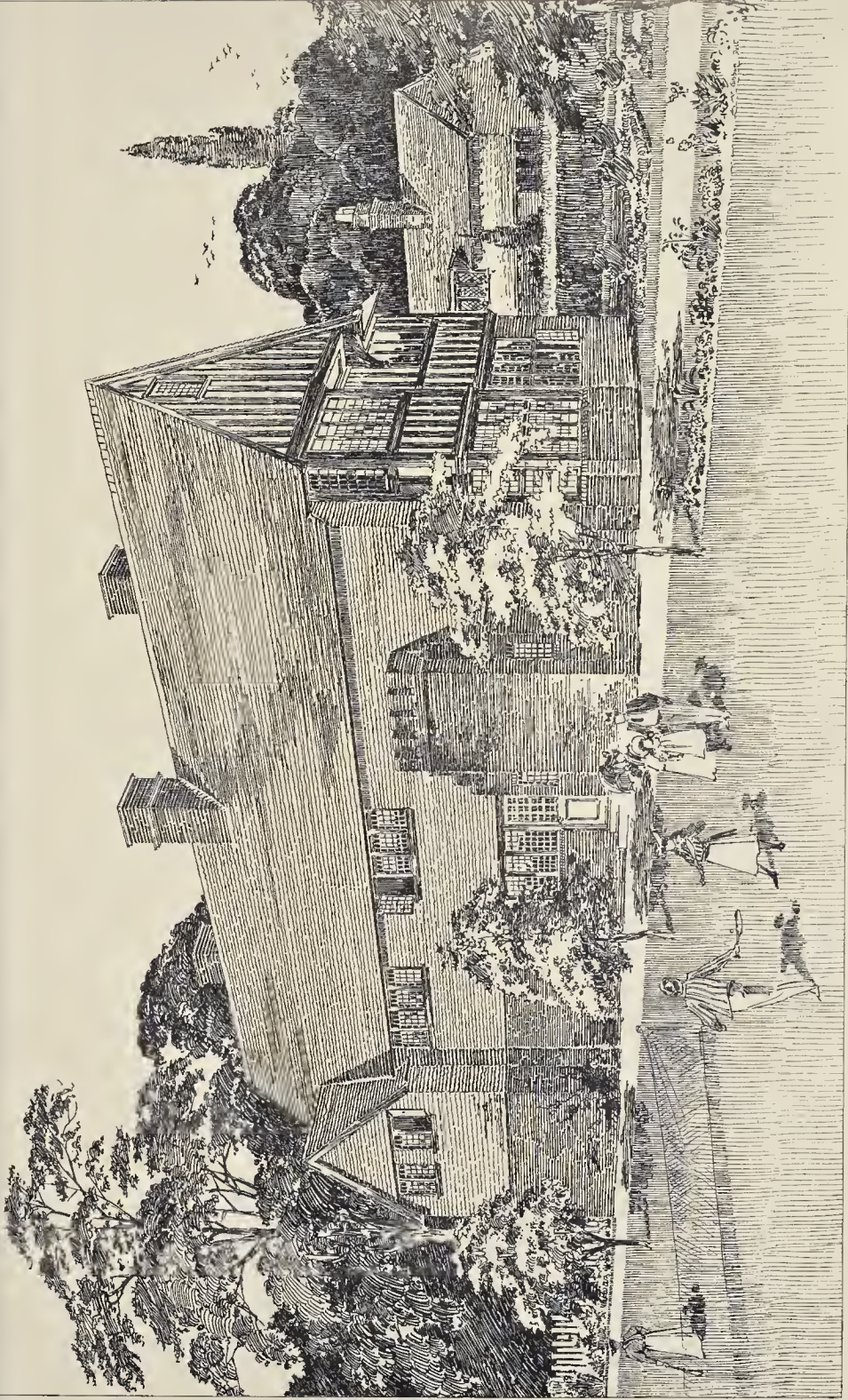
BUILDING UP OF OUTSIDE OF WEST GATEWAY, ÆSICA (THIRD OCCUPATION WORK).



SOUTH GATEWAY, ÆSICA; FROM EAST.

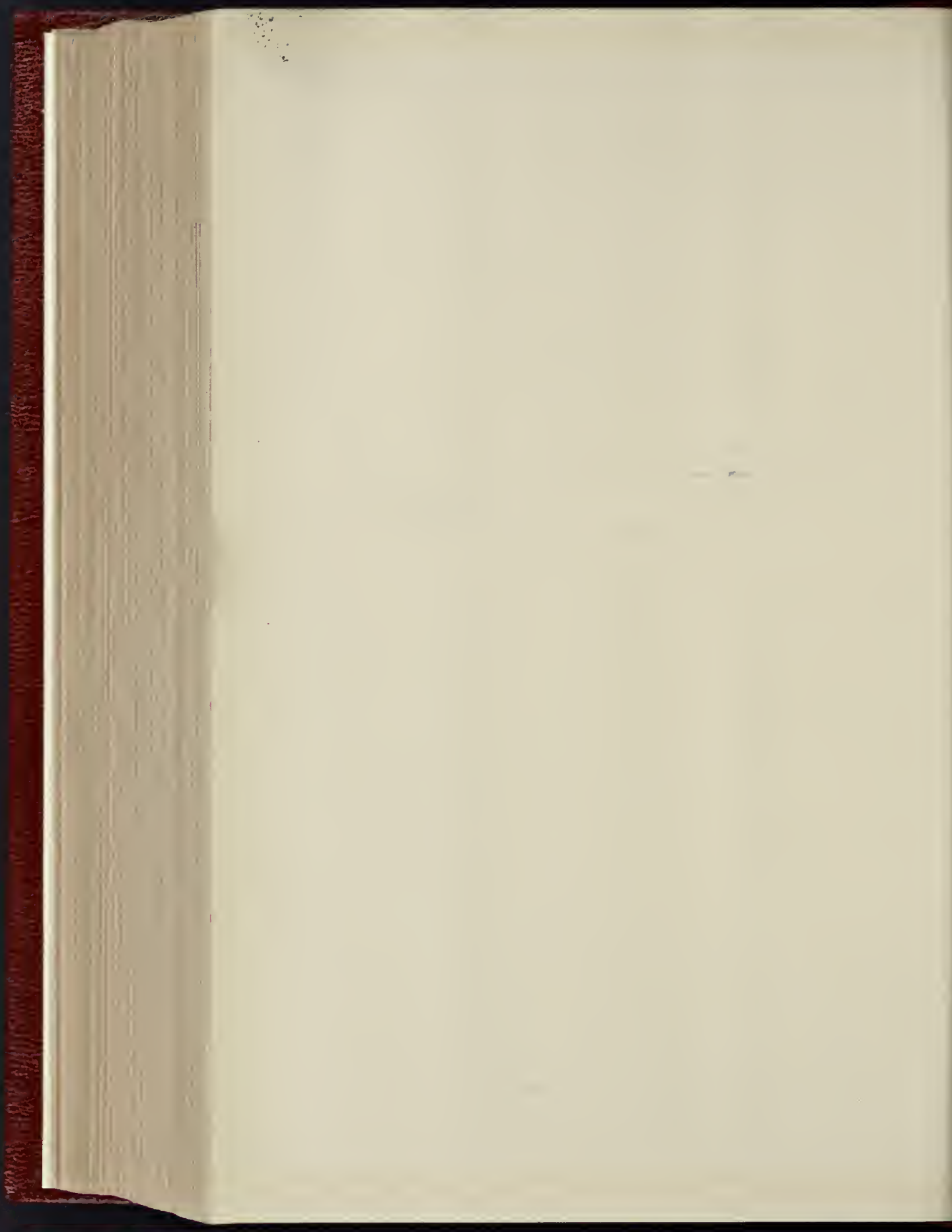
THE PHOTOGRAPHERS





"NETHERCLIFFE," WALTON-ON-THAMES: THE GARDEN FRONT.—MESSRS. NIVEN & WIGGLESWORTH, ARCHITECTS.

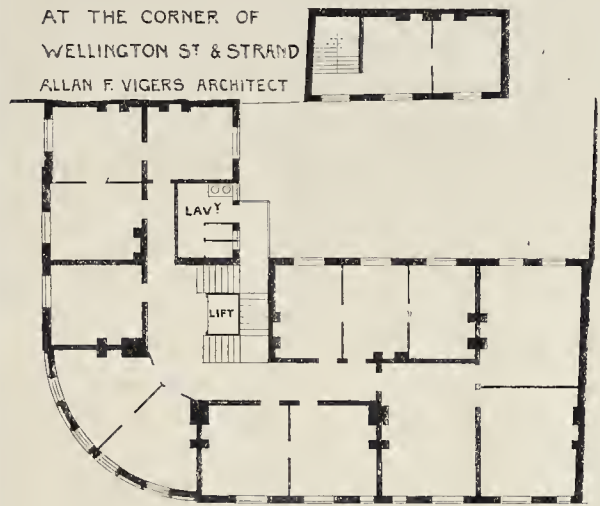
PHOTO-LITHO SPRAGUE & CO. 49, GREAT MARKING STREET, LONDON, E.C.



THE NATIONAL TELEPHONE COMPANY
COMPETITION DESIGN FOR BLOCK OF SHOPS & OFFICES

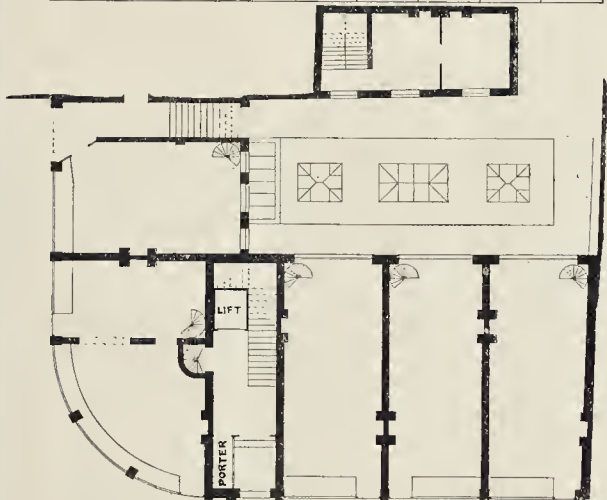
AT THE CORNER OF
WELLINGTON ST & STRAND

ALLAN F. VIGERS ARCHITECT



1ST 2ND & 3RD FLOOR PLAN

SCALE OF FEET
0 10 20 30 40 50 60 70 80



GROUND FLOOR PLAN

Engineers in 1880. He then described a plant which has recently been erected by Mr. Taylor, of Montreal, giving an increased efficiency of 10 per cent. He gave in detail the method of impregnating the water with minute bubbles of air, the improvement being entirely due to this feature, and pointed out the alterations necessary, being confident of obtaining 75 per cent. of the power at command. He also gave records of the trials conducted, and has computed the various hydraulic losses in the apparatus. He summarised the advantages of adopting this principle as follows:—1. The compression takes place isothermally. 2. The initial outlay, repairs, and working expenses are less than by any other means. 3. It is suitable for adoption in the case of low waterfalls. He claimed that these advantages far outweighed the objections of sinking a shaft.

TRADE CATALOGUES.

Messrs. SHANKS & Co. (Barrhead, Glasgow) send us their handsomely got up catalogue of sanitary appliances, mostly intended for ships, this firm making a special feature of this kind of work for shipping. They show various forms of solid pedestal closets with lugs for screwing to the deck, all those for sea-going ships being valve closets; washdown closets being unsuitable, as the rolling of the ship tends to empty the traps. Besides these, there are illustrations of folding lavatories for ships, baths, urinals, &c., and storm-valves for guarding the outlets. Messrs. Thos. Crapper & Co. (Chelsea) send us their catalogue of sanitary ware, which includes some special features—among these are the "Kenon" disconnecting trap, in which the flow through the trap is quickened by making the channel at this point of egg-shape section, and the white glazed bricks for inspection-chamber floors, giving a glazed convex surface between the walls and centre channel, curving towards the channel. They also show an intermediate supply cistern for valve closets, rightly observing that this is essential, even for a valve closet, where the water-closet supply is drawn from a general cistern. Messrs. H. W. Caslon & Co. send us their illustrated catalogue of printing materials, which are sold by them as agents for the Hamilton Manufacturing Company of Wisconsin, and are said to bear practical testimony to the superiority of American printers' joinery as compared with that manufactured in this country. Of this, of course, use is the test. The catalogue includes rule and type cases, galley cabinets, "a noiseless forme trolley," composing frames, type-cabinets of many forms, steam and hand presses, &c. Among the minor articles is a panelled backing for large electros, specially made of selected wood to preclude warping. Messrs. B. Finch & Co. (Lambeth) send us their "Supplement to Finch's Diary for 1897," giving illustrations of several important sanitary articles, intended more especially for hospitals, among which may be mentioned the "Hospital Slop Sink with Drainer," of curved section with a three-gallon wash-out flush operating from the rim, and leak drainer fitted into a slot, which can be removed when required, and which when in position is washed by each flush. The white porcelain fire-clay sink with a fluted drainer of the same material is also worth attention, and the Hospital Bath valve by which hot water cannot be introduced without first introducing cold, the object being to prevent the possibility of scalding, or of cracking the porcelain bath, by the sudden introduction of overheated water. It is to be noticed that the illustrations of all the articles are given in a practical manner by plans and sections drawn in line, not by the shaded and pictorial illustrations often found in catalogues of sanitary ware, and which are of no use except to attract the eye. Messrs. Bullock (Bermundsey) send us their catalogue of ranges and stoves, including the "Westonian" cheap range, which appears very compact and simply arranged. A small portable range (1007) is also a convenient and apparently well-arranged one, and there are other articles of interest in the catalogue. Messrs. Waring send us an illustrated catalogue of an apparently rather remarkable collection of antique furniture, tapestries, embroideries, brocades, &c., removed from old castles, churches, and convents, chiefly in Spain and Italy. The illustrations include, among other things, a remarkable vestment of the eighth century, and a fine Dutch "Net," or ship centrepiece, besides many interesting examples of Renaissance tapestries, &c.

ENGINEERING SOCIETIES.

SOCIETY OF ENGINEERS.—At a meeting of the Society of Engineers, held at the Royal United Service Institution, Whitehall, on Monday, the 14th inst., Mr. G. Maxwell Lawford, President, in the chair, a paper was read by Professor Herbert W. Umney, on "The Compression of Air by the direct action of Water." The author, by way of introduction, referred to the importance of obtaining compressed air by the simplest possible means. In particular he called attention to the best of all methods, being the only one whereby the compression takes place isothermally. The idea, however, he observed, was not a new one. He referred to the ancient methods in use in Spain, and stated the general principle underlying the system. He then directed special attention to the plant erected by Mr. Frizell, of New York, which gave an efficiency of 52 per cent. when tested. He stated that an abstract of these experiments was recorded in the proceedings of the Institution of Civil

ture than the building in course of erection on the site.

"NETHERCLIFFE," WALTON-ON-THAMES.

The view shows the garden front of a wayside house at Walton-on-Thames. The walls are of red brick; the upper story and roof are tile hung.

Mr. James Smith, of Walton-on-Thames, was the builder, and Messrs. Niven & Wigglesworth the architects.

The illustration is from the drawing now exhibited at the Royal Academy.

BAPTIST CHAPEL, FLECKNEY, LEICESTERSHIRE.—The foundation-stone has just been laid of a new Baptist Chapel, Fleckney. Mr. George Starkey, of Leicester, is the architect. The erection covers the site of the old one, the chapel itself being estimated to seat, with the galleries, 250, whilst provision in the upper and lower schoolrooms is made for 200 scholars. The builder is Mr. E. Gamble, of Fleckney.

Correspondence.

To the Editor of THE BUILDER.

THE ASSOCIATES' (R.I.B.A.) VOTE.

SIR,—The decision of the Chairman at last Monday's meeting was so unexpected and so extraordinary that I trust you will permit both Fellows and Associates to express their opinion thereon, a course they were naturally prevented from taking at that meeting.

The words of the Charter (Clause 28) are, to my mind, very clear, and I thought I had secured the only possible interpretation of them from the President at the previous meeting (May 31). The clause says that Associates may not vote "in respect of the making and adopting, altering, revising, suspending, or rescinding of any by-law." The question is, can that possibly affect the Associates' right to vote on a resolution giving the Council, as from the whole body of the Institute, the right to do a certain thing? When the question of altering the by-law to give effect to this direction to the Council came up for decision, the Associates, it is clear, could not vote, and the paper issued to us containing the resolutions was quite correctly drawn up and clearly contemplated the different conditions. For at the top of page 54 on that paper I read, "In the event of the foregoing resolutions being carried it will be necessary to alter certain by-laws;" and then follow the suggested alterations. Upon these no Associate could, of course, vote.

The Chairman's ruling is so far-reaching that I trust the Associates will take the matter into court, and get a proper decision on it, and I shall be very glad to subscribe to a fund for this purpose. For what is the situation now? We are forbidden to vote on a recommendation to the Council to do anything which will involve the alteration of a by-law. In fact, the Chairman has read into the Charter words that do not exist there, and he now makes us ineligible to vote, not only "in the making, altering, &c." of a by-law as intended by the Charter, but in any matter which involves the making, altering, &c.

That his ruling will be maintained by any court of law I do not for a moment believe, and I trust that steps will be taken to upset it. The matter under discussion on Monday was of the smallest importance, but some other time this ruling may be accepted as a precedent, and the gravest injustice perpetrated. Surely the Council itself cannot wish the ruling of one man, however well meaning, to upset the clear intention of the Charter. That they have no such wish I believe, or the resolutions, &c., on the paper would not have been printed in the form—the correct form—in which they reached us.

I shall anxiously await a pronouncement of the new Council on the subject.

C. H. BRODIE.

** The point is certainly one open to difference of opinion, but we do not think the conclusion is by any means so obvious as our correspondent seems to consider it. It may certainly be argued that if Associate members vote for a proposal involving the change of a by-law, they are practically voting for the change of the by-law, and that it is contrary to the spirit of the Charter if not to the letter. This, we presume, was the view that the Chairman took on Monday.—E.D.

THE POSITION OF THE ORGAN IN CHURCHES.

SIR,—In a "Note" in your last issue referring to the above question you say it is the "Conservatism" of the clergy which stands in the way of improvement. Now, a mania for turning everything upside down and inside out, coupled with an almost insane hatred of everything savouring in the slightest degree of antiquity (and especially of the detested and detestable eighteenth century), can hardly, I think, properly be called "Conservatism." Yet these have undoubtedly been the prevailing characteristics of the clergy of the Church of England during the past thirty years or so. "Conservatism" would have led them to retain the organ at the west end, where it had been placed for at least many hundreds of years.

Let us console ourselves with the reflection that though "fads" may endure for a day, common sense generally triumphs in the long run.

H. E. T.

ELECTRIC LIGHTING BY REFLECTION.

SIR,—My attention has been called to your remarks re the electric lighting at the Royal Palace Hotel, in your issue of the 12th inst. The whole of this work was arranged by me and carried out to my specification and under my supervision by the firm of Messrs. Donnison, Berlin, & Co., electrical contractors. I quite agree with your views as to the form of reflected lighting being used where the architectural details of a building permit; but I have experienced difficulty in persuading my clients to adopt this system, as they regarded it in the nature of a costly experiment, with little chance of a successful result. However, having now, in spite of some opposition, installed it in a public building, I have no doubt but that the arrangement will be more generally used.

ADRIAN COLLINS.

SIR,—If I have not already occupied too much of your valuable space, I shall be glad of a little more to reply to the two letters of your correspondent, Mr. Norman Wight. In calling attention, in my paper before the Architectural Association, to the advantages of a valve-closet, I was, of course, referring to an up-to-date valve closet, and had more especially the "Optimus" closet in my mind; but the latter being a patent of mine, I was desirous of saying nothing in reference to it that might have even the semblance of an advertisement. Evidently Mr. Wight has never seen this closet, and it may interest him to know that the overflow trap is made to discharge into a ventilated pipe above the level of the basin-valve—i.e., into a pipe which is open to the air just outside the external wall of the closet, which pipe not only ventilates the "valve-box," but prevents any action upon the water seal of the overflow trap. Moreover, this trap in practice is rarely, if ever, fouled, for the overflow arm being open downwards from the top, affording a ready means of inspection and access, and the flushing rim of the basin being continued around it, the overflow trap is thoroughly flushed out every time the closet handle is pulled, and quite independently of any water which may be held in the basin.

S. STEVENS HELLVER.

The Student's Column.

SPECIFICATIONS.—XXV.
REPAIRS.

REPAIRS.
IN writing a specification for repairs the student must be careful not to confuse this with a specification or, more properly, a schedule of dilapidations. The latter is generally written with inclusiveness as its chief quality, and is, therefore, usually vague rather than definite. As a guide to the method of specifying repairs our best plan will be to proceed through the various trades, noting especially matters in which this class of specification differs from that for a new building.

Bricklayer.

Defective Walls.—Describe the extent to which these are to be taken down and rebuilt; as for example:—Take down the upper part of front wall to a distance of 12 ft. 6 in. below top of parapet; and rebuild in 9-in. work in mortar to the same height as before. (Describe the kind of pointing. State if the old bricks from the pulling down are to be re-used.)

Pointing to Walls.—Describe the extent to which walls are to be pointed, where and how they are to be cleaned, if they are to be stained or coloured, and the description of pointing.

Pointing to Door and Window Frames.—State that the old pointing is to be raked out, and specify whether the new pointing is to be in lime and hair or in cement.

Resetting Stoves and Ranges.—State that the stoves and ranges which are to be reset are to be taken out and reset. The throating, flaunchings, covings, &c., being made good.

Chimney-pots.—State how many and what description, and make it clear whether they are to be in replacement of broken ones, or whether they are to be additional. In the former case the old flaunchings ought to be removed in order to make a sound job of the setting of the new pots.

Mason.

Describe what stonework requires to be taken out and renewed, what is capable of being pieced, and what merely requires to be taken down and rebuilt. In the case of copings and other masonry continued in long lengths, it would frequently happen that part only requires renewing to a greater or lesser extent, and then the specification should define how much is to be renewed or repaired, as the case may be; as the common slipshod practice of specifying that the defective parts are to be taken out and renewed is likely to lead to difficulties, especially if competitive tenders are being invited from builders.

If the necessary repair or renewal of any work is of a very extensive character, it may be necessary to provide and specify shoring during the progress of the work.

In the case of worn steps, define whether they are to be taken out and entirely renewed or turned over and re-dressed, or whether pieces may be let in, or whether, if broken, they may be merely re-jointed and cramped.

Paving would generally require to be taken up and relaid to current, with probably a new foundation and some part at least (query what part) should be renewed.

Slater and Tiler.

Specify how much, if any, of the roofing material is to be taken off and relaid, or whether

merely the broken and defective slates or tiles are to be renewed. Also specify the renewal of pointing and torching to tiling, and the resetting and possibly the renewing of ridges and retiling.

Carpenter and Joiner.

The repairs in this trade are comparatively easy to specify, as generally speaking it is a case of entire renewal of broken or defective parts. Perhaps the most frequent exception to this is in the case of treads of stairs where the necessities of the case may sometimes be met by renewing the nosing only. In any case where dry-rot exists the entire removal of all parts of the woodwork however slightly affected must be stringently enforced, and, of course, proper and adequate ventilation would have to be arranged.

The ironmongery is equally simple. If any which has to be renewed is to match any old work this must be specially mentioned as even if the patterns are simple they may be old-fashioned, and considerable difficulty may be experienced in matching. A careful estimator would make a considerable addition to the price of work which is to be matched.

Smith and Foundry.

In this trade again repairs in the strict sense are almost out of the question. It is generally a question of renewal. Even in the case of stoves and ranges, which comprise by far the greater part of the repairs strictly so called in this trade, it is often cheaper and more satisfactory to renew the defective part, except in those cases where a special casting has to be dealt with.

Rain-water pipes, eaves gutters, and other rain-water goods are, of course, quite irreplaceable. In the case of ornamental balconies, balustrades and railings, it is a matter of importance to have the defective parts as a general rule replaced by others to match the remainder of the work, and this must therefore be clearly stipulated.

Whatever repairs in this trade are specified, the student must be quite sure that the repairs are possible, and cheaper than renewal, and should carefully explain in the specification the manner in which the repair is to be executed. Thus the student might consider the various ways in which the repair might be performed to a wrought iron railing, the feet of the upright bars of which have been let into stone and run with lead, and have become decayed by galvanic action and rust. This is a condition of things which frequently exists, and is capable of several various methods of repair other than complete renewal.

Plasterer.

Ceilings.—Specify to what extent defective ceilings are to be cut down, whether or not the lathing is to be renewed, and what description of plastering is to be carried out.

Walls and Partitions.—Specify these in a similar way.

Cornices.—Define whether the whole of the cornices are to be renewed, or whether part only needs to be re-run, or whether stopping of cracks will meet the case. As regards enrichments, specify that they are to match those existing, or whether entirely new enrichments are to be put in.

Distemping.—Specify washing down and stopping, and clear-coating if necessary. Particularly if enrichments are to be soaked and cleaned out, specify that they are to be cleaned of all whitewash down to plaster.

External Work.—Make it clear whether repairs are to be in similar materials to the existing, which may be of lime stucco, or Roman cement, or whether it is to be done in Portland cement. Remember that patching up of defective external plastering is generally a very unsatisfactory performance, and usually has to be very speedily repeated.

Plumber and Zinc Worker.

The repair of external lead and zinc work generally consists simply of soldering. If this is what is desired it should be so stated, but if a more satisfactory and permanent repair is wanted, then partial or complete renewal of the lead or zinc must be specified. State, if the old lead is to be removed, what is to be done with it, whether the contractor is to take it away, in which case the most satisfactory and equitable proceeding is for the contractor to quote a price per cwt. which he will allow for the old lead, and for it to be weighed when stripped from the roofs. In dealing with internal work, repairs may be needed to joints or to pipes, the latter generally would be a ques-

tion of renewal. With regard to fittings define precisely whether any or all are to be renewed or whether new washers or regrinding or other repair will satisfy the case.

Be careful to include a stipulation for cleaning of gutters and flats in external work, and of traps and safes in internal work.

Painter, Glazier, and Paperhanger.

The most important point for the student to define with regard to painter's work is the extent of the preparation for the paint, whether a mere washing down and sizing is sufficient, or whether rubbing down with pumice stone or burning off or removing with pickle are to be employed. When the work is preparatory the painting will then generally be on similar lines, as far as the specification is concerned, to that of new work.

In the glazier's work repairs generally consist of hacking out and renewing broken glass, and the specification should define what constitutes a break. It is a very common practice to assume that one crack in a pane of glass is not a break, but that two cracks do constitute a broken pane. The removal and making good of decayed putty is also to be specified where required; and the cementings and attachments of lead lights, of course making it clear what quality of cementing material and connexion are required. In specifying repairs for paperhanger, in all good work, the walls, of course, would be stripped to the plaster, then stopped and sized before re-papering. Specify if the papering can be repaired with paper to match, which will only be likely be the case when the papering has been comparatively recently done, as patterns are rapidly superseded. Careful householders often preserve a piece or two of paper for repairs, but as that hung on the walls usually fades, the precaution to be complete should include the hanging up of the paper exposed to the light.

GENERAL BUILDING NEWS.

ST. JOHN THE BAPTIST CHURCH, NEW SPRINGS, LANCASHIRE.—This new church was consecrated recently by Dr. Lyle, Lord Bishop of Liverpool. The architect, in his description of the building, says that the plan of the new church is unusual. There are no nave aisles, but a broad nave, which is drawn to an apsidal ending towards the east. The centre arch of the apse opens into the chancel. The side skew arches open respectively into the north and south chancel aisles. The south chancel aisle is regarded as a choir, the services in which only comparatively few take part, but it is so arranged that its occupants can join in the service when the church is full. Near this chapel is a door. The north chancel aisle, marked off from chancel and nave by arched traceried screens, is divided into clergy and choir vestries and organ chamber. At the west end is a music gallery, the lower story is a choir, the nave floor, and forms the baptistry. On the north side, near the west end, is the main entrance porch, provided with a narrow side door (in addition to the wide front door). The chancel arch is carried on massive circular pillars, flanked by the two side arches of the apse. The east window has three lights, a brick chimney and traceried above. Below the window is a recess of stone, with a central medallion of stone containing a sculpture of the Agnus. The chancel is of three bays—three arches on each side—the two westernmost, north and south, respectively opening into the chancel aisles. Looking west from the chancel steps is seen the arch of the baptistry with a wide one-light window beyond. The east chancel window is similar glass in patterns, with symbols and devices; but the centre light, which is 3 ft. wide, is filled with stained glass, the work and the gift of Messrs. Heaton, Butler, & Bayne. The subject is the baptism of Our Lord by St. John the Baptist. This is essentially a brick church. The design is entirely of a modern character. It is not at all a design for a stone building just carried out in brick. Brick is accepted as a dignified and worthy material, and is treated as brick should be treated, simply and unaffectedly. Even the window tracery is for the most part brick, with just a little relief in stone, where stone is constructionally better. Outside the larger plain wall spaces. At the west end of the chancel is a dwarf brick wall, carrying a low screen or cresting of ironwork, which is continued around the pulpit, the ironwork of the pulpit being a little fuller and more ornate. A slight wrought-iron arch emphasises the entrance to the chancel. The Bible lectern is attached to and forms part of the low iron screen. In the four open arches at the side of the chancel are arched and traceried wooden screens. The tower is covered with a quadrilateral green slated roof. The chancel roof is somewhat higher than the nave, high enough to admit of a clerestory above the aisle roof. An east window in the north chancel aisle is so contrived as to light the organist's key-board. The heating is by hot water. The

churchyard is fenced in by brick walls and piers, with wrought-iron railings and gates. The gas fittings are of wrought iron. The fittings generally are of pitch pine. The work throughout has been designed and superintended by Mr. Medland Taylor, the architect, of Manchester. Mr. C. B. Holmes was the builder. The church will seat 400 adults, but on special occasions seventy more might be accommodated. The contracts amount to 5,230l. The church has been built with varied tints of Runcorn stone, and the bricks of the inside are Ruabon, with red facings round the windows, whilst the other portions of the walls are gold and buff. The bricks of the outside are from the Wigan Coal and Iron Company's works.

JOHN ROBINSON MEMORIAL CHURCH, GAINSBOROUGH.—The dedication services in connexion with the John Robinson Memorial Church, Gainsborough, were initiated on the 9th inst. The site, which comprises 1,777 square yards, cost 1,510l., the total cost being slightly over 7,000l. The principal entrance, in the main road, is a large double door, under a elliptical arch supported on stone shafts with carved capitals. Above this is a seven-light window, the head being of elliptical form, and the upper part filled with tracery. There are two turrets on the front elevation, terminating in stone octagonal heads. The building is of red brick with bands of stone work, and the heads, sills and other sills are of stone. The roof is covered with Westmoreland slate. A fleche is placed on the ridge, in which is placed the ventilator. There are projecting buttresses on the sides of the building. Sitting accommodation is provided for 600 adults. Three doorways in front and sides give admission into the church, and additional exits down organ and vestry stairs. The gallery for the organ is approached by a separate staircase from the outside. The minister's vestry is immediately behind the rostrum, and is provided with a private entrance. The deacons' vestry is near the ministers' vestry. The light columns supporting the galleries are continued up and support the roof, which is of open timber roof with wrought-iron principals, &c. The lecture hall at the rear of the church provides accommodation for seating 300 adults. Class rooms are arranged round the hall which will be used for the Sunday School. There is an infants' school provided. The architects were Messrs. R. C. and E. R. Sutton, of Nottingham.

PROPOSED NEW EXCHANGE, NEWCASTLE.—It is proposed to erect an Exchange at Quayside, Newcastle, from plans prepared by Mr. C. T. Marshall, architect, Newcastle. On the ground floor there will be an entrance hall from the Quayside, having a small office for the porter commanding the main entrance. There is an ante-room or vestibule about 40 ft. long and 20 ft. in breadth. Next there will be a reading-room, which will be about 53 ft. long and 28 ft. broad. The Exchange Hall will be 110 ft. in length, 47 ft. in breadth, and 30 ft. in height to the cornice, and about 40 ft. to the top of the domes. A row of seven telephone-rooms with small office for telephone clerk will be at one end of the hall. On the other end also will be a Board-room, a book-room about 50 ft. in length, and offices for secretary and clerks, and for callers, letters, &c. On the upper floors in the rear rooms will be provided for club-rooms, smoking-rooms, &c., with kitchen and residence for caretaker on the top floor.

CHURCH SCHOOL, FACIT, LANCASHIRE.—On the 11th inst. the foundation stone of a new infants' schoolroom for St. John's day school, Facit, was laid. Mr. F. Rodley is the architect, and the contractor is Mr. John Dyer.

THE GLASGOW BUILDING TRADE.—At a recent sitting of the Glasgow Dean of Guild Court, thirty-five applications were considered, and linings were granted for upwards of 100,000l. worth of new property. Adding to that amount the value of the work passed at last Court day, the new linings granted for the month reaches the total of 184,000l. The chief linings were those granted to the Baltic Chambers, Limited, who received permission to erect a block of offices in Wellington, Cadogan, and Holm-streets in Glasgow, at a cost of 38,500l.; to Rev. James Stalker, D.D., and the deacons, as trustees of Free St. Matthew's Church, Glasgow, who received permission to erect a church and hall in Garscube-road, Glasgow, at a cost of 5,000l.; to David S. Cargill, merchant, Glasgow, and the trustees of the Glasgow Church Co-operative Society, who were granted a lining to erect a church and hall at the corner of Doncaster and Hinshaw-streets, Glasgow, to be called St. Cuthbert's Church; to the trustees of the Association for Infirmary Children, who received permission to make alterations on East Park Home, Maryhill, and to the Glasgow Eastern Co-operative Society, who were granted a lining for tenements of dwelling houses on the south-west side of Baltic-street, Bridgeton, Glasgow. The remaining linings were mostly for tenements of shops and dwelling-houses in various quarters of the city.

CAFÉ, BEXHILL-ON-SEA.—The Royal Café Restaurant, Devonshire-road, Bexhill-on-Sea, was opened recently. The building has been erected from plans prepared by Mr. G. H. Gray, architect, by Messrs. Sanders & Co., builders.

DUDFIELD MEMORIAL HALL, SOUTHWARK.—The memorial-stones have just been laid of the Dudfield

Memorial Hall, which will be added on to the existing Lansdowne-place Ragged School. The new Hall, which has been designed by Messrs. Searle and Hayes, and which is being built by Messrs. Holliday and Greenwood, of Brixton, will accommodate some 500 children.

CHURCH, NEWELL.—The new Church of St. Michael and All Angels, Pen Mill, Yeovil, was opened on the 11th inst. The building was commenced about two years ago, and is in the Perpendicular style. It consists of a chancel, nave, aisles, and side chapel, and a tower at the south-west corner. It is built of Hamhill stone. The walls are made of pitch-pine, while the flooring is composed of solid blocks, with tiled aisles and chancel. The carving has been done by Mr. Harry Hems, of Exeter. There are three panels at the chief altar, with representations of the Incarnation, Crucifixion, and the Entombment of our Lord. The church has already cost over 8,000l. The architect is Mr. J. Nicholson Johnston of Yeovil. The contractor has been Mr. Willard, of Bridgewater, and Mr. Henry Moore, of Frome has been the clerk of the works.

SCHOOLS, LEEDS.—New day schools, which have been erected in connexion with St. Luke's Church, North-street, Leeds, were opened on the 11th inst. The schools have been built on the site of the old system, with the classrooms arranged on either side. There are four class-rooms, each 25 ft. by 20 ft., and two 28 ft. by 20 ft. The central hall is 60 ft. by 28 ft., and at the south end, opposite the entrances, is a raised platform, divided from it by patent swivel partitions, so as to form a teachers' room, or a platform and stage when the schools are being used for theatrical or public purposes. Entrance to the schools is gained by two porches and lavatories, 18 ft. by 10 ft., which are built close up to the Skinner-lane frontage. The building is heated by means of hot-water pipes and coils. The schools have been erected from the designs and under the superintendence of Messrs. Smith & Swedale, architects, Leeds.

NEW CONVALESCENT HOME, GRANGE-OVER-SANDS.—This home is built of local limestone, with red sandstone dressings, and is covered with blue Welsh slates. It is on the pavilion plan, with the administrative block in the centre, and the dormitory and dining room wings on each side of the centre of the letter L. At present only the administrative block and one wing have been built. The accommodation includes a dining hall for seventy persons, day room, 27 ft. long by 22 ft. wide, with a large bay window overlooking the sea, with win dow sills also to the south, and a glazed door leading out on to the verandah and into the grounds. There is a private entrance from the verandah to the front, with entrance hall and dining room on ground floor, and a private staircase to the sitting and three bed rooms on the first and second floors, being connected with the main block on each floor by a glazed door. From the entrance hall the main staircase leads immediately to the first and second floors, well lighted by windows on each landing. There are four dormitories, divided into sleeping compartments by boarded partitions, 7 ft. high, to accommodate 32 men, warmed by a service of hot water pipes, running round each dormitory, passing through each sleeping compartment, and kept at an even temperature. Fresh air is brought in by tubes placed in the external walls. The ventilated air is taken off at the ceiling level into pipe flues built in the walls and carried up to the roof. The cost of the home is about 3,000l., and the contractors for the works are Mr. Enoch Denny, Grange-over-Sands, walling, slating, and plastering; Messrs. Nelson Bros, Kendal, carpenter and joiner; and Mr. Lawrence Airey, Kendal, plumbing, painting, and glazing. Mr. J. Hutton, Kendal, is the architect.

RESTORATION OF CHURCH, NEAR BILLINGBOROUGH, LINCOLNSHIRE.—The church of St. James at Askeby, near Billingborough, which has been undergoing restoration for some time, was reopened on the 8th inst. by the Bishop of Lincoln. The interior of the church has been almost entirely remodelled to plans prepared by the late Mr. James Fowler, of Louth, and since carried out under the superintendence of his son, Mr. R. Fowler. The contractors were Messrs. Walter & Hensman, of Horncastle.

ADDITIONS TO ALLOA ACADEMY.—A new secondary department in connexion with Alloa Academy has just been completed. The building has been erected from plans prepared by Mr. R. Bryden, architect, Glasgow. The new building is two stories in height. Internally the centre is occupied by a rectangular hall, rising through both stories, with galleries round it on the upper floor, and lighted by a glazed cupola and end window. The hall communicates at either side with the entrance doors and staircases for boys and girls, and gives access on the ground floor area and from the gallery to all the class-rooms in the building. The staircases are separated from the hall by arches formed with stone columns and pilasters. The stairs are wide and of easy gradients, and are lined with tiles. Cloak-room accommodation is provided for the entrances for both boys and girls, and a special cloak-room is on the upper floor for senior girls. The accommodation for scholars on the ground floor comprises four separate class-rooms. On the upper floor special class-rooms are arranged for technical education. These comprise a chemical laboratory with

working benches, in connexion with which a balance-room and chemical store-room are provided. Adjoining the laboratory a lecture-room has been planned. The cookery class-room is reached directly from the girls' staircase. The north end of the upper part of the building is wholly occupied by drawing class-rooms and cast-room. There are two teachers' rooms provided in the building. The principal contractors for the different works were:—Mason, Mr. J. Philp, Tillicoultry; joiners, Messrs. A. Mitchell & Son; plumber, Mr. James Philp; plasterer, Mr. J. Walker, Alva; painter, Mr. J. Robertson, Alton.

BAPTIST CHAPEL, BARRY.—Foundation stones of a new Welsh Baptist Chapel were laid at Barry Dock recently. The building will be constructed chiefly of native stone, with red Dean Forest stone dressings. It is designed in the Gothic style, will be 50 ft long and 40 ft wide in the main building, with galleries provided, and will be sufficient to accommodate about 750 worshippers. The designs were prepared by Mr. Jenkin Williams, Cardiff, and the contract for executing the work has been secured by Mr. Jonathan Lewis, Cadoxton.

COTTAGE HOSPITAL, ACTON.—The foundation stone of a cottage hospital at Acton was laid on the 9th inst. by Lady Rothschild. The building has been designed by Mr. C. Bell. The main wards are at each side, one for males and one for females, each containing four beds and a cot, and there will be a room for convalescents, an operating-room, hospital dispensary, accommodation for matron and nurses, and administrative offices. Above will be seven rooms, available as bedrooms or as special rooms for patients.

WESLEYAN CHAPEL, ECCLESFIELD, YORKSHIRE.—Memorial stones of a new Wesleyan chapel at Ecclesfield were laid recently. The new edifice, which has been designed by Mr. H. W. Lockwood, of Sheffield, and is being built by Messrs. J. Mastin & Son, also of Sheffield, will be 75 ft long, with a breadth, at the widest part, of 57 ft, and across the nave of 43 ft. It is to consist of a nave and transepts, with a large organ and choir gallery, and will accommodate on the ground floor and in the gallery, which occupies three sides, 650 worshippers. At the rear are vestries, lavatories, &c. Right and left of a central vestibule are wide stone staircases leading to the gallery, and forming semicircular bays. The cost of the new chapel will be 2,350l.

METAL EXCHANGE, SWANSEA.—The new Swansea Metal Exchange was opened on the 8th inst. The building was designed by Mr. H. W. Wills, and the contract was given to Mr. Thomas Davies, the total cost of the building being 3,500l. The Exchange is built in Queen Anne style, and carried out in red brickwork, with stone dressings. The main entrance is from Fisher-street. The corridor is tiled, and leads into the large Exchange, the inside of which is 50 ft by 40 ft, and 20 ft high, and has a curved elliptical roof. The building also contains two other rooms. The roof is covered with tin plates.

WESLEYAN CHURCH, HULL.—The foundation stone was laid on the 10th inst. of the extension of the Sunday school and church premises of the Coltman-street Wesleyan Church, Hull. A portion of the walls of the old school remains, and also several class-rooms. There is to be a central hall of 50 ft by 37 ft, with a gallery around it. This has been made to accommodate about 750 scholars. The infants' class-room is to be 33 ft 6 in. by 23 ft 6 in., in addition to which there will be a young women's class-room, with a young men's class-room on the first floor the same size. Seventeen class-rooms of various sizes are also provided for. The central hall is made with an open timber roof. Separate staircases are provided for boys and girls. The contract was given to Mr. George Houlton, and amounted to 2,671l., the work being under the supervision of Messrs. Gelder & Kitchen, architects.

SCHOOL, KILSYTH, STIRLING.—The Burgh School Board have agreed to erect a new infant school in the Burgh Academy grounds capable of holding 600 pupils. Mr. Robt. Hay has been appointed architect.

CATHOLIC SCHOOL, LEYLAND, LANCASHIRE.—The memorial stone of the new day school in connexion with St. Mary's Mission, Leyland, was laid recently. The cost of the building will be about 1,000l. Mr. J. A. Seward, of Preston is the architect; Mr. Thomas Jackson, of Leyland, the builder; and the joinery work is in the hands of Mr. James Tomlinson, of Leyland. The school will accommodate some 250 scholars. The building externally is faced with Accrington bricks and Longridge stone dressings.

PARISH ROOM FOR ST. MARK'S CHURCH, ST. HELENS.—Colonel Gamble, C.B., proposes to celebrate the Jubilee in connexion with St. Mark's parish, St. Helens, by presenting the vicar and parishioners with a parish room and caretaker's house, which will cost over 1,500l. Mr. James Gales has drawn plans for the parish room, which is to be erected on the space between St. Mark's Church and the Park Hotel. The contract for the buildings has been secured by Mr. Peter Tickle, builder, for 1,400l.

SOCIETY OF ANTIQUARIANS FOR CHAPEL-EN-LE-FRITH.—It has been decided to form a society in Chapel-en-le-Frith known as the Chapel-en-le-Frith Antiquarian and Research Society. Mr. W. Brailsford Bunting is President of the new Society.

SANITARY AND ENGINEERING NEWS.

EXTENSION OF BERWICK WATERWORKS.—On the 8th inst. the extension of the waterworks at Tweedmouth for supplying Berwick with an increased supply of water was formally opened by the Mayor and Town Council of Berwick. The work, which has been carried out by Messrs. Leslie & Reid, C.E., Edinburgh, has cost about 5,000l., and the daily yield of water now exceeds 4,000 gallons.

WATER SUPPLY, BALLATER, ABERDEEN.—There has just been completed at Ballater the laying of a duplicate water main for the supply of the burgh from the river Gairn. The work has cost 1,000l., and has been carried out under the supervision of Messrs. Jenkins & Murr, Aberdeen.

BRIDGE, KINRAIG, INVERNESS.—On the 12th inst. the new bridge over the Spey at Kinraig was opened. The engineer for the bridge was Mr. Mackenzie, and Mr. Fraser was the contractor.

DRAINAGE & C., BRIGHTLINGSEA, ESSEX.—Colonel W. Langton Coke has just held a Local Government Board inquiry in reference to a scheme of drainage and sewage disposal prepared by Messrs. Thomas & Taylor, civil engineers, of the same name. The amount of the loan applied for is 6,000l. There was strong opposition to the point at which the Council proposed to place the effluent outlet pipe; but at a little extra cost the pipe is to be extended to a more suitable point. The system of sewage disposal to be adopted is that of the Universal Company, Derby.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. F. T. Verity, architect, has removed from 11, Fernside-street, to 7, Seville-street, Beccles, Suffolk. The firm of Messrs. Kierlmeier & Co., manufacturers of sawmill and woodworking machinery, of Leipzig (with branches at Paris, Milan, Moscow, Zurich, London, Manchester, Stockholm, Barcelona, Vienna, Budapest, and Melbourne), has been formed into a private limited company.

POTTERIES, & C., MASTER BUILDERS' ASSOCIATION.—The Potteries, Newcastle, and Beccles branches of the National Builders' Association held their eighth annual picnic recently, the locale selected this year being Matlock, Haddon Hall, and Chatsworth. The members of the Association and friends to the number of 110 first visited Matlock Bath. After lunch, eight breaks were requisitioned, and the party drove to Chatsworth and back by the circular route, passing via Gella and Haddon Hall. At Matlock Bath the party dined. The arrangements for the picnic were made by Mr. James Bowden, secretary. Before leaving Matlock a vote of thanks was accorded to Mr. Bowden for the arrangements he had made, and to the caterers for their services. Mr. James Bowden, in responding, said, in relation to the Workmen's Compensation Bill now before Parliament, it was not that they objected to compensation, but they desired that litigation should be reduced to a minimum. In the Bill they found there were many difficulties which would make litigation so rife that they were afraid that in the future there would not be much peace for builders or men unless there was an alteration. Those matters had been considered, and by the exertions of the committee eight or nine clauses had been passed by the House in a way which he thought would satisfy both employer and employee.

THE JOSEPH THOMSON MEMORIAL.—The memorial which has been erected to Mr. Joseph Thomson, the African traveller, at his native village, Thornhill, in Dumfriesshire, was unveiled on the 8th inst. by Mr. Charles Robert Mackenzie, E.C.B., President of the Royal Geographical Society. The memorial was designed by Mr. Charles M. Brice, sculptor, Edinburgh. It consists of a bronze bust set upon a truncated obelisk pedestal made of red freestone from the adjacent Gatelawbridge quarry, the pedestal being raised on three steps. The front panel is occupied with a bas-relief in bronze representing the figure of Esau displaying a map of Africa, with palm trees, and Mount Kilimanjaro in the background. The south panel bears an inscription. Mr. Thomson's work and exploration is recounted on the north panel.

CARDIFF CORPORATION CONTRACTS AND SUB-LETTING.—At the Public Works Committee of the Cardiff Corporation recently, Councillor Crossman directed attention to the alleged violation of contract by Mr. Symonds in the Liverpool wall contract, the complaint being that he got the coping-stone ready dressed from Messrs. Turner & Sons, and this, it was contended, was a violation of the clause in the contract prohibiting sub-contracting. The Town Clerk had written to Mr. Symonds calling attention to the matter, and in the course of his reply Mr. Symonds stated that he had bought the coping ready prepared. He had also bought the additional iron railings ready-made. If that was sub-contracting it would be sub-contracting to go into a timber-yard and buy a bundle of mouldings or a square of prepared flooring; or to an ironfounder's for a girder or a length of rainwater goods. It transpired that the coping-stone had been dressed in Cardiff, and the Chairman doubted whether this could fairly be described as "sub-letting." Councillor Crossman maintained that the clause would be useless if one builder was permitted to sub-let to another in this manner. A man taking a building contract under the Corporation was required by the

clause in the contract to do all the building work himself. Councillor E. Thomas argued that the object of the clause was to do away with the middleman system, which was a curse and an evil in every way. Councillor Veall moved that the Town Clerk be asked to give his opinion as to whether Mr. Symonds' action was a violation or not of the sub-contracting clause. If it was, then they would know how to act. Councillor Veall's motion was eventually agreed to.

PROPOSED MODEL DWELLINGS, SUNDERLAND.—At a monthly meeting of the Sunderland Town Council, held in the Town Hall, Sunderland, on the 9th inst., the Health Committee recommended that certain amended drawings for workmen's dwellings in what is known as the Hat Case area, be adopted, and that, subject to the approval of the Local Government Board, the architects be instructed to prepare the necessary working drawings, and that the Committee be authorised to arrange to have the quantities taken and obtain the necessary tenders. The Hat Case area is a district which was freed by the Council some three years ago as an insanitary area which should be dealt with under the Housing of the Working Classes Act. The houses on it have been demolished, displacing about 480 people. Alderman Harrison, in submitting the report of the Health Committee, showed that the scheme represented by the drawings referred to in the report provided for the housing of 454 people, but wide streets would be run through the area. There would be three blocks of buildings, one containing sixty two-roomed tenements, to let at 3s. 6d. a week, a second containing twenty-four three-roomed tenements to let at 4s. 3d. a week, and twelve one-roomed tenements to let at 2s. a week; and the third containing eleven two-roomed tenements to let at 3s. 6d. a week, and one one-roomed tenement to let at 2s. a week. The recommendation of the Committee was adopted.

TRAMWAY SCHEME, HALIFAX.—Colonel C. H. Luard, R.E., Local Government Board Inspector, held an inquiry at the Town Hall, Halifax, on the 9th inst., in respect to an application from the Corporation for sanction to borrow a sum of 10,300l. for purposes connected with the electric tramway scheme, and 1,633l. for the purposes of street improvements. Mr. Wilmshurst, engineer, submitted plans showing the route of the mains which it is proposed to lay up Horton-street from the railway station, Ward's End, Commercial-street, George-street, Bull Green, King Cross-road, King Cross-street, Silver-street, a portion of Crown-street, Swine Market, Gibbet-street, and up to Highwood Well. The Borough Engineer (Mr. Escott) gave the particulars with respect to the proposed improvements which were to take place in Lister-lane, Shay-lane, Gibbet-street, and Thrum Hall-lane.

STATUE, WEST HARTLEPOOL.—There has just been unveiled in Church-street, West Hartlepool, by the Marquis of Londonderry, K.G., the bronze statue of the late Mr. Ralph Ward-Jackson, the first M.P. for the borough. The statue was designed by Mr. Onslow Ford, R.A., and is of bronze, 8½ ft. in height. It was cast by Messrs. Rovini & Pavanotti, London. The figure is in an oratorical attitude, standing upon a 7-ft. pedestal of Portland stone.

The square is adorned with bronze shields. **A POLYTECHNIC FOR HACKNEY.**—Under the presidency of the Lord Chief Justice, Lord Russell of Killowen, a meeting was held on the 17th inst. at the Hackney Town Hall, under the auspices of the Vestry of Hackney and the Technical Education Board of the London County Council, to consider the steps to be taken for the establishment of a technical institute for Hackney. Mr. G. B. Holmes moved the first resolution, which recognised the obligation which lay upon the community of Hackney to give its workers the most efficient scientific and technical training possible in order to equip them most fully for their duty in life, and pledged the meeting to promote the foundation of a Technical Institute or Polytechnic Institute in Hackney. In the course of his speech Mr. Holmes mentioned that it was calculated that 12,000l. would be required to start the Polytechnic. The motion was supported by Sir A. Scoble, M.P., and passed unanimously. A number of other gentlemen addressed the meeting, and resolutions were adopted providing that a public subscription should be started and a committee appointed.

LIVERPOOL. SECTIONS IN ARCHITECTURE AND APPLIED ARTS.—The annual exhibition of selected works done by the students of the City of Liverpool School of Architecture and Applied Arts during the past session was opened recently in the Applied Art Building, University College. The exhibits include architectural drawings and designs by first and second year men and more advanced students, modelling from the life, designs for fabrics, wall-papers, book-plates, stained glass, posters, &c., and many sketches submitted for the Sketch Club competitions. There are some specimens of wood-carving, and a few examples of wrought iron work. The department of architecture is under the direction of Professor Simpson, the principal of the schools. As regards the department of modelling and sculpture, the main feature is the prominence given to direct study from the life. The following is the list of prize-winners.—Modelling from the life (Telephones): 1, A. H. Griffiths; 2, J. H. Morcom. Head from life: 1, C. Grosfield. Panel design: 1,

A. H. Griffith; 4 W. Webb. Panel design (special prizes): 1, R. Murray; 2, F. Vassett; extra prize, G. Shaw. Cast: 1, T. Rowan; 2, H. B. Bar. Drawing from the life (day): 1, L. Crossfield; (evening): 1, A. Jenks. Drapery: 1, R. Warrington. Set of designs: 1, C. A. Walker, who also shows some plates, &c., designed and made by her for the Della Robbia Company; 2, E. Jackson. Design (evening): C. E. Prescott. Design of ornament: 1, M. Carline; 2, J. Williams (extra prize). R. Roberts. Wrought iron: 1, E. Barstow and J. Lowe (equal); 2, H. Vogt. Junior: 1, W. Hawthorne. The prizes in the architectural department have not been awarded, the session in that subject being still in progress. Some additions will be made to the classes of the school next session, which commences on October 21. Amongst others, Mr. R. L. Rathbone will hold a class in copper and brass work.

PUBLIC IMPROVEMENTS, KEIGHLEY.—On behalf of the Local Government Board, Colonel John Ord Hasted held an inquiry on the 15th inst. at the Council Chamber, Keighley, into the application of the Companies Act, 1862, to borrow for the improvement of 500 ft. Amongst those present were Mr. W. M. Hopkinson, Surveyor; Mr. John Laycock, Gas Engineer; and Mr. Geo. Burr, Town Clerk. The Highways and Streets Improvement Committee sought borrowing powers in respect to an estimated expenditure of 39,597l. upon improvements in North-riding and street-widening on Broadford-road to Aireworth, together with the erection of a girder bridge. The Gas Committee applied for 10,650l. in order to enlarge the two holders at Thwaites, and thus increase their storage capacity from 1,440,000 cubic ft. to 2,386,000 cubic ft.

THE LOWER CHURCH OF GLASGOW CATHEDRAL.—A meeting, convened by Mr. P. Macgregor Burns, architect, in the Lower Church of Glasgow Cathedral, on the 8th inst., for the purpose of examining the plan and vaultings. Mr. Chalmers said that it was desirable in the interests of students of art and history that the plan and the vaulting of the Lower Church should be thoroughly examined by men sufficient in number and of recognized talent. The subject was first brought before the public notice by Mr. T. L. Watson in a paper which he read on November 18, 1895. He (Mr. Chalmers) had criticised that paper before the Archeological Society in April last, but it was thought by many that the present meeting ought to be held. Mr. Watson's main point was that the centre aisle of the Lower Church was intended in the original design to be formed into three narrow aisles by two rows of pillars, and that such was the case he held to have "demonstrated beyond the possibility of doubt." The lecturer held that such a plan possessed no constructive or artistic merit, and he thought it was unlikely to have occurred to the designer of the beautiful cathedral. The span of the side aisles was 11 ft. 8 1/2 in. According to his newly invented plan the span of the three centre aisles would require to have been only 5 ft. The east end of the church being divided into four compartments, the junction of this part of the design with five aisles on the west would have been most objectionable. Moreover, in Mr. Watson's plan the peculiarly significant feature of the shrine of Saint Mungo was utterly forgotten. Mr. Chalmers then proceeded to show that Mr. Watson's attempt to group the various sections of mouldings, and to assign dates to these groups, was fallacious. Mr. Watson also omitted to refer to the mouldings of the pillars, which ought, according to his own theory, to have advanced as well as the mouldings of the arches. Nor was his theory of the demolition of the old choir, and the method described as having been followed in the erection of the structure, in accordance with the evidence to be actually found in the building. The stones at the springing of the vaulting ribs above the capitals of the pillars of the north aisle were then minutely examined. Here Mr. Chalmers did not rely on his own statements. By his request Mr. David McGibbon, Mr. Campbell Douglas, and Mr. Peter Anderson, builder, made an examination in presence of the company. Where Mr. Watson had stated that the moulding was of later date and an insertion in the older work the examiners agreed that they belonged to the original masonry. It was found that mouldings which were said to have been removed had never really existed. It was also found that the slight imperfection in the direction of the vaulting ribs was most apparent at the very spots where, were Mr. Watson's plan correct, no imperfection would have been present. Where Mr. Watson's theory had been followed for about 200 years and certain vaulting ribs introduced as afterthoughts, the examination showed that the ribs were part of the original structure, designed for when the very walls were being erected. Mr. Watson's suggestion that the middle windows of the Lower Church had been left incomplete in order that the stonework for the whole structure should be brought in was also held to be fallacious. Every thing pointed to the west end as having been the direction from which the stonework came.—Mr. David McGibbon moved a vote of thanks to Mr. Chalmers. There now remained no doubt that the beautiful Lower Church existed at present as originally designed by the great architect who had planned the Cathedral. Sir Henry Barry seconded, and the vote of thanks was agreed to.—*Glasgow Herald*

WOOD-CARVING EXHIBITION IN NORTHAMPTON.—The annual exhibition of the work of the students of the various wood-carving, &c., classes, held under the auspices of the Northamptonshire County Council, was held at the Northampton and County Modern and Technical School recently. Classes are now held at ten centres in the county, as follows, the figures in parentheses indicating the number of years the class has been in existence.—Towcester (1), Long Buckby (3), Earls Barton (3), Watford (1), Woodford (1), Broughton (1), East Haddon (2), Desborough (3), Easton-on-the-Hill (3), and Higham Ferrers (2), the subjects taught being wood-carving and woodwork, including joinery. All the above centres were represented at the exhibition.

BIRMINGHAM AND MIDLAND INSTITUTE ARCHEOLOGICAL SECTION.—On the 12th inst., a party of members of the archeological section of the Birmingham and Midland Institute and their friends visited The Nash, the seat of Sir Richard Temple, Bart. After reaching Worcester a drive of six miles brought the company to their destination, where they were received by their host. The house presents the appearance of a delightful ivy-clad Elizabethan minor house, and the great part of it would be correctly so described. But the original mansion must be of much earlier date, as may be seen by the enormous thickness of the wall in certain places—capacious closets being actually enclosed in them. Several of the rooms are of great interest, being practically unchanged since the days of Shakespeare, and in the great hall is particularly conspicuous. The old Elizabethan oak panelling, which, after being painted most of the colours of the rainbow, has been carefully restored to its original simplicity by the present owner, is yet more recent than the singularly fine ceiling in elaborate plaster work, and the books for supporting the tapestry, which the Duke of Devonshire discovered in the course of recent renovations. The ornament is an elaborate and beautiful religious subject, apparently Italian. The hall is also a very fine room, and there are peculiarities in the domed ceilings of two apartments and in other internal arrangements which are deserving of careful study. The bedrooms are delightfully quaint, unsuspected in shape, prodigal of unlooked-for corners, and suggestive of perfect comfort.—*Birmingham Post.*

ACCIDENTS TO CARPENTERS.—Two serious accidents occurred on the 14th inst. to carpenters engaged in the erection of stands to view the Jubilee procession. The first case was that of William Martin, who was engaged carpentering at King's College Hospital, in Finsbury-churchyard, He suddenly slipped and fell, and before he reached the ground was bounced from one piece of scaffolding to another, which caused injuries of a serious character. He was at once attended to by two members of the St. John's Ambulance Association, and afterwards removed to St. Bartholomew's Hospital, where he now lies in a precarious condition, he having broken his left arm, besides injuring his head. The second case was that of George Tucker, who was working on the grand stand being erected outside St. Clement Danes Church, in the Strand. He missed his footing and fell to the ground, a distance of over 40 feet. When taken up he was found to be unconscious, and was at once removed to King's College Hospital on an ambulance.

EXTENSION OF ELECTRIC LIGHTING IN LIVERPOOL.—The Lighting Committee of the Liverpool Corporation met on the 11th inst. in the Municipal Buildings, Dale-street, when it was decided to extend the electric mains to Granby-street at a cost of 387l.; to Park-road and Cornhill, at a cost of 377l.; to Oxford-street, at a cost of 187l.; and to Smithdown-road, at a cost of 60l. The Municipal Electrical Association wrote that they propose visiting Liverpool on July 1, and intimated their desire to inspect the electric lighting arrangements in the city. Permission for this purpose was granted.

THE SIDDON'S STATUE.—The ceremony of unveiling the white marble statue of Mrs. Siddons on Paddington-green, within a short distance of her burial place, was performed on the 14th inst. by Sir Henry Irving. The statue has been modelled by Messrs. Farmer & Brindley after a design by the French sculptor, M. Chavalland.

THE PARKS AND GALLERIES COMMITTEE OF GLASGOW.—The Parks and Galleries Committee of Glasgow Town Council, to whom remits were made regarding the proposed Exhibition in 1901, met on the 14th inst., and agreed that, after the guarantee fund amounted to 50,000l., steps should be taken to form an Exhibition Association to carry out the project.

WINDY, FLEX BOURTON CHURCH, SOMERSETSHIRE.—A stained glass window has just been placed in this church. The design consists of three figures—St. John, St. Peter, and St. James—each depicted with his respective emblem. The window is the design and work of Messrs. Joseph Bell & Son, of Bristol.

CAPITAL AND LABOUR.

THE THREE TOWNS' BUILDING STRIKE.—The position of affairs in this strike is practically unaltered. The Master Builders' Association have considered the request of the Labourers' Strike Committee that deputations from both bodies should meet with a view to a settlement. The

Association, however, came to the conclusion that no purpose could be served by such a meeting, as they were not disposed to make any concessions to the men, there being no lack of labourers in the town. It was also resolved, at the request of the Carpenters' Society, to permit a deputation from the Association to attend a meeting of the general body of carpenters, and also to receive a deputation from the society at a meeting of builders to clear up any points in the dispute that may be at present misapprehended.

THE STRIKE OF TYNESIDE STONEMASONS.—A meeting of the members of the Newcastle, Gosforth, and District Operative Stonemasons' Society was held at the Lovaine Hall, St. Mary's-place, Newcastle, on the 11th inst., Councillor W. Flynn presiding. "One of the audience moved: 'That we resolve to stand fast by our original demand for the shortening of our working hours, believing that it is made in the best and highest interest of trades unionism.' This having been seconded, Mr. W. Fisher gave a resumé of the dispute, and mentioned that for the past twenty-two years no financial progress had been made. There were seventy-one men in England where the men worked less than thirty hours a week. The local employers had refused to meet the masons with a view to considering the case. Although the Association was "unanimous in refusing the men's demands" at least seven prominent members of the Association had agreed to the demands of the men, and their employees were not at work. Only 100 men were now out on strike. That the men were sincere in their demand for an eight hours' day was shown by the fact that they would be sacrificing 4s. 15d. a week in wages by the change. The men had sufficient funds in the Society to last them the whole of this year, so they could not be beaten in a day or two. The proposition was carried. The meeting also expressed itself in favour of a proposition to "leave" themselves for 3s. a week in order to aid those who were out of work.

THE DISPUTE IN THE OXFORD BUILDING TRADE.—In the absence of any satisfactory settlement of the recent dispute between the builders in Oxford and the carpenters and joiners the men ceased work recently. The demand of the employees is for an increase of wages, from 7 1/2d. to 8d. per hour, and further desire the signatures of the builders to the code of working rules fixed by the late Conciliation Board. The rules were signed by many employers at the time of their adoption, but the contract then entered into between the contending parties has long since for some cause come to an end, and it is now sought to again put the rules in force. Owing to contingencies that have arisen in the interim there is no longer any combination or organisation amongst the builders, and the Master Builders' Association, formed at the time of the inception of the Conciliation Board, has been allowed to die a natural death. The men maintain that the code of rules agreed upon by the Amalgamated Society of Carpenters and Joiners and the General Union of Carpenters jointly constitute a fair basis of agreement between the parties and that they are of a similar character to those usually existing in other centres of the building trade. On the other hand, so far as we have been able to ascertain, the position of the masters, or at least the majority of them, is that they decline to concede the union of Carpenters reserve to themselves the right to deal individually with their employees and hence the deadlock. It is said that the builders also have strong objections to the principle of a uniform or standard rate of wages. The number of men out on strike is said to be about 120, twelve only of whom have yet left Oxford for work in other towns, although the men claim that the reason more have not sought employment elsewhere is the prospect which they feel there exists of an early and satisfactory settlement of the matter.—*Jackon's Oxford Journal.*

THE CARLISLE JOINERS' STRIKE.—The joiners' strike in Carlisle has terminated. Six weeks ago the men came out for an advance of three farthings an hour and a reduction of the number of hours of work to the extent of four per week in summer and seven in winter. A meeting of the Masters' Association was recently held in the Viaduct Hotel, and a deputation from the men were present. It was finally decided to grant the men the reduction of hours asked for, and an advance of one-halfpenny per hour.

LEGAL.

BUILDERS AND ARCHITECTS.

His Honour Judge Waddy, Q.C., had before him in the Sheffield County Court on the 11th inst., an action which had been remitted from the High Court. Plaintiffs in the case were Moorwood, Sons and Co., ironfounders, of Harleston Works, Sheffield, and defendants George Longden and Son, builders and contractors, Neepsend, and the action was brought to recover 54l. 18s. 3d. the price of goods, consisting of shoves and lead weights, sold by plaintiffs to defendants. The plaintiffs were represented by Mr. Waugh, barrister, of Bradford (instructed by Clegg and Sons) and Mr. T. E. Ellison (instructed by Alderson, Son and Dust) represented the defendants.

Mr. Waugh, in opening the case, said, on September 6, 1895, Messrs. Longden & Son, the defendants, entered into a contract with the Chairman and

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Table with 4 columns: Nature of Work, By whom Advertised, Preliminary, Designs to be delivered.

CONTRACTS—Continued.

Table with 4 columns: Nature of Work or Materials, By whom Required, Forms of Tender, &c., Tenders to be delivered.

CONTRACTS.

Table with 4 columns: Nature of Work or Materials, By whom Required, Forms of Tender, &c., Tenders to be delivered.

PUBLIC APPOINTMENTS.

Table with 4 columns: Nature of Appointment, By whom Advertised, Salary, Applications to be in.

Those marked with an asterisk (*) are advertised in this Number. Competitions, iv. Contracts, pp. iv, vi, viii, & xix. Public Appointments, pp. xvi, & xix.

Weekly Board of the Sheffield Royal Hospital for the erection of certain buildings in connection with the extension of the hospital.

Mr. Elison, on the other hand, first contended that the defendants were not directly liable for the goods.

Mr. Charles Hadfield, architect for the alterations and extensions in connexion with the Royal Hospital, said he ordered the goods as the architect,

His Honour: Then who do you consider ought to pay for the goods in the case, for you ordered them?

Witness: Well, if you look at it as a strict matter of business, I ought to pay, but I have already expressed that I ordered the goods as the agent of the Royal Hospital authorities.

His Honour: So do I think you ought to pay. Witness: But that would not be at all fair to the

architect to make him pay for the goods he ordered as an agent. Of course, it would not make a penny difference to him, but he takes this course because it is the customary one, and if the principals ordered the goods direct they would often get a lot of rubbish which the architect would not have.

Mr. Elison, for the defence, urged that there was no agreement on the part of his clients with plaintiffs to pay for the goods, and such an undertaking must be proved if plaintiffs were to succeed in the action.

Mr. James Longden, head of the defendant firm, said a clerk from plaintiffs' firm came to the office and said he had a certificate. Witness directed him to go to the cashier, and personally he did not see the certificate.

His Honour, in giving judgment, said on previous occasions and in other places he had felt called upon to express his astonishment that in these days of enlightenment, contractors and builders should be such stupid and absolutely helpless people as to give themselves up with their throats wide open to be comfortably and happily cut by the architects by whom they were bound.

On the other hand the architects argued that this was the only way in which building operations could be carried out, and that it was necessary to have absolutely unfettered discretion in some one man's hands, so that he could exercise his brains when any unforeseen change or contingency in the course of trade took place.

MEETINGS.

FRIDAY, JUNE 18. Carpenter's Hall, London Wall.—Examination in Carpentry and Joinery. 9.30.

SATURDAY, JUNE 19. Carpenter's Hall, London Wall.—Examination in Carpentry and Joinery. 2.30. Edinburgh Architectural Association.—Annual Excursion: Visit to (1) Linlithgow Palace, (2) St. Michael's Church, (3) Kinmel House, (4) Bonhard House.

RECENT PATENTS:

- 10,659.—LAVATORY BASINS, BATHS, &c.: F. C. Lynde.—In order to obviate the foul condition caused by accumulation of soap and dirt at overflow and upper ends of waste pipes, inventor dispenses with ordinary plug and overflow pipe and adopts a pipe of a sliding character, fitted with a lavatory basin which will perform the function of waste overflow pipe, the plug being adaptable. 11,384.—CHIMNEY POTS: G. W. Taylor.—Inventor adopts a top conical tube and lower down, two belts of outer casing with a number of holes round bottom. Inside there are two conical tubes. Chain is for holes and arrangement of belt. 12,229.—STAIR FLOORING: M. Logan.—Inventor claims a flooring consisting of bricks (formed of any material) utilised end-wise and arranged in rows, drainage channels formed between such rows and spaces communicating with such channels; also an improved brick, consisting of upper and lower independently, downwardly tapering portions, upper side edge of such brick being rounded. 13,570.—MEANS FOR HOLDING AJAR DOORS, CASE-SHUTTERS, &c.: W. Griffiths.—Inventor adopts a sliding nut or bolt extending downwards from latch of door, &c., and terminating in a spike, &c. This is pressed to floor by a spring, and being connected with the latch spindle is raised clear on releasing the catch. Some modifications are described. 4,779.—DEVICE FOR EASILY SECURING BOLTS, SHANKS &c., IN WALLS: P. Le Hite.—Bolt or Shank has a stationary nut, with movable nut, and two or more sleeves arranged between the nuts, surround the bolt, and have their adjacent ends oblique to their axis. 5,838.—DOOR LIFTING APPLIANCES: C. R. Miller.—In order to lift doors for oiling hinges, &c. Inventor adopts a combined Door-lifter and holder appliance provided with a swinging, lift-limiting prop, a roller-like bottom block, a metal foot or under-grip, a treadle block and a shore, united in such a manner as to be freely movable. NEW APPLICATIONS FOR LETTERS PATENT. MAY 21.—13,367. W. Brayshaw, Window or Sash Fastener.—13,371. W. Brayshaw, Window or Sash Fastener.—13,372. T. Smith and T. Parker, Brick-making Machines.—13,393. H. Deacon, Sash Fastener.—13,398. A. James, Window

FASTENERS.—13,432, S. Lockhart, Locks or Fastening Devices.

JUNE 1.—13,432, R. Harrison, Securing Window Sashes.—13,492, E. Thorpe, Window Preventers for Sliding Windows.—13,497, W. Gibson, Sash Fasteners.—13,499, T. Rowland, Sash Fastener.—13,505, H. Alexander, Measuring and Mixing Sand, Cement, &c.—13,508, A. Parry, Sash Fasteners.—13,512, J. Lippincott, Disinfecting or Perfuming the Air of Water Closets, &c.—

JUNE 2.—13,555, C. and W. Gowland, Hinges.—13,557, A. Jordan, Chimney Top or Ventilator.—13,565, J. Abel, Roof Glazing.—13,592, J. Holden and S. Woods, Embossed or Raised Paper for Covering Wall, &c.—13,569, W. Kirkland and K. Mathers, Tool Grinding Machines.—

JUNE 3.—13,654, E. Walker and G. Horner, Movable Partitions, Sliding Doors, &c.—13,674, J. Mecker, Window Frame and Balances for Sashes thereof.—13,675, J. Langston, Case for Doors, Windows, Fireplaces, &c.—13,680, D. Ross, Sash Fastener.—13,681, J. James, Sash Fastener.—13,686, A. Bryant, Sash Fastener.—13,704, W. and A. Hiron, Fasteners for Sashes.—13,706, H. Norval, Window Fastener.—13,707, Y. Courcier, Sash Fastener.—

JUNE 4.—13,772, J. Duckett & Son, Limited and J. Duckett, Water-Closets.—13,790, E. Morgan, Window Sash Fastener.—13,791, J. Hargrave, Working Stone, Marble, Granite, &c.—13,812, J. Nicholls, Fireplaces or Stoves.—

JUNE 5.—13,830, R. Dale, Brick.—13,842, G. Bryant, Laid and Secured Fastening Devices.—13,845, W. Doffle and F. Fellos, Constructing Glass Windows, Illuminated Devices, &c.—13,922, W. Lake, Drying Bricks.

PROVISIONAL SPECIFICATIONS ACCEPTED. 6,239, W. Phillips, Combined Stay and Fastener for Sliding and Reversible Windows.—9,465 and 9,466, J. K. Kaiser and J. Willard, Door Fastening.—9,843, S. J. Simmons, Flushing Clusters and Water Waste Preventers.—10,277, A. Henderson, Fixing Sashes.—10,297, A. Weston, Sash Fasteners.—10,317, A. W. Wydon, Artificial Stone.—

COMPLETE SPECIFICATIONS ACCEPTED. Open to application for two months. 14,113, L. Weiss, Bricks for Flat and Cylindrical Structures.—14,657, H. Lawson, Portable Houses or Structures.—15,688, R. Evered, Water-Closets.—16,827, G. Clark, Stone Dressing Tools.—16,831, C. Conder, Fixing of Door Handles.—16,901, A. Barker, Lock for use in Fastening Sliding Doors and Windows.

SOME RECENT SALES OF PROPERTY: ESTATE EXCHANGE REPORT. June 1.—By J. C. PLATT (of Hammer-street), Shepherd's Bush.—Blonfield rd., a block of building land, 12 to 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, 83, 85, 87, 89, 91, 93, 95, 97, 99, 101, 103, 105, 107, 109, 111, 113, 115, 117, 119, 121, 123, 125, 127, 129, 131, 133, 135, 137, 139, 141, 143, 145, 147, 149, 151, 153, 155, 157, 159, 161, 163, 165, 167, 169, 171, 173, 175, 177, 179, 181, 183, 185, 187, 189, 191, 193, 195, 197, 199, 201, 203, 205, 207, 209, 211, 213, 215, 217, 219, 221, 223, 225, 227, 229, 231, 233, 235, 237, 239, 241, 243, 245, 247, 249, 251, 253, 255, 257, 259, 261, 263, 265, 267, 269, 271, 273, 275, 277, 279, 281, 283, 285, 287, 289, 291, 293, 295, 297, 299, 301, 303, 305, 307, 309, 311, 313, 315, 317, 319, 321, 323, 325, 327, 329, 331, 333, 335, 337, 339, 341, 343, 345, 347, 349, 351, 353, 355, 357, 359, 361, 363, 365, 367, 369, 371, 373, 375, 377, 379, 381, 383, 385, 387, 389, 391, 393, 395, 397, 399, 401, 403, 405, 407, 409, 411, 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MANCHESTER.—For extension and alterations at the Hospital of Consumption, Bowdon, Cheshire. Mr. W. Cecil Hardy, architect, Manchester. Quantities by Mr. C. Jackson, Brazenose street, Manchester.—

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 Plumbing—J. McNair, Morecambe 89 0

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 James White 109 late 26,198 0 0

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 A. & B. Hanson, Southall* 226

HAREWOOD TERRACE.

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 K. Bowen 2,650 0 0
 G. F. Smith & Sons 2,428 0 0

J. H. & J. Cashmore, £2,924 0 0
 E. Tallis, Warwick, £2,222 0 0
 [Architect's estimate, £2,935]
 * Accepted.

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John Rogers £1,050 0 0
 S. Moss 987 0 0
 R. S. Roberts, Brough R. Williams 954 0 1

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JUNE 26, 1897.

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National Museum, Amsterdam.—Dr. Cuypers, Architect	Double-Page Ink-Photo.
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The Jubilee from a Decorative Point of View.



OR two or three weeks previous to the 22nd, London, or that portion of it which was on the line of route of the procession, assumed the appearance of a huge carpenter's shop.

As far as the erection of stands only interfered with ordinary shop front architecture there was no particular objection to be made; people might do what they liked with their own; but it is rather a question whether the building up and disfiguring of churches and public buildings with huge masses of staging was altogether the way to beautify the city or to improve its public buildings. The architectural effect of St. Paul's was entirely spoiled for the time being by the temporary erections which clung round it. The National Gallery showed only half its height above a huge tier of wooden seats; the portico of St. Martin's suffered even more, and was, in fact, almost lost to view; and St. Clement Danes was as badly treated. Independently of the question of loss of effect from thus masking some of the principal buildings and destroying their proportions, there comes the perhaps more serious question of the chance of permanent damage to the stonework. It is to be hoped that no serious injury to any of them will have resulted, but we shall be surprised if some of them do not show more or less sign of the stonework having been knocked about to a perceptible extent. If we are to have any more such shows on a grand scale, it is a point to be considered whether public buildings which are national property and are of more or less architectural value ought to be made use of as *points d'appui* for the erection of staging, to say nothing of the possible danger to them from fire in massing such a quantity of inflammable material around and against them; and also (since one object on such occasions is to present the city in its best aspect) whether the result is not a disfigurement which it would be better to avoid in future. It seems pretty clear that there was no real necessity, even in view of sightseeing, for some portion of this work; for there can be

little doubt that, in the matter of special seats to view the procession, the market was overstocked, though (as it proved) not quite to the extent that many people supposed before the day arrived.

From the carpenter's shop stage London passed, during the two or three days previous to the show, into the upholstery stage. The result was brilliant and picturesque as a whole; dingy London scarcely knew itself with such an amount of colour about; but one can hardly say that there was much that was very effective or original in the individual treatment of the fronts. We do not, however, hold with those who advocate the adoption of a general scheme of decoration imposed by authority, and to which individual tastes should have given way. For one thing, it would be too vast an undertaking for authority to carry out; and it would be unreasonable, and an interference with the liberty of the subject, to have expected or compelled house-owners to spend their own money in decorating their premises under compulsion and not according to their own taste. It may also be urged that the element of individuality in the decoration of private premises has an interest of its own. The carrying out of a general scheme must be limited to the public portion of the thoroughfare.

As far as this latter portion of the decoration went we have certainly improved of late years, though we have still something to learn in these matters from Paris and even, strange as it may seem, from Berlin. Our authorities have discovered what an unflattering source of picturesque and jubilant effect is to be found in the erection of standards of some kind or another at equal distances, with garlands festooned from one to the other. What are called Venetian masts are as good in this way as most things: they have a gay effect, and they are entirely in good taste. Thus in this respect the Strand portion of the public decoration was perhaps the most satisfactory; at all events there could be nothing to find fault with in it, at least as far as the masts and garlands went. The more ambitious efforts in other places were not all successful. Along Piccadilly the ornamental standard posts broke out into a kind of ornament at the top which was somewhat flimsy and commonplace in character, pretentious without being really decorative. Across the road in front of the National

Gallery, and in the western portion of the Strand, the genius of some one had devised a very bad kind of cross erections or triumphal lintels (shall we call them), in which the most prominent feature was a kind of finial in a shape approaching a fleur-de-lis, with three coloured balls on it, and a triple group of coloured balls at the side of this; the whole unfortunately suggesting a pawnbroker's sign upside down. We do not know whether there is any symbolism in this triple-ball arrangement; from a decorative point one can only say that, whoever was responsible for this effort in decoration, it was not a happy one. At the top of St. James's-street there stood on each side of the roadway a great built-up Corinthian column with a gilt capital. These columns (the "Jachin and Boaz" of the day) seem to have been erected under the desire to put something large and striking there, without any notion what to do with it. The columns, seeing that the erections were in that form, should at least have carried something; as they stood they looked perfectly unmeaning, and as it they were portions of a design for a triumphal arch, or something of that kind, which had never been finished. Even a statue on the top would have been better than nothing. But the fact is they should not have been in column shape at all; they were evidently intended merely as striking objects to flank the entry to St. James's-street, and should have been designed in something more of the obelisk form—something which was obviously not designed to carry anything, but to be sufficient unto itself. There were, by the way, two more of these columns at the bottom of the street, looking still more unmeaning from the fact that they did not properly face each other, the easternmost one being set at an angle of 45 deg. with the corner building. Were these official efforts, or the combined taste of the clubs of St. James's-street? The whole street looked glorious with a crowd of garlands stretching across it, leaving it like a kind of elongated bower or arcade of greenery, when seen in perspective. Whether the tee-to-tum birds spinning round under the garlands were any improvement may be a question.

On coming eastward of "The Griffin" there was to be noticed a considerable improvement in the design of the standards for carry-

ing the garlands, they were much less commonplace than those along Piccadilly, and showed a good deal of elegance of design and detail. Those in Ludgate Hill, where the Indian Empire was symbolised by bracketed posts, carrying each a gilt silhouette figure of an elephant and palm, were effective and rather novel. London Bridge looked very well with its festoons from end to end above the parapet. In the Borough the simpler class of Venetian masts again prevailed, but St. George's Circus, between the Borough-road and Westminster Bridge, showed one of the most effective bits of decoration on the route, long festoons being carried from all sides of the circus and secured to the top of the obelisk in the centre, thus bringing the whole space into one design.

As to the street fronts, in which, as before observed, upholstery ruled for the most part, one cannot say that there was much of novelty or inventiveness in the decorations, and where there was, it was not always of the best kind. One house in Piccadilly attempted a *tour de force* by means of metal-faced spiral colonnettes and an arcade, accompanied by draperies, but the result was more prominent than satisfactory. Some of the best results were obtained, as at the Albemarle Hotel, by simply festooning the lower portion of each window with coloured textiles; in the case of the hotel the colour scheme was rather delicate and the effect very bright and festive. Generally speaking the taste seems to have been for strong reds set off with yellow or gold, which is a somewhat commonplace combination. Occasionally a well-meant effort at an original and harmonious scheme of colour was spoiled by a failure of balance. In one of the smaller house fronts in Piccadilly, not far from Hyde Park Corner, we noticed the day before the procession a very effective scheme of colour in a completely-draped front, (with the name of Storey as decorator) in which rich orange hangings played a considerable part, contrasted by a rather dark heavy green in the balcony fronts. The effect was very good but somewhat sombre; it was evidently intended to do something more with the green balcony fronts, but on the procession day this "something more" consisted in hanging Indian or Persian rugs over them, leaving the green partially showing, and this spoiled the effect; the rather dark though rich patterns of the rugs did not give a bright enough effect. If those balcony fronts had been enlivened with something white—not too much of it—this could have been chronicled as the success of the day in upholstery decoration. On the whole the conclusion was that while we have improved in our notions of street decoration as far as the public way is concerned—the portion carried out by public authority—in the draping and decorating of residences on such occasions there is a great deal of room for improvement, and little was to be seen which was really of artistic value, the main idea in most cases being, apparently, to get as much stuff as possible on the building and let Providence take care of the colours. In one or two instances (one on a brick house in the Borough) the idea was to cover the whole wall bodily with a diapered stuff and use this as a *fond* for the details of the decoration, but the result was hardly worth the trouble it must have cost. No was much to be said for the inscriptions,

except in respect of their loyalty. An occasional quotation from Tennyson came in well and appropriately, but there was not much of this higher element. "Victoria Reg. et Imp." has not a very inspiring effect. In two places, in Parliament-street and in the Borough, the rather mild cricketering joke of "60—not out," was thought worth emblazoning; this hardly comes under the domain of "happy thoughts."

Considering that there were to be illuminations by night as well as decorations by day, it is curious how very few of the decorators seem to have given any thought to providing something that would be equally successful under both aspects. The Palace Theatre of Varieties, for instance, made a splendid show by day, but was sombre enough at night, and in fact hardly conveyed the idea of being illuminated. The Bank of England stood almost alone in its provision for equally good decorative effect both by day and night. We have already referred to the design. The glass bucket lamps used being white, produced quite a pretty effect as festoons by day, and a still better one at night; the reveals of the windows were also lined out, and a large Greek anthemion ornament emphasised the angle of the building towards the open space at the Mansion House. The merit of the design consisted in its severe and restrained character; nothing was overdone, and every detail had its effect; and though a good deal of the lighting did not follow the actual lines of the building, the spacing and arrangement of the festoons all had reference to the architectural divisions. A study of the illuminations suggested some considerations as to the treatment of architecture in illumination. In any building of architectural importance, bringing out the main lines of the building by lines of lights is one of the best and most effective methods of illuminating, though it has the drawback of being somewhat costly and taking time to carry out. It is a great deal simpler to buy or hire big letters and crowns and emblems, either in gas or in glass to be lighted behind, and fix them up; but this kind of thing soon palls upon one, and in fact the illuminations along Piccadilly and St. James-street were not the least worth the struggle among a noisy crowd which one had to go through to see them. It was fully expected, by the way, that the festoons across the street would be lighted up at night (there were lamp-glasses on them), and a good deal of disappointment was expressed at the failure of this; it would have had a beautiful effect, really worth seeing. The Institution of Civil Engineers, which reserved itself for the illumination and made no decorative show during the day, adopted the architectural principle with good effect, lining out the upper and lower cornice; and an effective scheme of the same kind was carried out at the offices of the London and North-Western Railway Company at the corner of Piccadilly and Bridge-street. But it was around the Mansion House that the architectural principle of illuminating was best seen; in the Mansion House itself, in the Exchange, in the Bank (as already mentioned), and in the Liverpool London and Globe Insurance Offices, which produced an excellent effect by lining out their windows and introducing a double festoon of lights at the level of the first-floor string. But it is necessary to remember that devices which

look quite natural and right by day may fail at night from not showing as they were expected to show. The device of wreathing columns spirally with lights, as at the Mansion House, is one of these. It looks all right by day, but it is forgotten that at night the columns themselves can hardly be seen, and the spiral seems twisted round nothing, and does not explain itself. There was a failure of the same kind at London Bridge. By day the festoon lines of decoration looked well enough (though with the defect that the festoons were too short and numerous for the best effect); but when the lamps were lighted on the festoons there seemed nothing for them to hang from, and one only saw a set of curves rising up into points and going down again, with no apparent statical reason. When lamps are to be festooned, there should be some kind of attachment shown in light also, at the highest points, to give the curves something to hang from.

It seems a pity that an attempt was not made to illuminate St. Paul's by architecturally treated lines of lighting; the effect would have been splendid; but there seems to have been a rather unnecessary dread of danger to the building from fire. St. Peter's has been illuminated in this way many times without any such result. But something was done, nevertheless; the dome and lantern were put into brilliant light by a set of arc lights in the upper windows of some of the houses, and the effect of the colonnade of the dome, seen above the dark mass of the lower portion of the building, as if built of some phosphorescent stone, and the lantern above shining white in the sky, was really fine, and was perhaps the thing best worth seeing on that evening. The Monument was finely treated, with four great ropes of Chinese lanterns from the four angles of the capital, carried down in expanding lines to the adjacent houses.

As to the great function of the 22nd, the procession itself, it must be chronicled as a splendid success, carried out without a hitch or failure of any kind. This was decorative enough; and here again there was a suggestion as to the relation between artistic effect and practical fitness. For nothing was more admired everywhere, we believe, than the general appearance of the Australian contingent, yet their uniform was a very modest one in regard to colour and trappings as compared with our resplendent artillery and cavalry uniforms, but it had the double merit of having some artistic style about it, and of looking like a dress fitted for active service, whereas some of our uniforms seem much more adapted for a procession than as a costume for actual field work. As a spectacle, however, the whole thing was splendid—a sight to be long remembered.

ALTERATIONS AT THE VIENNA "HOFBURG" THEATRE.

AN important decision was recently arrived at in respect to the great Court Playhouse at Vienna, known as the "Hofburg" Theatre.

It has been a well-known fact that the auditorium was unsatisfactory in many respects. Particularly the sighting from the side-boxes was bad, and the acoustics in many parts were lamentable. It is now scarcely nine years since this imposing building has been completed, its actual construction having commenced in 1874, whilst

the plans had been under consideration as far back as 1866. The auditorium is now to be reconstructed, and some of the defects remedied.

This building, which by many is considered to be an example of technical skill brought to high perfection, with all due regard for the allied arts of painting and sculpture, has unfortunately been a subject of incessant controversy ever since the idea of its erection originated. There was much competition in the first instance as to obtaining the commission for the work. Gottfried Semper, it will be remembered, was eventually called in by the Emperor of Austria in 1869 to act as the assessor on the competition drawings of the theatre and several other extensive public buildings which were to be erected. Then Semper was given the commission both for the Court Museum and the "Hofburg" Theatre; and he, being a stranger in Vienna, wished, for various reasons, to be associated with the late Baron Hasenauer in the execution of this extensive scheme. The actual appointment of Semper and Hasenauer as collaborators was dated in May, 1871, but in 1875, shortly after the building operations had commenced on the playhouse, Semper resigned his position, primarily owing to disagreements with his colleague, who seems to have been always anxious to make himself disagreeable, and was not loth to enter into intrigues to weaken the position of the man to whom he was indebted for so much.

When the "Hofburg" was opened in October, 1888, a fresh controversy arose as to the authorship or responsibility for the design. Though the facts are pretty well known to many persons, the disagreement is, unfortunately, not yet settled. The facts are, that Semper was the author of the original design, and Hasenauer was appointed as his colleague in the execution of it. Then Semper resigned, leaving the elaboration of the design and the entire execution to the younger man. We are hence indebted to the former for the plans and main lines of the rendering and the preliminary scheme of decoration. Baron Hasenauer, however, improved the original plan by giving it a more practical character, and, at the same time, introducing a lighter feeling into the architectural treatment, whilst the whole of the co-structural detail and the technical appliances were arranged and carried out under his supervision. The same hand is practically responsible for the whole of the interior decoration, the greater part of which Hasenauer personally sketched, and all of which he executed after Semper's departure. Semper and Hasenauer may therefore be properly described as joint architects of the building.

In the lapse of time between Semper's retirement in 1875 and the completion of the block in 1888, Baron Hasenauer had contrived that Semper's participation in the work should almost be forgotten, and it was Hasenauer who was the recipient of the many compliments and marks of distinction on the termination of this important monument. Nevertheless, the discussion referred to as to authorship was so far kept up that, when criticisms were published as to the acoustic properties and the sighting of certain parts of the auditorium, Hasenauer suddenly recalled the share taken by his deceased colleague in the work, and made him the scapegoat for these deficiencies.

This same procedure is being observed at the moment by the friends of the late Baron. Now that it has been decided to remedy some of the mistakes, the late Baron Hasenauer's friends are ascribing everything unsatisfactory to Semper. As a matter of fact, the mistakes can hardly be considered the fault either of Semper or of Hasenauer, for it could be easily shown that the unfortunate lines of the auditorium are practically due to orders respecting the dimensions and capacity given by certain Court officials, and Baron Hasenauer himself is known to have privately stated in 1893 that the present lines were quite contrary to the judgment of both Semper and himself, both knowing quite well that the results must be disadvantageous. No doubt the actual lines of the auditorium as shown here (see diagram) are as first drawn by Semper, but Semper was only following his client's instructions.

Referring to fig. 1, it will be seen that the shape of the box fronts must, neces-

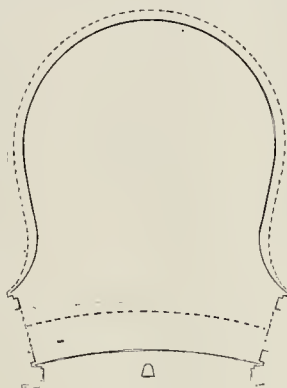


Fig. 1.

sarily, prevent a good view of the stage in certain positions. The complaints of the last nine years have now resulted in the Court Office of Works requesting Messrs. Fellner and Helmer, together with their permanent technical adviser, Herr Foerster, to report on the matter, and the first-named firm has been strenuously advising an immediate and entire reconstruction of the auditorium, whilst the Court Office of Works, their technical representative, and the theatre administration, advocated the more moderate measure of taking down the fronts and reconstructing them to a different line, at a cost not exceeding 200,000 florins. This expenditure has now been sanctioned by the Emperor, and the work will be taken in hand at once, under the directions of Mr. Foerster, whilst the services of Messrs. Fellner and Helmer are to be dispensed with.

A horse-shoe shape (see fig. 2) is to be followed, in place of the lyre shape, in the plan of the box fronts, and six months have been allowed for the reconstruction. Unfortunately these alterations will probably only partly remedy the defects, for there are many other seats which require attention and alteration besides those of the boxes, especially those in the pit and in the gallery.

Though the reconstruction has been found necessary, it is only right to protest against the indignation which has been shown in

some quarters towards the two deceased architects, for on the point in question there is no doubt that it was the client (as repre-

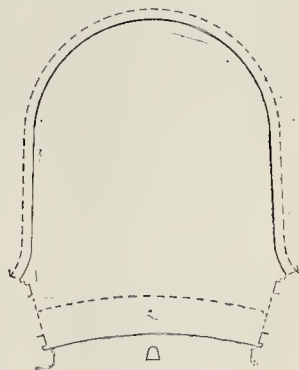


Fig. 2.

sented by certain officials), and not either of the architects, who was to blame. It is further unfortunate that there should be so much feeling shown as to the execution of the alterations. Messrs. Fellner and Helmer cannot be considered infallible in questions of this kind, and the methods apparently used by these architects and their friends to impress their opinions on the public would be considered unprofessional in this country.

NOTES.

It is surely not unreasonable to ask why it is that the architectural profession is always passed over in the distribution of official honours on such an occasion as this. In art we recognise that Sir W. B. Richmond has well earned his distinction; in engineering we are glad to welcome Sir A. R. Binnie and Sir J. Wolfe Barry, for though we regard the Tower Bridge as an architectural monstrosity, we have always fully recognised the engineering qualities displayed in its construction. But are there no architects in this country who have done anything to deserve recognition? We do not suppose the architects care very much about it—they are not given to snapping after honours, but the slight to them is just the same; and when we see the President of the Institute of Architects, who has done so much, and at so much expenditure of cost and labour, to elucidate the history and promote the study of architecture, passed over—and likewise Mr. Penrose, too, one of the greatest exponents and illustrators of ancient architecture, whose retirement from his position at St. Paul's just about this time might have furnished the best excuse for an official compliment—and when on the other hand we see the honour of knighthood conferred on a water-colour artist who enjoys the questionable distinction of being the President of the Society which gives the worst annual picture exhibitions in London, one begins to wonder how these matters are managed, and who it is that advises the Government on them.

THE letter addressed by the Dean of St. Paul's to the *Times* of the 23rd inst. on this subject

is so far satisfactory that it seems to indicate that the great work of decorating St. Paul's is not to be left half finished; and it appears

that four City Companies have promised each to bear the cost of decorating one of the semi-domes over the piers at the angles of the main dome. But when the Dean goes on to ask for money for the decoration of the interior drum of the dome—"the space between the whispering-gallery and the bottom of the windows in the dome"—the natural reply is, or ought to be, that before we subscribe money for this we must see a scheme, not only for the decoration of the drum, but for that of the whole dome, which cannot rightly be considered apart from the drum. The decoration of the dome in St. Paul's is by far the most important *opus* of the whole work; according as it is suitably or unsuitably done it will make or mar the decoration scheme; and it is perfectly unreasonable to ask people to subscribe for such a work unless they are to first see what is proposed to be done. Again, while we are glad to see that it is proposed to decorate as soon as possible the small domical spaces in choir aisles, the intimation that "there is a place for the arms of any donor who will give 1,000*l.* towards the completion of one of them"—in other words, offering a bribe to the personal vanity of subscribers with the promise to have their arms painted there as part of the decoration, appears to us to be in the worst possible taste. If people will only give for such a paltry motive as that, they had better not give at all.

The Royal Gold Medal. It is to be hoped that there will be a large meeting at the Institute on Monday to do honour to Dr. Cuypers, for we conscientiously believe that the Royal Gold Medal of the Institute has never been more worthily bestowed; and those who read the short account which we have given on another page of Dr. Cuypers's character and career will recognise that he is no ordinary man. And as Dr. Cuypers has been especially noted for the attention which he has given to craftsmanship in connexion with architecture, and for the interest he has always taken in the work of artisans, we may suggest that some of those "outside" architects who specially espouse the craftsman view of architecture might very well put aside their differences with the Institute, and join in welcoming their Dutch brother in the art. The Institute, we have no doubt, will be very glad to see them as visitors on such an occasion.

Truro Cathedral. We are glad to hear that the foundations for the nave of Truro Cathedral are in course of preparation. We do not suppose the funds requisite to complete the cathedral can as yet have been entirely raised or promised, but the fact that the foundations are being proceeded with seems to indicate that there is good hope of the money being forthcoming as required. It would be a thousand pities if Truro Cathedral were allowed to remain half finished for an indefinite period.

The New Sorbonne. This great work proceeds very slowly to its completion. The monumental façades of the buildings along Rue St. Jacques are now finished, and produce a very imposing effect. A high tower, in a modern—very modern—style, is a notable feature in one of these façades, and is rather a remarkable bit of

architectural design. The work is proceeding in the interior of the building; the portion intended for the *École des Chartes* is at present in course of preparation. In a few days the last vestiges of the old Sorbonne will have been removed. The ancient gateway certainly ought to have been preserved.

The Cambrian Railway Accident. It appears that the strictures upon the general condition of the Cambrian line attributed to Col. Yorke at the Board of Trade inquiry into the Welshampton accident have, as we anticipated, been very much modified—indeed they have been practically disavowed by him altogether. Very rough material had apparently been used for repairs in a section of the road examined by the Inspector, but he stated at the inquest, on Friday last, that he did not intend his remarks upon the circumstance to be interpreted as disparaging the general condition of the permanent way of the Cambrian line. The Inspector's remarks were apparently misquoted or misunderstood by the reporters, with the result that a prejudice has been created against the Company, which Colonel Yorke has thus taken the first opportunity of endeavouring to clear up. The Report, embodying the Inspector's final opinion, will be awaited with greater interest in view of the conflicting reports upon the proceedings, and the consequent misapprehensions which have arisen. The alternative theory to which allusion was made last week, seems to have found acceptance with the coroner's jury. Their verdict exonerates the officials from negligence, but they consider that the accident would not have happened had the light Lancashire and Yorkshire van not been on the train. It is a singular fact—if this view is accepted as correct—that a step primarily taken as a precautionary measure, must be regarded as directly contributing to, if not causing, the disaster. For the Lancashire and Yorkshire officials would doubtless consider that, in attaching a second brake van to a long train which had only been provided with one, they were repairing an omission.

Tall Chimneys. MR. F. J. BANCROFT'S paper on "The Stability of Tall Chimneys," recently read before the Institution of Junior Engineers, while not pretending to treat the subject exhaustively, nevertheless deals with practically all the more essential points of this class of construction. We quite agree with him that in a chimney built of brick or stone, no reliance should be placed upon the tenacity of the mortar at the joints, as any chimney may be called upon to withstand a gale of wind while the mortar is still fresh. In order that there may be no tension at any point, it becomes necessary to accurately determine the limiting position of the centre of pressure, and the method of doing this is clearly explained in the paper. The author considers that there should never be any appreciable deflection of a tall chimney when subjected to a heavy wind pressure, or, in other words, that they should not rock. This is certainly a desirable condition, but one that is seldom realised in tall chimneys. Most existing chimneys appear to be greatly neglected so far as periodical inspection is concerned, and when it is remembered that accidents in connexion with these lofty structures may prove most serious, it seems

very desirable that they should be examined from time to time by a competent and independent man.

Telegraphy Without Wires. A TIMELY letter by Professor Lodge in Tuesday's *Times* calls attention to the misleading articles which have appeared in popular journals on this subject. To talk about "Marconi waves," "important discoveries," and "brilliant novelties," in connexion with the Post Office experiments on Hertzian vibrations, gives a totally wrong impression to the public. This impression has been fostered by the unnecessary secrecy used by Mr. Preece in his public statements prior to his recent lecture at the Royal Institution, which came as an anti-climax to experts who had been led to expect something novel. Professor Lodge points out that Lord Rayleigh was the first to discover "cohesion" under electrical influences, but he modestly underrates his own discoveries. He, however, points out, as we did a short time ago, that the apparatus he used in his 1894 experiments was substantially the same as the Marconi apparatus exploited by Mr. Preece. He naturally resents the impression conveyed by Mr. Preece in his Institution lecture that he had prophesied half a mile as the superior limit to which Hertzian vibrations could travel. To quote from a popular work like Professor Trowbridge's "What is Electricity?" full as it is of the most absurd and erroneous statements, in order to show to an audience, including many experts, the present state of our knowledge of electrical theory, was a somewhat deliberate attempt to minimise the importance of Professor Lodge's discoveries.

Professor Crookes. The inclusion of Professor Crookes amongst the recipients of Jubilee honours has given great satisfaction to electricians. Although his researches in chemistry and metallurgy have placed him during the last forty years in the front rank of English physicists, yet the researches he made on electric discharge in high vacua have contributed to two epoch-making discoveries in the applications of electricity. His methods of producing extreme vacua were used by Edison and Swan when they were experimenting on glow-lamp manufacture, and the work he did in this direction greatly simplified the problems they had to solve. It was when experimenting with a Crookes' tube that Professor Röntgen discovered that certain rays given out by it passed through many opaque bodies. How near Professor Crookes was to making this discovery will be seen by reading his presidential address to the Institution of Electrical Engineers some five or six years ago. He had found out that when the exhaustion of a tube was carried far enough certain bodies placed in front of the electrode cast sharply-defined shadows on the opposite wall of the tube, whilst others were apparently perfectly transparent. Although it was reserved for others to discover two of the most practical applications of his experiments, yet the importance of the pioneer work that he did can never be overlooked.

The Rural Delights of Biggleswade. A REPORT to the Local Government Board by Dr. Buchanan, on the prevalence of diphtheria in the village of Hatley Cockayne, in the

Biggleswade Rural District, sufficiently explains why diphtheria has found a congenial soil at Hatley Cockayne. Old cottages built partly of brick and partly of wattle and plaster, roofed with straw thatching, with damp walls, have wooden privies, usually placed in the gardens, the contents of which are dug out by the inhabitants when there are signs of overflow, and either at once disposed of on the garden land, or stored until wanted in an open manure pit within a few yards of the dwelling. Most of the inhabitants obtain water from a brick well, provided with bucket and windlass, placed in the front garden of one of the cottages. It is not difficult in such a case to put two and two together; the water supply does that; product—diphtheria. The same report comments on the water supply of Moggerhanger, in the same district of Biggleswade. Moggerhanger is also supplied by wells, about a dozen in number, of old construction, dry-stained in brickwork which is frequently faulty. Water is drawn from them usually by bucket and windlass, sometimes by a pump. Some are 20 ft. or more in depth, others are about 15 ft. These wells are fed by surface water, which percolates to them through the layers of glacial drift which overlies the Oxford clay. One of them, which shows large gaps in its brick steining, supplies six houses in Bedford-road Yard, Moggerhanger. This well stands in the centre of a yard unprovided with paving or drains to carry away surface water. Waste water and slops are thrown by the inhabitants of the houses on to the surface of the yard, and no doubt soak into the soil, and so reach the well. The same tale is told as to most of the other wells by which Moggerhanger is supplied. Result—enteric fever.

The Radcliffe Library, Oxford. WE gather that the Drapers' Company have nominated Mr. T. G. Jackson as architect of the new buildings which they propose to erect, at a cost of 15,000*l.*, and present to Oxford University. The Radcliffe Library was built, 1737-47, at a cost of nearly 40,000*l.* by James Gibbs, Dr. John Radcliffe having bequeathed that sum for a site and erection thereon of a scientific library, together with an endowment for the librarian, and for the purchase of books. In 1861, Gibbs' building was adapted for the purposes of the Bodleian, and its upper floor converted into a reading-room. The Radcliffe collection of books was removed to the New Museum, built 1855-60, after the designs of Messrs. Deane & Woodward. By the Drapers' Company's generous gift the University will be enabled to provide further accommodation for the School of Scientific Medicine. Gibbs gave a bust of himself, by Rysbrack, to the Radcliffe Library, whose trustees presented, in 1862, a cast of the bust to the Royal Institute of British Architects. In 1747 he issued a volume of his designs for the Library.

The Château of Malmaison. M. OSIRIS, who has bought the historic château of Malmaison in order to save it from ruin, has entrusted to M. Daumet the task of overseeing its repair and (to a certain extent) restoration. The personal apartments of Napoleon are to be brought back to their original condition—his library, his private room, and Josephine's bedroom, dress-

ing-room, and bath-room. The first floor, which is in a ruinous state, is to be rebuilt and transformed into a series of galleries in which will be placed all the souvenirs, artistic objects, furniture, bronzes and medals which are connected with the career and the reign of Napoleon.

Irish Decorative Textiles. THERE is on view at the Donegal Industrial Fund at 43, Wigmore-street a collection of hand-woven Irish linens and homespuns, which may usefully be employed by architects for decorative purposes. They possess the advantage of being entirely made by hand and vegetable dyed by the workers of Donegal, Indian madder dyes of rich and effective colouring being largely employed. Some of them are treated with stencil patterns of the Japanese type, and have been used as friezes. The material is much to be commended for curtains, portières, &c., and also for ecclesiastical hangings. Mrs. Ernest Hart has much reason to be proud of her efforts to reintroduce into the poorer parts of Ireland industries which have been found to thrive there. The designs and execution of the ecclesiastical embroidery are in some cases excellent, and architects can have their designs executed with the knowledge that they are helping forward native industries in the best possible direction.*

The Weather Prophet. A FORECAST of the weather made a day or two beforehand is always to be regarded with suspicion; but we are no longer to be in doubt as to future weather since Mr. B. G. Jenkins, F.R.A.S., has come upon the scene. We have been sent "The British Weather Chart for 1897" by that *savant*, and it is the most remarkable document we have seen for some time. Not only is the weather for the present year provided for, but we are told that as soon as the author has completed the necessary calculations he will issue forecast barometric and thermometric curves, with explanatory notes, for the years 1899, 1900, and 1901. In a paper which appeared in the bulletins of the Royal Academy of Sciences of Belgium, and in another work, the author says that he has given sufficient evidence to show "conclusively" that the moon has a great deal to do with the production of the weather. Nevertheless, on further investigation he found that the moon's influence alone was not sufficient to account for all the observed weather phenomena, so the sun and the planets are called into play; the earth does not seem to have anything to do with its weather. We begin to understand something of this little difficulty when the shades of Copernicus, Kepler, and Newton, and their "system of astronomy," are invoked—the Meteorological Society is not mentioned. The vehicle for conveying these wonderful forecasts is the "Telluric curve," which is "applicable to the

* Since the above was written, we have received some further information from Donegal House as to the practical manner in which it is proposed to use these linens as decorative coverings for walls. A small wood fillet is attached to the wall top and bottom, the linen is nailed on to this very firmly and well stretched, and the raw edges of the linen are covered either with a linen cord or gimp, specially manufactured of the same tone or blend as the linen used, or by a painted or gilt moulding. These linens can be painted in oils or water-colour and stencilled in gold, silver, or colours most effectively. The heavy "Eolus" linens are made of thick polished threads, and look like corded silk, but come out at about one-fifth the price.

whole earth." We notice that this weather chart is revised—"a more accurate adjustment of the curves has enabled the author to issue what he believes will be found to be a more accurate forecast of this year's weather from June onward." A "moderate depression" was prophesied "round the 22nd" of this month—a very accurate forecast! Ought not this revised version to be called a "Jubilee edition" of the chart?

ARCHITECTURAL MEETINGS IN FRANCE.

THE "ASSEMBLÉE GÉNÉRALE" OF THE PROVINCIAL ASSOCIATION OF FRENCH ARCHITECTS.

SINCE 1890, the annual meetings of the Congress of French Architects have been preceded by the meetings of the "Assemblée Générale de l'Association Provinciale des Architectes Français." These latter take place almost always at the commencement of June, in a provincial town (a different place of meeting being selected every year). The proceedings are generally influenced by the intention of treating those subjects which are of special interest to the architects of the Department in which the meeting is held, and the visits made to ancient and modern buildings have also a special or local interest.

This year the "Assemblée Générale" has held its meetings at Clermont-Ferrand, and has made visits to the towns of Royat, Riom, Montferrand, and Puy, and has distributed its rewards to building artisans, and others connected with architectural work, at Clermont-Ferrand and Puy. The meeting was presided over by M. Paugoy, of Marseilles, assisted by M. Guimbal, of Issoire (Vice-President), M. Reybaud, of Marseilles (General Secretary), and M. Benoît, of Lyons (Assistant Secretary).

The delegates, to the number of fifty, from almost all quarters of France, represented twenty-one societies, spread over fifty-four Departments of the country.

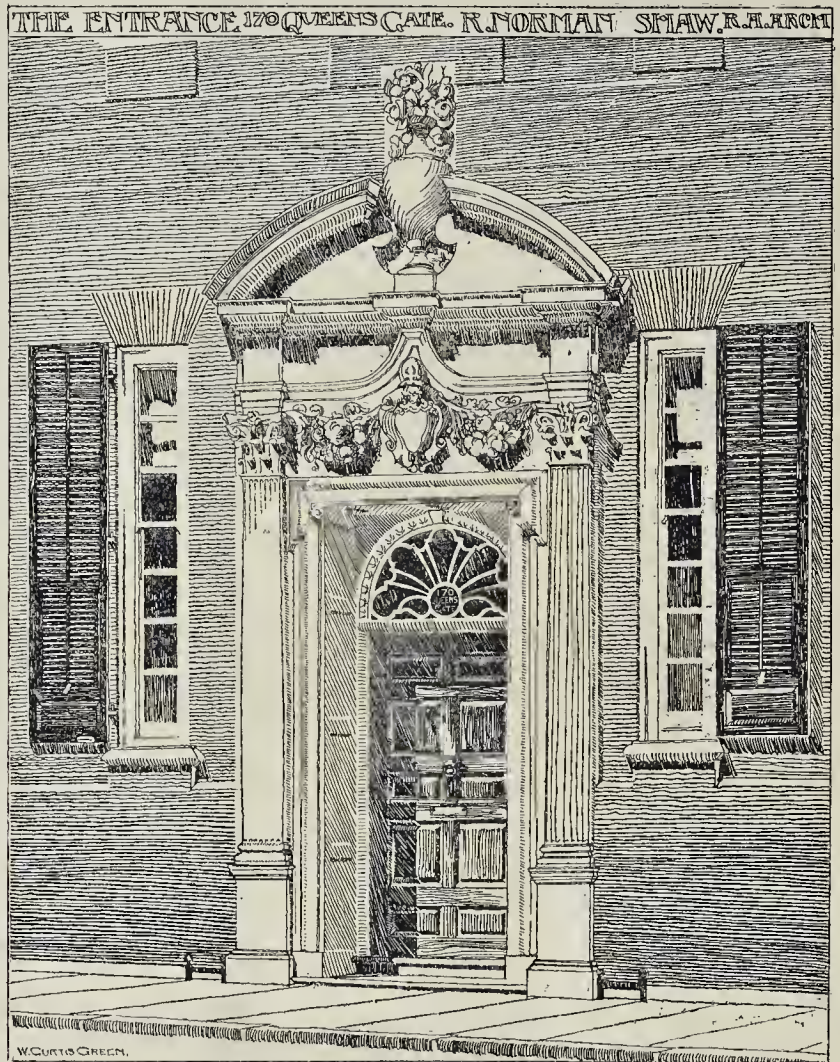
Among the resolutions voted, the most important were those in regard to local architectural education, on which an admirable Report was read by M. Blondel, of Versailles, and on which the views of the "Assemblée" were expressed in the two following resolutions:—

1. "Instruction in architecture to be given at (the special places) to be selected by the Minister of Fine Arts, in schools of architecture all subject to the same regulations and following the same programme of studies, and conferring on the pupils, besides the advantage of being exempt from the two years' military service (on the same conditions on which the law grants this exemption to Schools of Commerce and Agriculture), a certificate of capacity after examination, before leaving the school, by a special jury."

2. "The École Nationale des Beaux-Arts (Architectural Section) to take the title of 'École Supérieure d'Architecture,' and to have the sole power of conferring the Government diploma of architecture."

The "Assemblée" also voted for (1) the creation of a prize, in the form of a travelling studentship, to be competed for annually by the students of the Departmental Art Schools; (2) the establishment of a scale of charges for architects, in which 5 per cent. would be taken as the minimum; (3) the insertion, in the statutes of the allied Societies, of the treatise on the "Professional Duties of Architects," drawn up by M. Guadet in the name of the "Société Centrale des Architectes" and adopted by that Society; (4) the formal approbation of a study by M. Gouaull, of Rouen, on the "Servitude d'Alignement"; (5) the adjournment till next year of a Report by M. Le Cœur, of Rouen, on "l'Hygiène de l'habitation," and the inclusion, in that Report, of a special chapter on "l'Hygiène des Habitations à bon marché," of which M. Le Cœur has created a remarkable type in Rouen itself; and lastly, various measures to be submitted to the Government in regard to the reform of the licence of practise for architects, the composition of "Conseils des bâtiments civils," &c.

M. Dupuy, Prefect of the Department of Puy-de-Dôme, presided over the distribution of "Recompenses" which took place, after an address by M. Paugoy, in the large hall of the Municipal Council at Clermont-Ferrand, and



Sketches of London Street Architecture.—XV.

which was followed by a banquet and a conversation to which the relatives and friends of the delegates were invited.

CONGRESS OF FRENCH ARCHITECTS.

The twenty-fifth annual Congress of French Architects is being held this week at Lille as its headquarters. The Société Centrale des Architectes, under whose management all the congresses are held, has this year entirely broken from the tradition of making Paris the headquarters and taking excursions thence for two or three days. On this occasion the Congress sat at Lille from the 18th to the 21st, and after that resolved itself into an excursion in Belgium, to Tournai, Brussels, and Antwerp, but is to finish up its session at Paris to-day (Saturday), where the members will assemble for the usual General Meeting and "Distribution des Récompenses" in the morning and afternoon, and the usual banquet in the evening. There was also to be a meeting of the "Caisse de Défense Mutuelle" in Paris on the previous day.

At midday on the 18th the architects of the "Société Régionale" of the North of France,

which has its centre at Lille, assembled at the railway station to receive their professional friends from Paris and other parts of France; among whom were M. Lucien Etienne, Vice-President of the Société Centrale, MM. Boileau, Poupinel, and L. George, the Secretaries, and M. Girard, the senior member of the Société; MM. Aivas (of Angers), Bissuel (Loyous), Chenevier (Verdun), Marmottin (Concomniers), &c., &c.

After welcome and compliments from M. Dubuisson, President of the "Société du Nord," and a return of thanks by M. L. Etienne (as the representative of the President, M. Chas. Garnier, who had been prevented from attending), the sitting opened at 3 p.m., in the amphitheatre of the Institut de Physique, under the presidency of M. Dubuisson, assisted by the delegates of other societies represented. M. Bergougnoux, at the call of the President, opened the proceedings with a paper on the old but always reviving question of "La Responsabilité des Architectes." After considering the subject at great length, he concluded by propounding a "projet de loi" or sketch of a legal enactment in seven articles,

which dealt not only with the subject of legal responsibility but with all the other questions as to architectural practice which were related to or involved in that question. The meeting decided that the questions raised were too extensive and complicated to be usefully discussed there and then, and with the limited time at their disposal, and that it was necessary to adjourn their consideration to another occasion; and the meeting passed to the second question on the programme—"Architectural Education in the Provinces." On this question, which is regarded in France as the most vital and important of all the subjects under consideration in the architectural world at present, an animated discussion took place on a paper by M. Bateau, a résumé of the previous studies of the subject already presented to the "Société Régionale du Nord." After various opinions had been expressed by MM. Barbaud (Paris), Richez (Valenciennes), Thibeau (Roubaix), Dauphin and Bergougnoux (Paris), and Vandenbergh, Professor of Architecture in the Academy Schools of Lille, the meeting unanimously adopted a resolution to the effect that "the architectural schools of the

Departments ought to be further developed, and that the public authorities be invited to take up the question and to make a commencement of the undertaking."

On the evening of the same day, at 8.30 p.m. the Société du Nord invited the congressists to a convivial meeting ("un Punch") at the Grand Hotel, Rue Faidherbe, where many toasts and much agreeable conversation was further enlivened by various songs, some in the *patois* of Lille and Turcoing, among them a complimentary composition, by M. Watteuw, dedicated "aux architectes."

On Saturday the 10th the Congress sat at 9 a.m., under the presidency of M. Newnham of Lille, when an interesting paper was read by M. Bateau on the "Duties of the Architect in the Eighteenth Century," the author showing, by numerous quotations, that the architect was by no means a negligible quantity, as had been sometimes supposed, in the last century, and that the architects who carried out work for the public were a good deal more than "general contractors."

A Report by M. Bisuel (of Lyons) followed, on the subject of a dispensation from the two years of military service, to be granted to the most meritorious among architectural students, and after a discussion in which many different opinions were expressed, the following resolution was unanimously adopted:—

"That a certain number of Art Schools ought to be established in the Departments, one section of each to be a School of Architecture, with an examination on entering and leaving it, and a certificate of permission to study being granted (after the entry examination), but without any prejudice to the student attending also the existing Fine Art Schools. That the students at these schools, as in the case of the Schools of Commerce and Agriculture, should be exempted from the rule of two years' military service, but only in the case when they had satisfied the examiners at the exit examination before arriving at the age of twenty-six."

The morning's sitting being a pretty laborious one, the afternoon of this day was given up to drives in a number of carriages, first to the Bourse, a building of the seventeenth century, a photograph of which, as well as of the Porte de Paris, was presented to each member of the party; then to M. Newnham's country house at Lambersart, and to the church there, by M. Baudin; to the chalets of MM. Mallet, Baert, Villans, and Cordonnier, in the Avenue de l'Hippodrome, at Lille; also to the houses of MM. Vandenberg and Newnham; to the church of Sacré Cœur, by M. Batigny, and to the apsidal chapel of Notre Dame de la Treille, by M. Villans.

The remainder of the proceedings will be recorded in our next issue.

SKETCHES OF LONDON STREET ARCHITECTURE.—XV.

DOORWAY OF HOUSE IN QUEEN'S GATE.

THIS is a sketch of the doorway of the large house built from the designs of Mr. Norman Shaw, at the corner of Queen's Gate and the road running past the front of the Imperial Institute. The house, as is well known, is one of the most important and typical examples of revived Queen Anne architecture in London. The entrance shown here faces the cross street, not Queen's Gate, although the house is numbered as in the latter street.

CORPORATION BATHS, HULL.—The foundation stone of the new Corporation Baths, now in course of erection on the Holderness-road, Hull, was laid on the 9th inst. by the Mayor of Hull. The building is in the Renaissance style, and will be built of red brick, with buff terra-cotta dressings. The large swimming bath will be 66 ft. by 30 ft., and the Lovers' swimming bath will be 60 ft. by 30 ft. In the private baths, which number thirty-one, with space for five more if required, the partitions are of glazed brick. A laundry is provided. In the large swimming bath a gallery has been erected for the accommodation of the public in attending swimming exhibitions. Provision is made for covering the bath in the winter time with a wooden floor, so that it can be used as a public hall. The new baths will be lighted by electricity. The total cost of the buildings, exclusive of land, is 12,500l. The contractors are as follows:—Buildings, Mr. J. Sangwin; terra-cotta, Mr. J. C. Edwards, Randon; roofs, &c., Messrs. Moorwood & Sons, Sheffield; pipe work and valves, Messrs. Barker & Asprey, Wilmington; boilers, Messrs. J. & B. Umpleby. The new baths are being erected under the superintendence of the Borough Engineer, Mr. A. E. White.

THE ROYAL GOLD MEDALLIST OF THE INSTITUTE: 1897.

THE eminent Dutch architect, Mynheer Petrus Josephus Hubertus Cuypers, to whom the President will on Monday next present the Royal gold medal of the Institute, was born at Roermond (or Ruremonde) in the Duchy of Limburg, in the Netherlands, on May 10, 1827, one of a numerous family. The father practised the art of painting in his leisure hours, and hence the children more or less inherited a taste for art. The son was educated at the Episcopal College of his native town, and it was the director of the college who advised him to select the profession of architecture, as one in which taste and reason went hand in hand.

In 1847 he left Roermond for the Royal Academy of Antwerp, where he gave evidence of his exceptional talents by carrying off the principal prizes in architecture, while at the same time he went through a course of study in sculpture and painting. The Antwerp Academy was at this time an institution exceedingly conservative in the classic tradition.

During his early days at Roermond the young student had seen much of the great church of Notre Dame at Munster, dating from the commencement of the Thirteenth century, and which exhibited architecture to him under a form quite different from that in which it was presented by his Academical teachers; and his subsequent expeditions along the valley of the Rhine and in the north of France brought to his acquaintance other ancient works, as well as the architects in charge of them, especially Viollet-le-Duc, who expounded to him the intimate relation between design and structure in the buildings of the Middle Ages, and led him to recognise the importance of the architecture executed by the Germanic countries before they came under the influence of the Renaissance.

In the early part of the present century Holland could not be said to have any school of architecture of its own; and Cuypers formed the ambitious design of reviving the architecture of his native country on the basis of Mediaeval architecture. From the commencement of his career he recognised the necessity of an intimate relation between the art of architecture and those of sculpture and painting. To illustrate and promote the carrying out of this connection he founded, with Mr. Stoltzenberg, an atelier for combined instruction in sculpture, painting, and carpentry, together with copper-work and embroidery; his idea being that the architect's hand was to be in everything that the artisans executed, and that all was to be designed with the fullest regard to the technical qualities of the materials used. And in the large buildings which he carried out at a later period, all the details were designed by his own hand, and nothing done by the pupils ever went without the corrections of the master.

His chief attention was first given to ecclesiastical architecture, and he became a recognised expert authority on the ancient ecclesiastical architecture of Holland, Belgium, and Germany. About 1875 the Government appointed him a member of the new "Commission des Monuments Historiques," where his views gave rise to a great deal of opposition, but with the ultimate result that the Commission finally succumbed, and Dr. Cuypers was for twenty-five years the sole adviser of the Government, under successive ministries, with regard to the treatment of ancient buildings.

On establishing himself in 1865 at Amsterdam he found a great deal to do in domestic architecture. The whole "Vondelstraat" quarter, with its church, was carried out by him; and when on May 16 last the architect celebrated his seventieth birthday, there was a greater display of flags in the Vondelstraat quarter than are seen when the Queen makes her annual visit to the capital, and all the journals and reviews devoted long articles to his career, accompanied in most cases by a portrait; the various articles commenting on various aspects of Dr. Cuypers' architectural work; one representing him as a specially able constructor, another dwelling on his practical influence in the instruction of artisans, another honouring him as the first modern architect to introduce mural painting into the national buildings of his country, another regarding him as a learned and specially conservative restorer of ancient buildings; another dwelling on his special aptitude in applying ancient principles to modern requirements. But the greatest emphasis was laid on

his character as an indefatigable worker in his atelier, and on the interest which he took in the improvement and education of building artists; and the sixty artists of his atelier, in concert with the ecclesiastical authorities and the Mayor, arranged a fête in his honour at Roermond, which lasted several days, and was heard of all over the country.

Dr. Cuypers holds the degree of Honorary Doctor of Natural Philosophy in the University of Utrecht, and the titles of "Commandeur" in the Order of the Lion of the Netherlands, "Grand Officier" in the Order of Isabella la Católica (Spain), "Officier" in the Legion of Honour, Associate Member of the Institute of France, "Chevalier" of the Order of St. Gregory the Great, and "Chevalier" of the Order of the "Couronne du Chêne" (Netherlands). He is also Honorary and Corresponding Member of the Royal Institute of British Architects and of the Ecological Society of London, and Honorary Member of the Society of "Architectura Amicitia" of Amsterdam, of the Society of Architects of Antwerp, of the Guild of St. Bernulphus of Utrecht, of the Guild of St. Thomas and Lucas of Ghent, of the American Institute of Architects, and of the Royal Archaeological Society of Amsterdam. He is member of Council of the Society of Architects of the North of France (Lille), as well as of the "Société Centrale des Architectes" (Paris); member of the Central Society of Architects of Belgium, and Corresponding member of the Oesterich Museum of Art and Industry at Vienna, of the Academy of Archaeology of Belgium, and of the Historical and Archaeological Society of Limburg.

Among Dr. Cuypers' professional appointments is that of Architect to Mayence Cathedral and Architect to the National Art Galleries at Amsterdam. Of some of his principal executed works illustrations are given in the present number.

The Government of Holland brought out a special publication in illustration of the Royal Museum at Amsterdam, which will be found in the Library of the Institute of Architects; and Dr. Cuypers' friends and admirers are at present engaged in bringing out a large publication in illustration of his principal architectural works.

ARCHITECTURAL SOCIETIES.

THE ARCHITECTURAL ASSOCIATION OF IRELAND.—The annual excursion of this Association took place on the 12th inst. The party, numbering about twenty-five, assembled at Amiens-street in time for the 9 a.m. train to Drogheda. On the arrival of the train at Drogheda, boxes were in readiness to convey the party to Mellifont; the drive thither was through an exceedingly pleasant country, the route taken being along the valley of the Boyne, passing by the scene of the historic fight where the last of the Stuart kings made his final effort to retain the crown. An obelisk to commemorate the victory of King William marks the spot. Close to this the road crosses the river into the County Louth by an iron lattice-work bridge. A little further on the way was through the beautiful demesne of Mr. R. H. Balfour, D.L., Townley Hall. The house itself is a large, but uninteresting structure of the Grecian style in vogue during the early part of the present century. On arrival at Mellifont Abbey the party distributed through the remains of this fine old Cistercian abbey. Of the church itself little remains but what suffices to mark the lines of the plan, which is of the usual Cistercian type; but the octagonal baptistry is a building unique in its character in this country; portions of it are in good preservation, the mouldings of its richly-proportioned arcade of round arches being frequently wonderfully sharp. The detail is of a transitional type. The chapter-house is in much better condition, and still boasts its vaulted ceiling—not a common thing in Ireland. The detail here is of Early Decorated character, and is very good. A small handbook has recently been issued containing some illustrations by Mr. Scott, of Drogheda (a member of the Association), which gives an excellent account of this fine old place. A striking thing is that beyond the plan of the church there is little or nothing left of that type of architecture generally associated in one's mind with a Cistercian foundation. At about 3 o'clock the party drove on to Monasterboice where the two Celtic crosses were examined with much interest; there are also a few small and quaint tomb-



The Siddons Statue, Paddington Green. M. Chavaliand, Sculptor.



New Cemetery Chapel for the Northampton Corporation. Mr. Herbert Norman, architect.

stones of the last century here. Several photographic groups having been taken by Mr. Hadman and Mr. Colman both here and at Mellifont, the party started back for Drogheda, which was reached sufficiently early to give time for a stroll round the town. Amongst the places viewed were the old City Wall, and St. Lawrence Gate, the Constabulary Barracks (an old and rather quaint Georgian building), the new Roman Catholic church of St. Peter, the old Abbey, &c. Subsequently the members dined together at the "White Horse Hotel."

THE EDINBURGH ARCHITECTURAL ASSOCIATION.—The Edinburgh Architectural Association, on the occasion of its annual excursion on Saturday last, visited Linlithgow. Mr. Thomas Ross, President of the Association, conducted the party over the Palace in the unavoidable absence of Mr. W. W. Robertson, and described the plan and the manner and periods of the erection, and drew attention to the means which have been taken by Her Majesty's Board of Works to preserve the building from further decay. Mr. John Honeyman, R.S.A., architect for the restoration of St. Michael's Church, described the condition of the church before the work of restoration was begun, pointed out what had been done, and showed on drawings the proposed additional work. After luncheon at the "Star and Garter" Hotel, Mr. Rowand Anderson moved a vote of thanks to Mr. Honeyman for the interesting description of the restoration of St. Michael's Church, and expressed the appreciation of the members of the Association for the manner in which the work had been carried out. Mr. W. Horn Henderson, Linlithgow, moved a vote of thanks to Mr. Ross for his explanatory description of the Palace, and Mr. Honeyman and Mr. Ross having replied, the President proposed the toast of "Her Majesty

the Queen." The toast having been duly honoured, the party drove to Bonhard House and Kinneil House, which were examined under the leadership of Mr. Ross, who drew attention to the plaster ceilings at the former, and described the erection of the latter as two houses joined together by wings in the reign of Charles II. An examination was also made of ruins of a chapel at Kinneil, which is being cleared—under the direction of Mr. Macaulay, factor for the Duke of Hamilton—of the rubbish which has accumulated over the foundations.

VICTORIA HALL, WIDNES.—The foundation-stone of the new Victoria Hall for Sunday-schools in connexion with St. Ambrose Church, Widnes, was laid recently. The new building which is to be erected will adjoin the vicarage, and will have a central hall, 70 ft. by 34 ft., with three class-rooms about 24 ft. by 18 ft., separated by folding partitions. The ground plan is in the form of a cross. The hall is to form the central block, the class-rooms being on each side, and also occupying the ends. Accommodation will be provided for about 600 scholars. The building is being erected from the designs, and under the supervision, of Mr. Beesley, architect, Warrington, the contract having been taken by Mr. James Pilkington, builder, Rainford, St. Helens.

COTTAGES, ROTHBURY, NORTHUMBERLAND.—A block of twelve cottages has been erected at Rothbury by Lord Armstrong. The work has been carried out by the following tradesmen:—Mason work, Mr. Thomas Metcalf, Rothbury; joiner work, slating, plastering, and plumbing by the workmen employed by Lord Armstrong on his estate, under the superintendence of Mr. William Bertram and Mr. James Riddell; wrought-iron railings and gates, Messrs. Thompson Brothers, Berwick-upon-Tweed; painting and glazing, Mr. John H. Clark, Rothbury; the whole being from the plans of Messrs. James Stevenson & Son, architects, Berwick-upon-Tweed.

THE SIDDONS STATUE, PADDINGTON GREEN.

This statue, which was unveiled last week, is modelled by a French sculptor, M. Chavalaid, and executed at the atelier of Messrs. Farmer and Brindley. At the back of the pedestal is an inscription commemorating the fact that the statue was unveiled by Sir Henry Irving, on June 14, 1897.

The statue is dignified in pose and expression—a sculptor could hardly undertake to present Mrs. Siddons at all without attaining those qualities in his work—and we are glad to welcome it as an indication that the idea of erecting public statues in honour of persons who have been eminent among us for character or genius is gaining ground in this country. It is, however, impossible conscientiously to say that we regard this statue as a great or remarkable work of art, and we are rather inclined to ask why, in erecting a statue of an English actress on an English site, it was thought necessary to go to a second-rate French sculptor rather than to a first-rate English one?

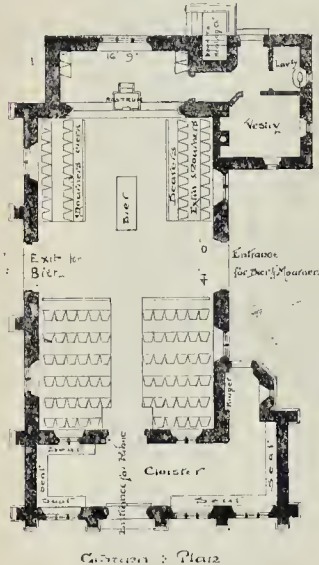
NEW CEMETERY CHAPEL, NORTHAMPTON.

This is the first premiated design for a new cemetery chapel and lodge, in a competition open to the architects of Northampton. The building is to be of hammer-dressed range work in Dunston stone with Weldon stone dressings. The chapel will give accommodation for 108 people. It is to be heated. The lodge is to have an external treatment of a similar character to that of the chapel. It to have on the ground floor an office

and sitting-room, kitchen, scullery, &c., with cellar in the basement and four bedrooms on the upper floor.

A tender has been obtained from Mr. G. J. Fisher, Northampton, for the two works, chapel and lodge, for 2,180*l.* The sum allowed in the competition was 2,500*l.*, and the architect's estimate was 2,350*l.*

The plan is so arranged that the public may enter and leave by the west door, whilst the funeral procession and those more intimately connected with it can enter by the north door and leave by the south, thus avoiding any



New Cemetery Chapel, Northampton.—Plan.

inconvenience by the meeting of the arriving and departing parties.

The vestry is so arranged that the officiating minister can see the funeral arrive, thus enabling him to appear at the proper time.

A cloister was required to enable people using the cemetery to rest. This is arranged at the west end, and could be made available for extra accommodation on special occasions.

The architect is Mr. Herbert Norman, of Northampton.

Illustrations.

THE ELEANOR CROSS, NEAR NORTHAMPTON.

THIS illustration of this well-known monument is taken from an exceptionally good photograph which was lent to us by a Northampton architect, Mr. Holding, at the time when we were collecting illustrations for the article on the architecture of Northampton, published in our issue of April 24 of this year. As it could hardly be rightly included under the head of Northampton architecture, and its publication would have taken up space which was wanted for the illustration of modern buildings, we omitted it at the time; but it is an effective illustration which our readers will probably be glad to have, independent of any special occasion for its introduction. Some remarks on the cross and its present condition will be found in the "Northampton" article already referred to, on pages 375-6 *ante*.

WORKS BY DR. CUYPERS, OF AMSTERDAM.

I. THE CHURCH OF ST. JACQUES, AT THE HAGUE.

This church is situated between two streets in the Dutch residence, the Hague, and is the first important Roman Catholic church that has been erected there.

In its principal features the design is of the

Dutch Medieval type; a Latin cross in plan, with a polygonal choir, and one large tower with spire at the west end. In the details the geometrical system is freely developed, and the ornamental decorative details are composed after natural forms.

The main walling is of brick, with sandstone and French savonnerie stone for interior dressings. The main portion of the internal structure is also of red brick, which has afterwards received a polychromatic decoration.

There is a gallery all round the choir, with an arched triforium above, and the arrangement of the two chapels in each of the transepts, developing their vaults from one pier with two capitals, gives some special character to this portion of the interior. The greater part of the furniture has been executed after the designs of the architect.

THE NATIONAL ART MUSEUM, AMSTERDAM.

Bricks of different sizes, Belgian and French, with blue-grey stone and granite, are the principal materials employed in this large building, which is constructed without any wood, and with very little iron.

As it contains not only the national picture gallery, but besides this a library, the very extensive collection of old engravings and etchings, an industrial and Oriental art museum, and a collection of casts and illustrations of the history of Dutch art in its various periods in connexion with every-day life, the plans of the three main floors have therefore been treated in accordance with these different requirements.

The objects of old Dutch industrial art have been collected in rooms which are copied from ancient existing buildings, so as to give the objects in their old surroundings.

The main form of the building is governed by the requirement of the Board of Works of Amsterdam, that a street thoroughfare should pass through the centre of the space. The architect accordingly arranged double vestibules and staircases, which lead to one central entrance-hall, with five different picture-galleries opening out of it. Above the street runs the gallery of the old Dutch masters, leading up to the "Rembrandt-Saal" at the end.

The Dutch Government has given a full publication of this Museum, the only one in Europe built at once after one general plan, and comprising all the different branches of art, even two schools of art in the upper floors.

This was the first public building in Holland in which decorative sculpture and painting were admitted, after engineers had been, during fifty years, the only Government architects. An art school was founded for instructing those who were to carry out the art-work in the Museum; a school which has not only succeeded admirably, but has been followed by the establishment of a great many others in Holland since that time.

THE CENTRAL RAILWAY STATION, AMSTERDAM.

In 1881 the Department of Railways and Public Building appointed Mr. P. J. H. Cuypers, in connection with the architect-engineer, A. L. van Gend, to prepare the plans for the Central Railway Station, in co-operation with the Railway Companies which were afterwards to make use of it.

The building is situated on a spot that twenty years ago was overflowed by the water of the sea in the Canal called the "Y." The Railway authorities proposed to form a great block of concrete in the sand, 300 metres by 50 and 2 metres thick. But the authorities decided to build on a common Dutch pool foundation, with an oak framework. This construction has answered very well, notwithstanding the heavy structure and large-span iron roof (45 metres), which it has to carry.

The style is that of the fifteenth and sixteenth century buildings in Holland—brick, and with stone dressings, both inside and outside.

The floors, either concrete or oak, are laid on brick vaults and iron girders.

The great central vestibule in the ground floor contains the ticket offices, and leads to the luggage offices on both sides; two passages in tunnels lead to the second and third platforms, two large staircases lead to the waiting-rooms, and first platform, two smaller staircases lead to the second floor, where the large assembly hall is formed above the vestibule; and all

other rooms are arranged for the administration department.

The dwellings for officials, the police-court, the post-office, etc., are in the west wing. At the east end is the pavilion for the Royal family, formed by a central hall, two side rooms, toilet, etc., and a richly-decorated vestibule with staircase.

Though the architect has been accused of making his public buildings too medieval and "convent-like," in this instance he departed sufficiently from medieval precedent, for, instead of vaulting this large five-aisled space, he employed iron box girders with immense wrought-iron brackets, with flat arches in yellow brick turned between them, and treated with a slight decoration. In adopting this treatment, Dr. Cuypers considers that he has kept to the principles of thirteenth century architecture, while adopting the methods of the nineteenth century.

One of the illustrations shows the front façade of the railway-station; the other gives an idea of the manner in which the interior passages and offices have been designed and treated.

SOCIETY OF ENGINEERS.

A VISIT was made by a party of the members of the Society of Engineers on Thursday, the 17th inst., to the London section of the M. S. and L. Railway (Extension to London) Works.

The works in question comprise the Metropolitan Division of the Manchester, Sheffield and Lincolnshire Railway (to be hereafter called the Central Railway) Extension to London.

The trains of the Company will run from the point where their new main line joins the Metropolitan Railway at Quainton-road, over the rails of the latter company to Harrow, from which place two new main lines for the exclusive use of the M. S. and L. Railway are being constructed by the Metropolitan Railway Company, adjoining their own line; to a point near Finchley-road Station, at which place the work is taken up by the M. S. and L. Railway, and is the property of that company.

At Neasden, which the new line of the Metropolitan Company passes, the M. S. and L. Company are laying out a large sorting-yard and engine-house, &c., for the accommodation of the London working.

From Finchley-road station the new line runs southerly by means of covered way, 26 ft. 4 in. in width, and at some points quite close to the existing line of the Metropolitan, until it reaches the London and North-Western Railway, which is crossed between the Loudoun-road station and the westerly mouth of the Primrose Hill tunnel by a steel girder bridge of three spans, and then runs into covered way again at the northerly side of the Alexandra-road, continuing either in covered way or tunnel until it emerges into a large opening lying between Circus-road and Wellington-place.

It again passes by means of covered way, constructed with three arches, one of 40 ft. and the other two of 26 ft. 4 in. each, the whole accommodating seven lines of rails, under Wellington-place, Lord's Cricket Ground, and St. John's Wood-road.

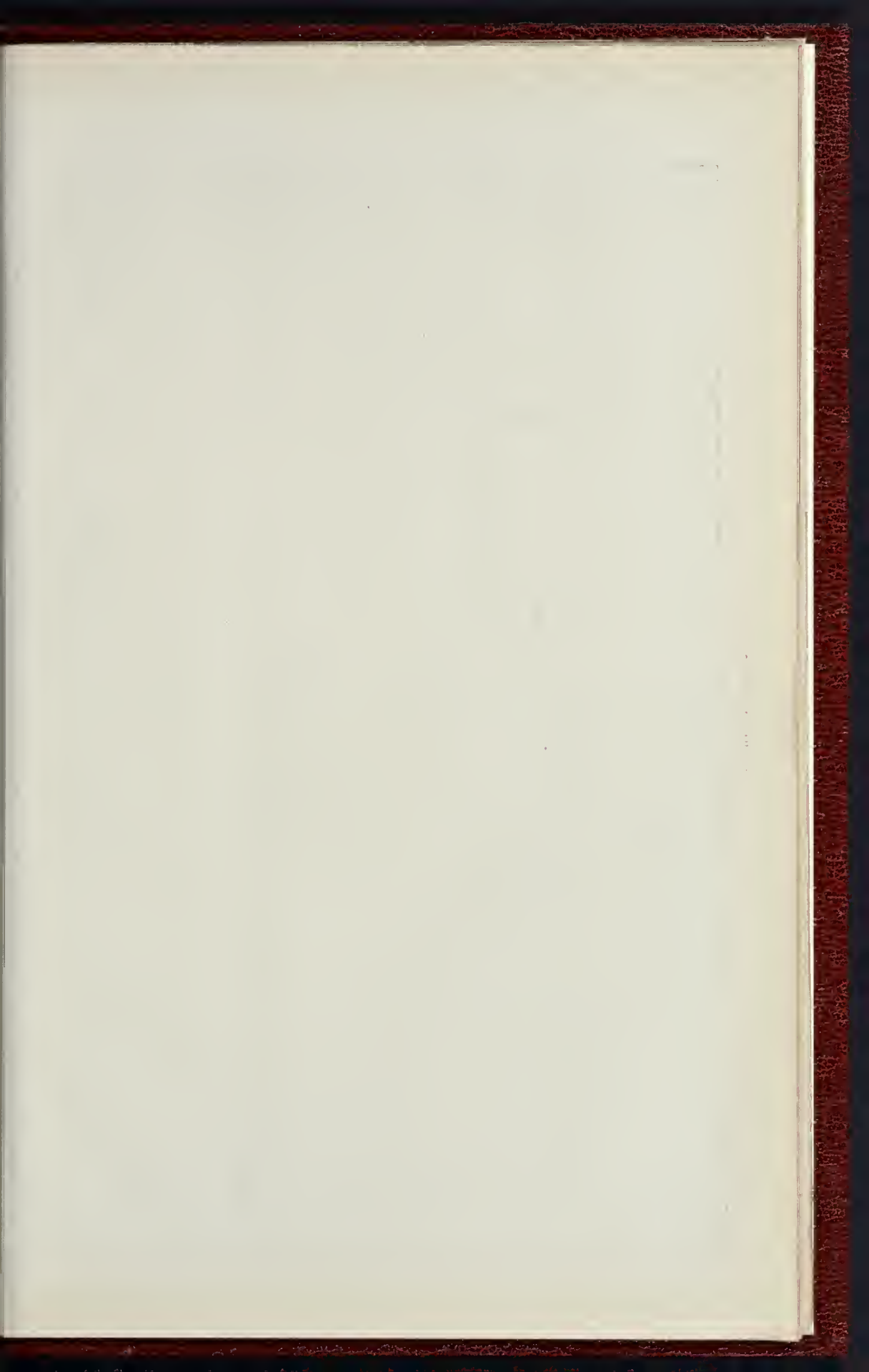
All the retaining walls, side walls, and arches of the covered way and tunnel are faced with blue brick and present a solid and massive appearance.

The work under Lord's Cricket Ground had to be done during the winter months, and the visit showed that no time had been lost, for the turf over the covered way is already green and in good condition. As fast as the arches were turned the dumping under them was excavated and lifted through openings left for the purpose, and the filling over the arches followed the brickwork quickly, work being continued day and night.

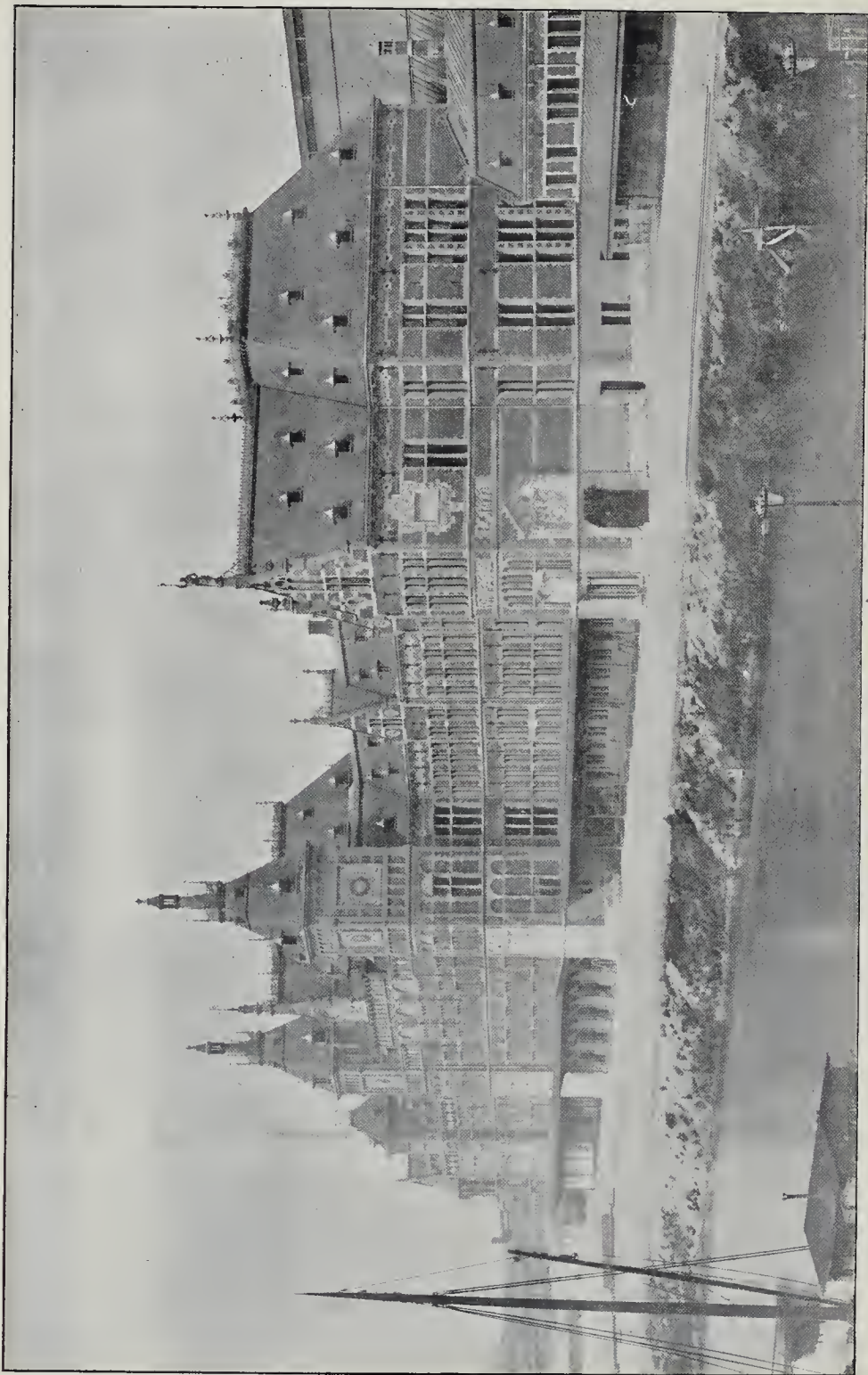
The Regent's Canal is crossed by a large steel bridge, the openings for the passenger main lines being spanned by through girders; while that portion for the goods and coal lines has been made a deck bridge, and covered with Hobson's steel flooring so that rails can be laid, and points and crossings laid in at any part, irrespective of the girders.

The Regent's Canal has been widened and a retaining wall built on the south side to form a lay-by for barges interchanging traffic with the railway, and a transfer shed, and several cranes will be placed on the railway wharf.

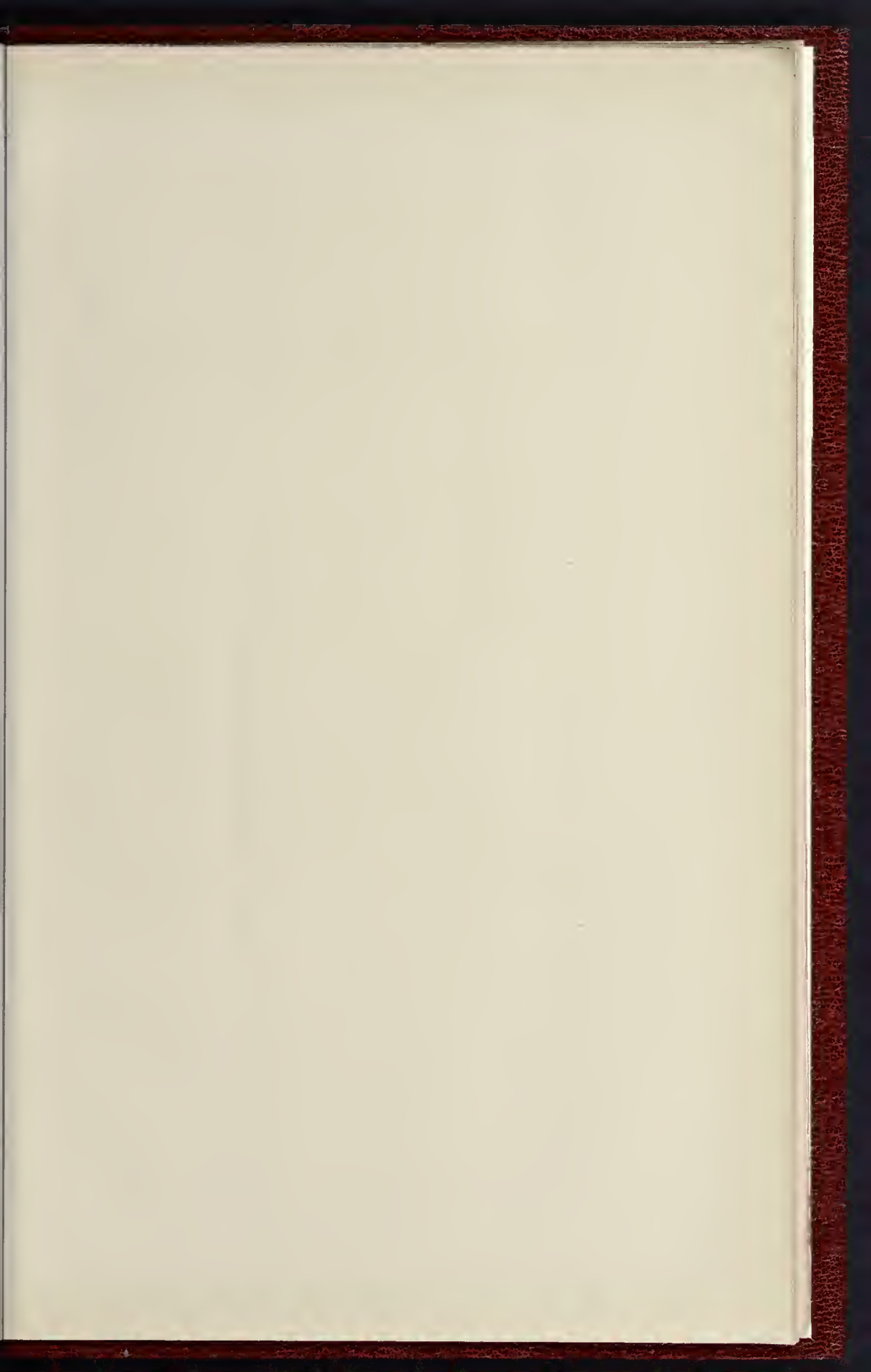
Just after crossing the Canal a separate pair of lines diverge and run west to Grove-road, under which they pass to an extensive coal



THE BUILDER, JUNE 26, 1897.

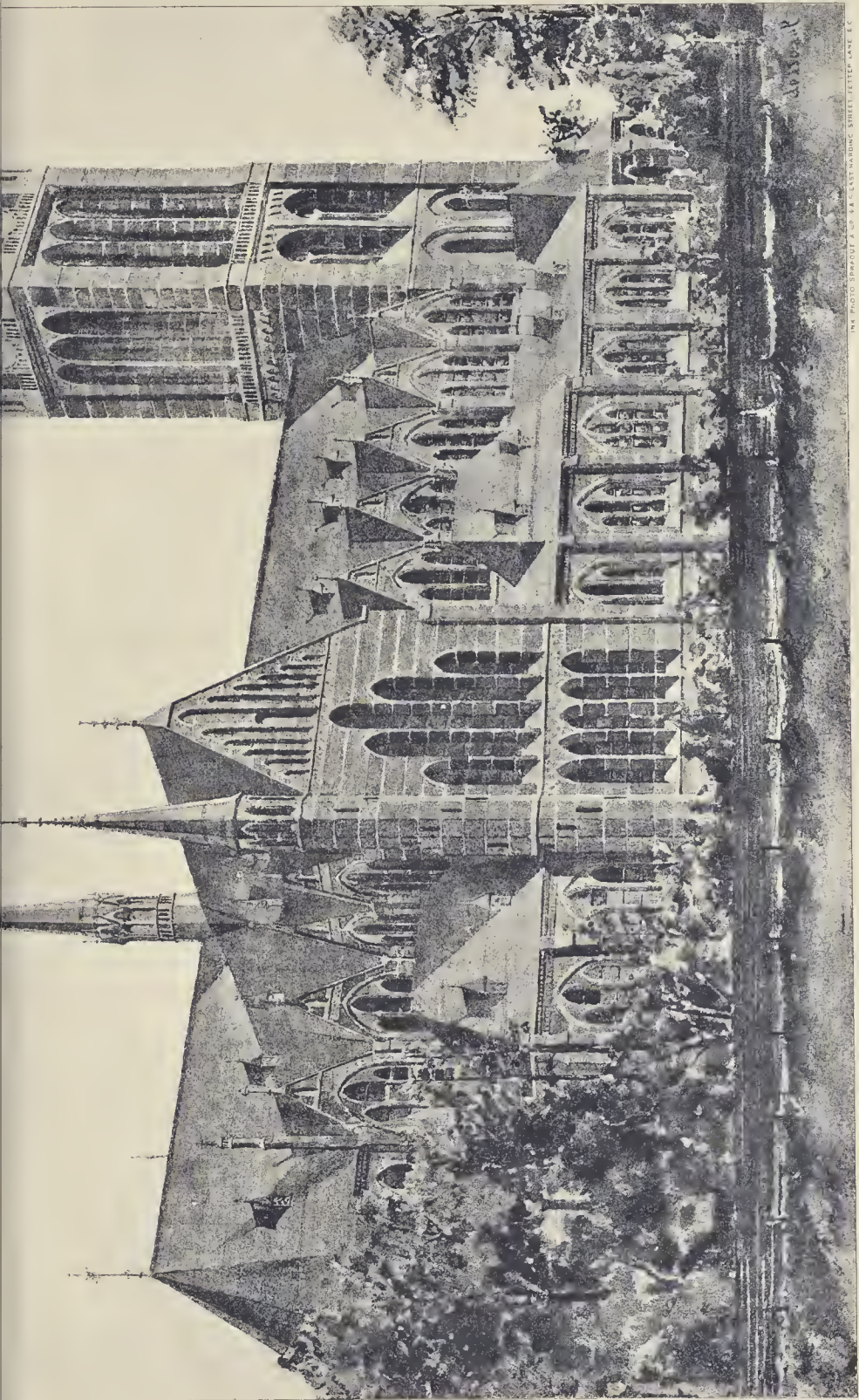


FRONT OF THE RAILWAY STATION, AMSTERDAM.—DR. CUYPERS, ARCHITECT.



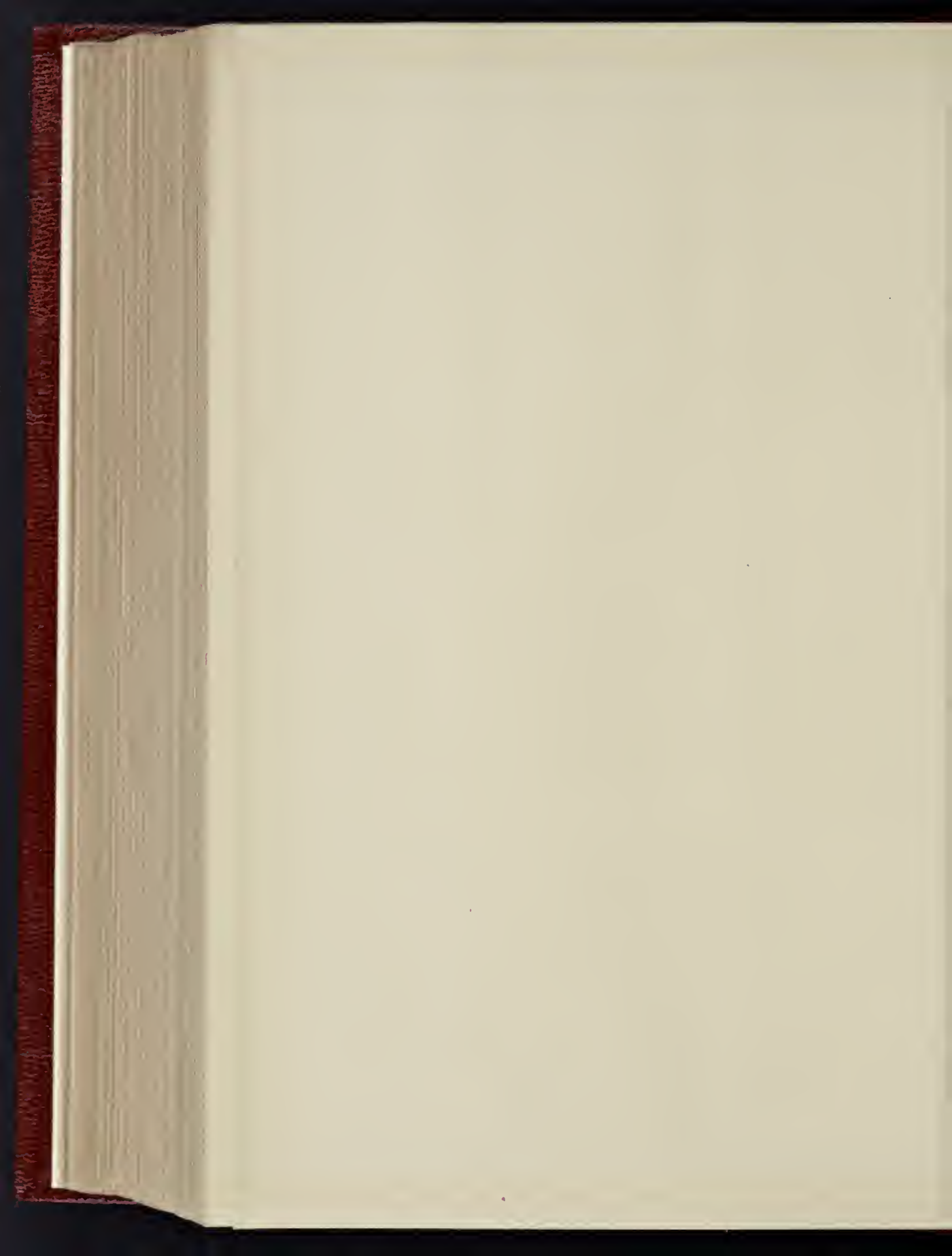
THE BUILDER, JUNE 26, 1897.

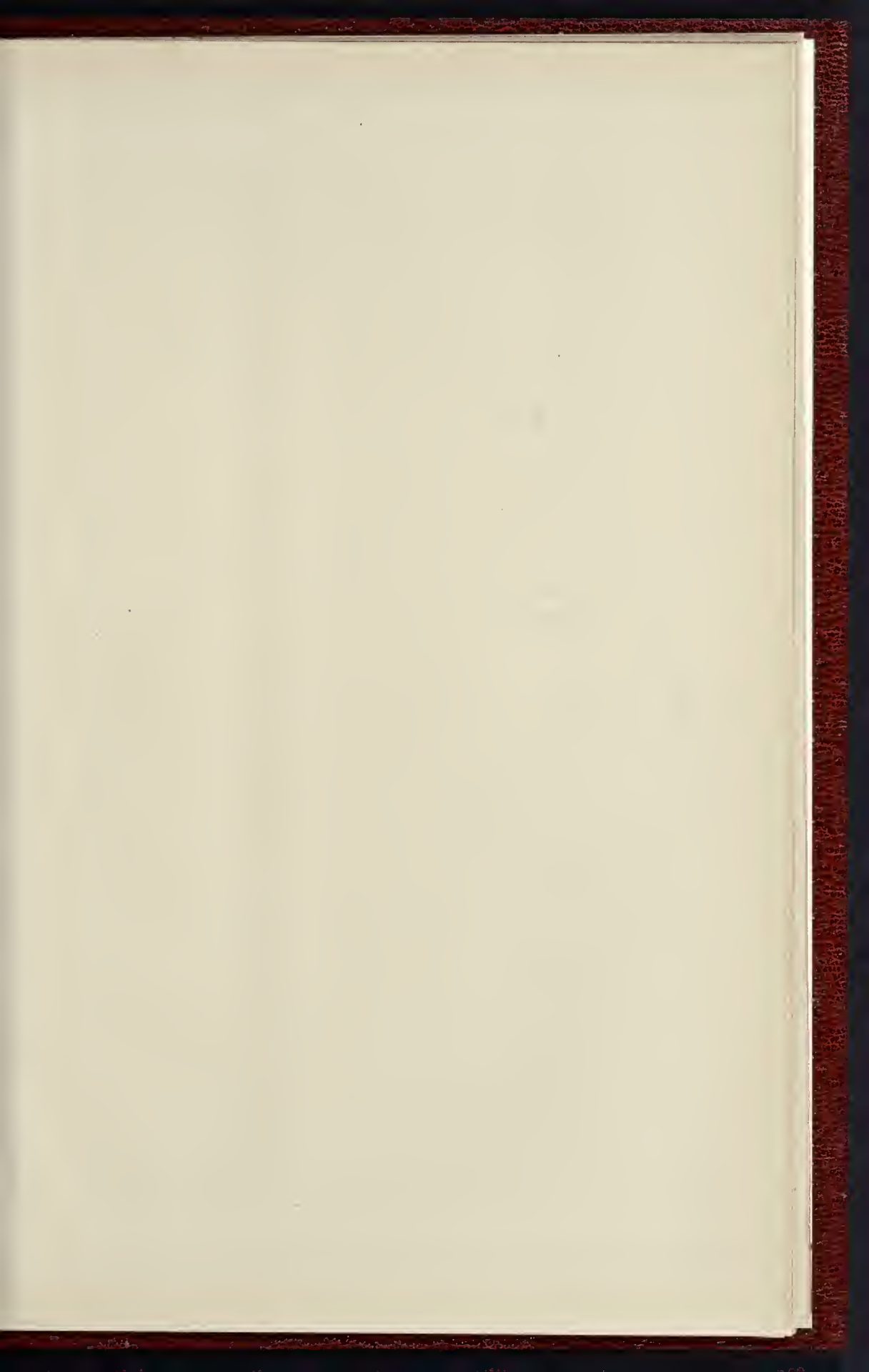




THE PHOTOGRAPH BY MR. H. A. S. VAN DER WERF, THE HAGUE, NETHERLANDS.

CHURCH, THE HAGUE.—DR. CUYPERS, ARCHITECT





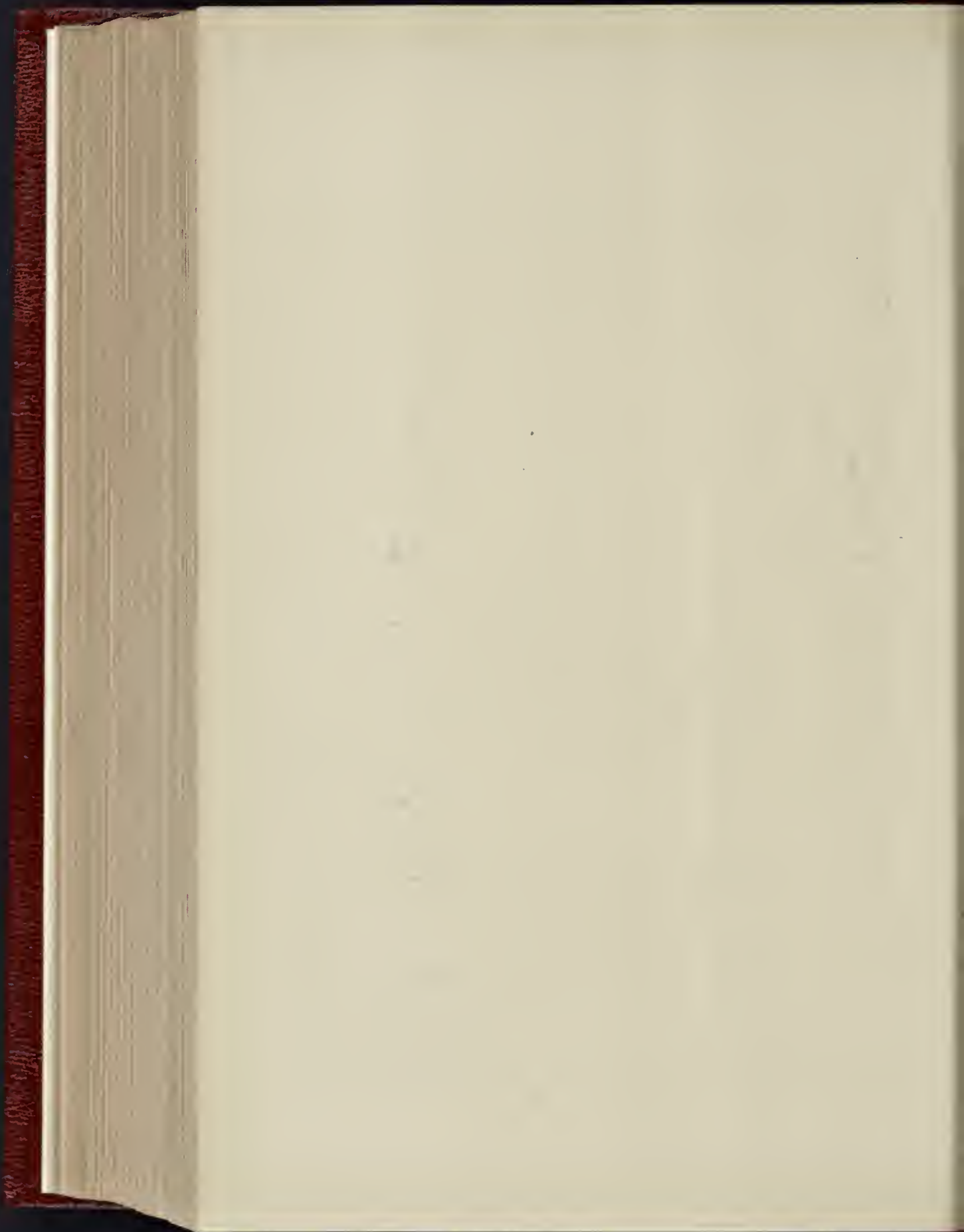


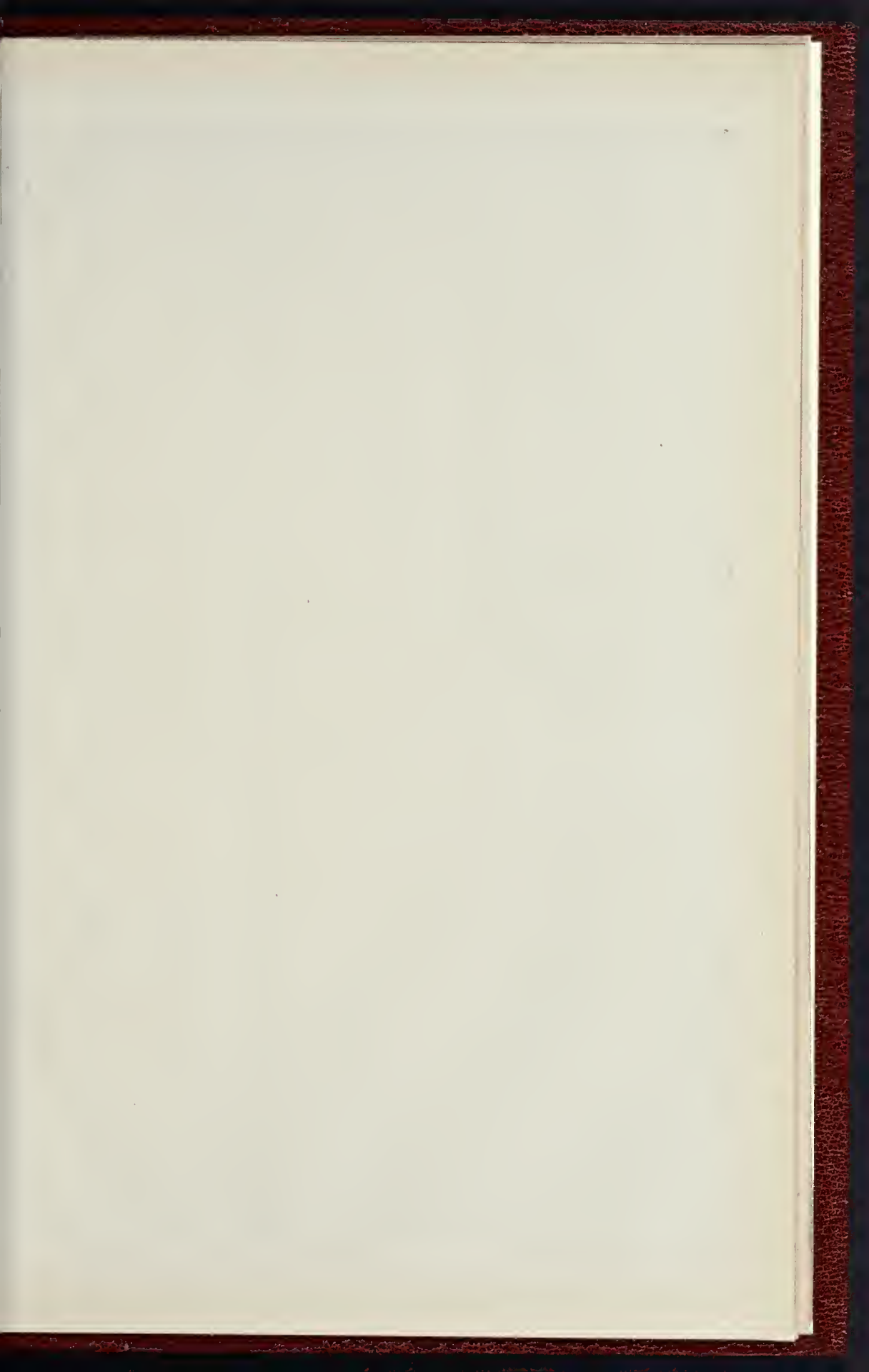
NATIONAL MUSEUM, AMS



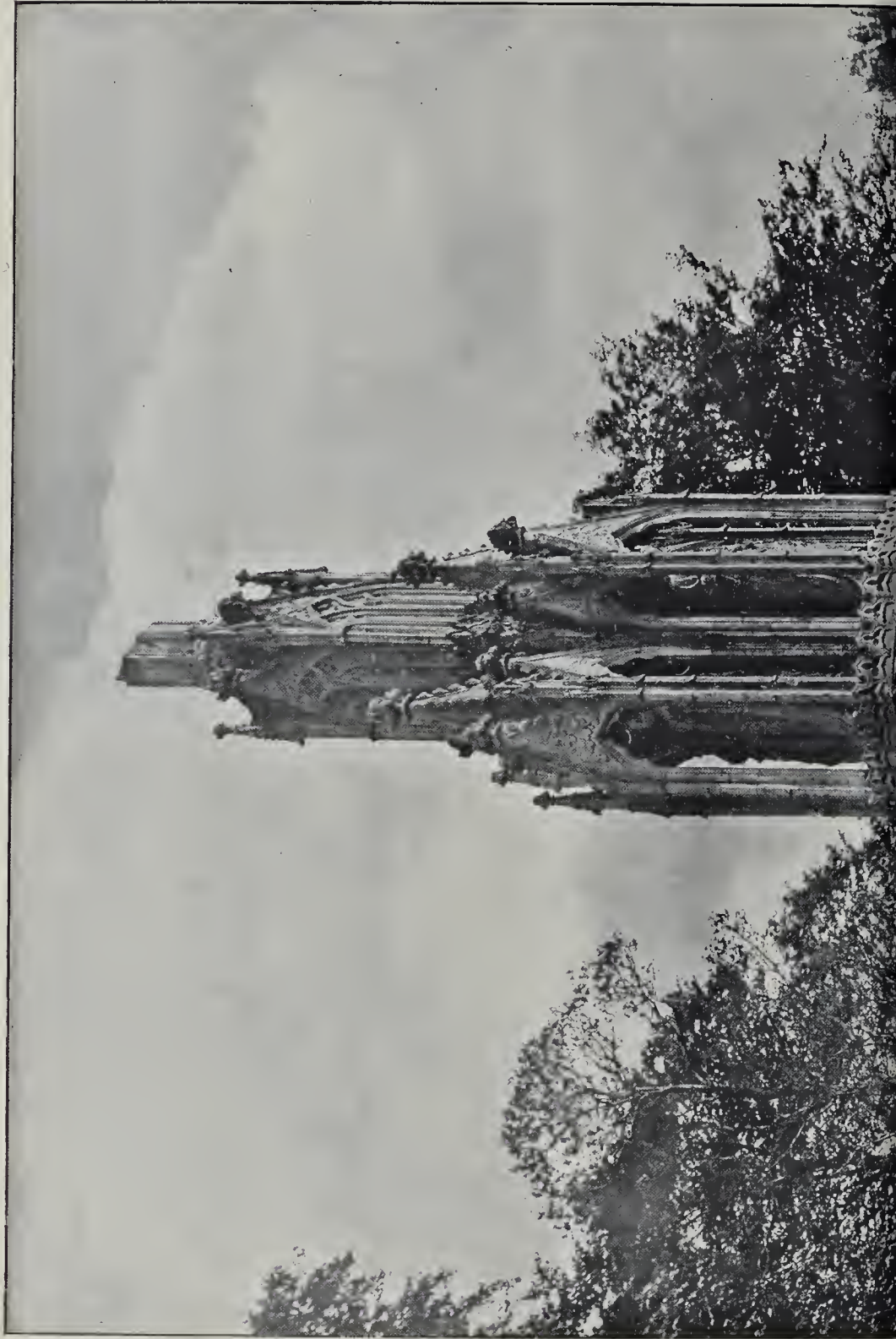
INN-PHOTO SPRAGUE & CO. 4 & 5, EAST HANING STREET FETTER LANE, E.C.

I.—DR. CUYPERS, ARCHITECT.



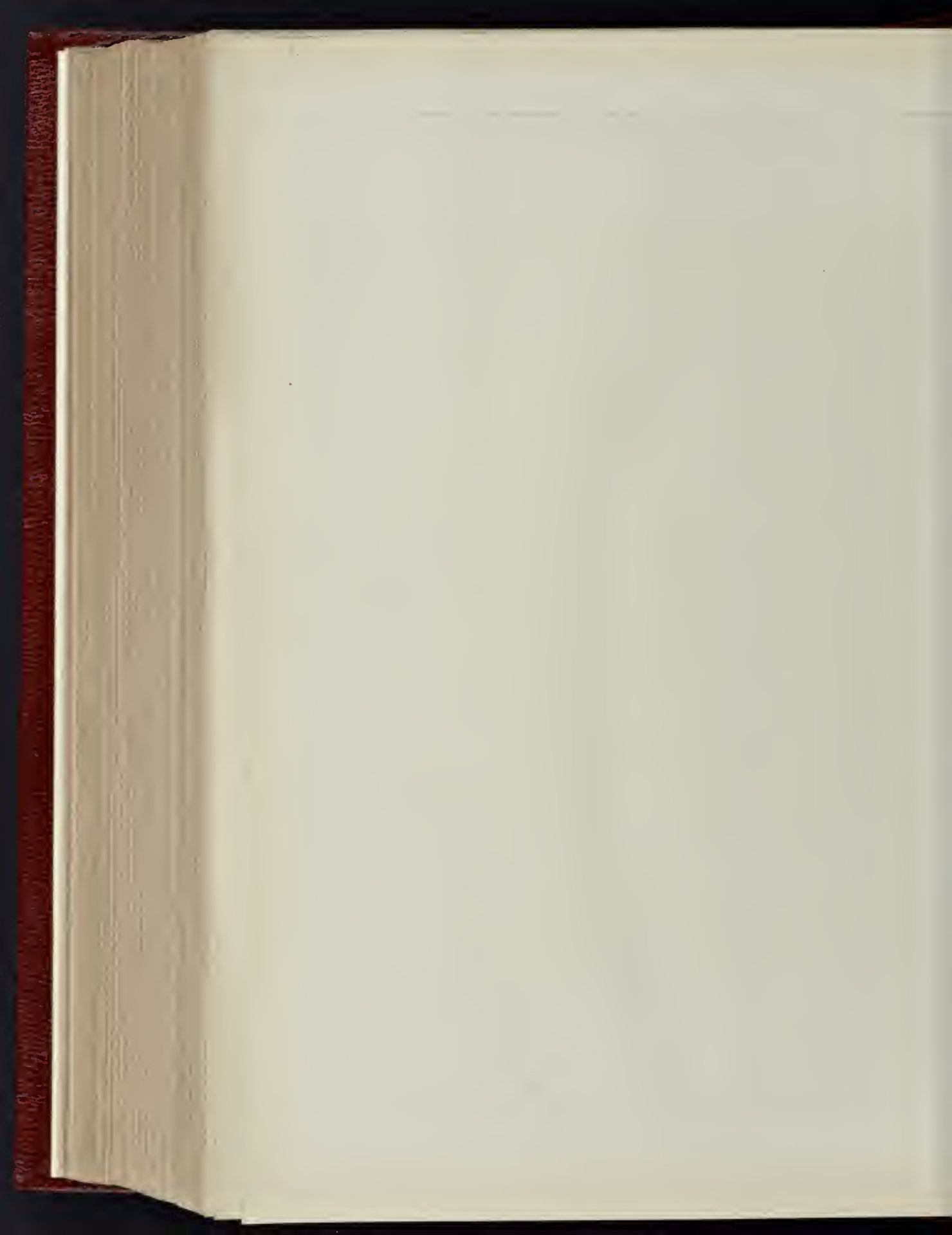


THE BUILDER. JUNE 26, 1897.



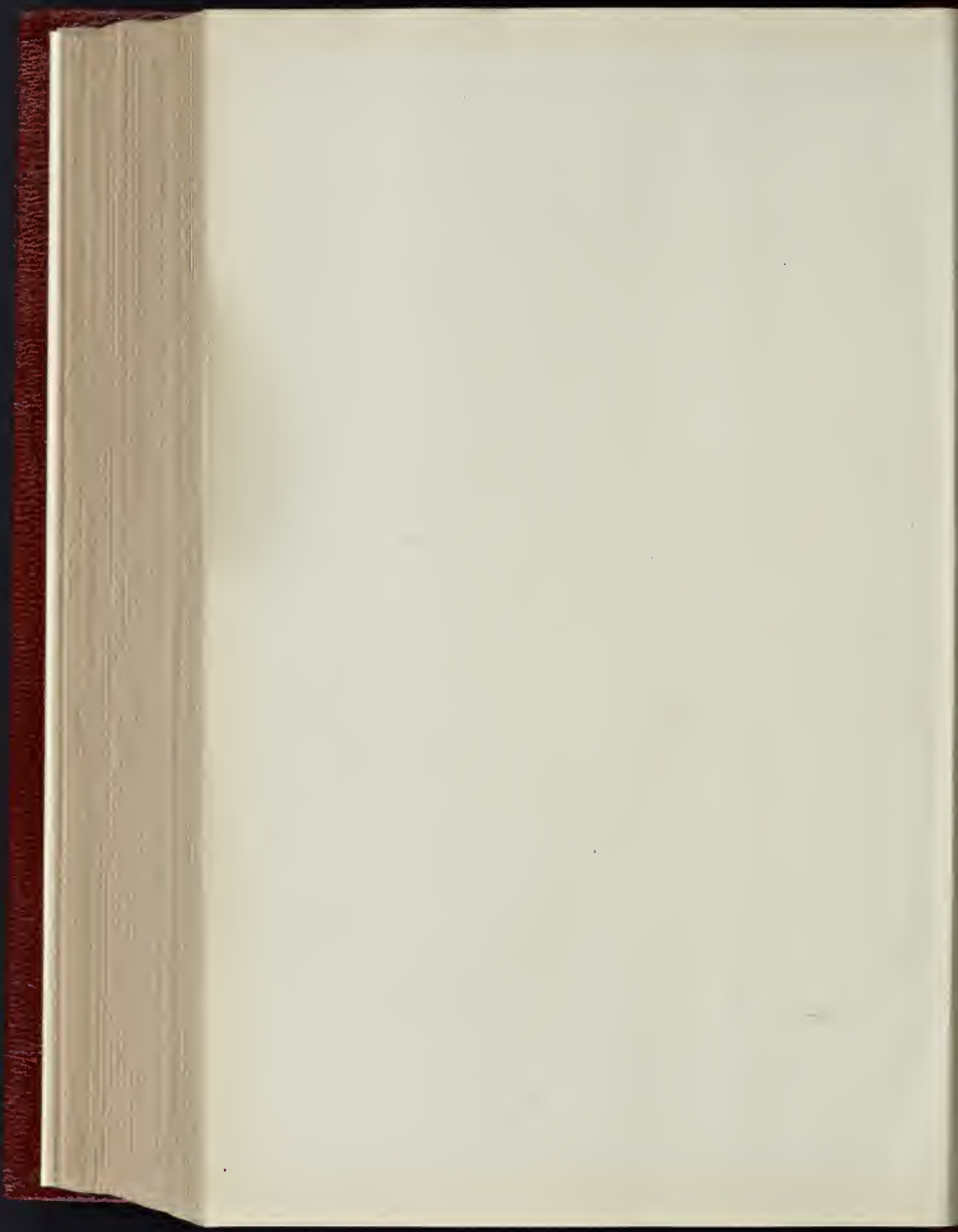


THE ELEANOR CROSS, NEAR NORTHAMPTON.





INTERIOR IN THE RAILWAY STATION OFFICES, AMSTERDAM.—DR. CUYPERS, ARCHITECT.

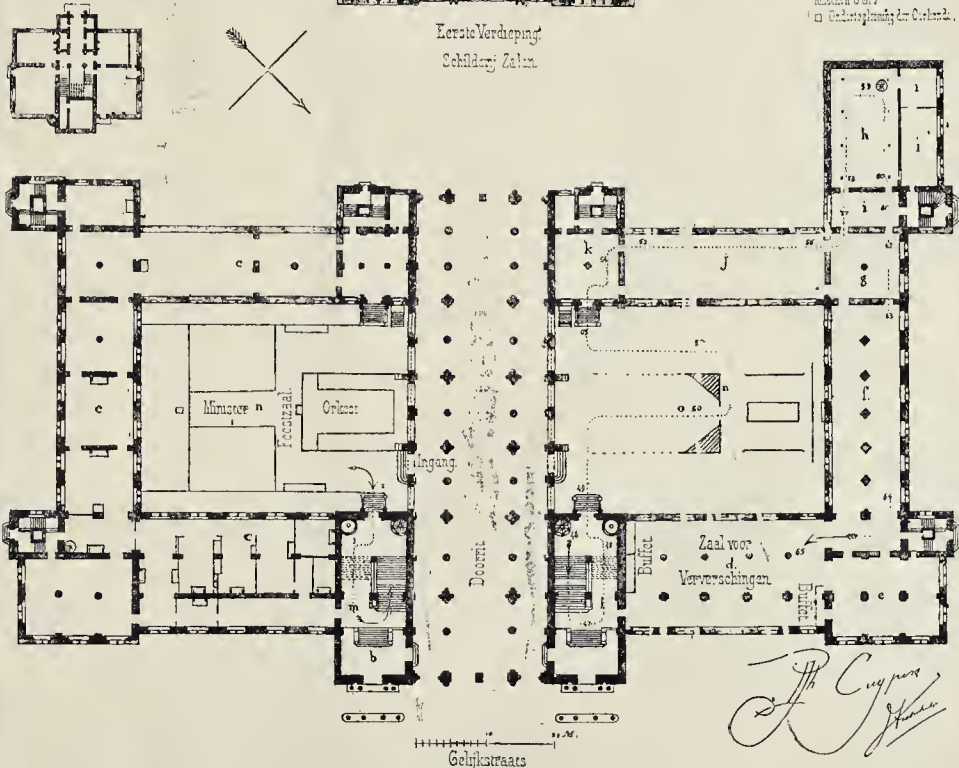


RIJKS-MUSEUMGEBOUWEN TE AMSTERDAM.



Eerste Verdieping
Schildery Zalen.

musica 6 en 7
in Gelijkskwaats te Colonnade.



Art Museum, Amsterdam. Plan.

depot which is in course of construction, and which occupies an area of about 20 acres.

The goods warehouse, which will be 385 ft. in length, by 255 ft. in width, and have five floors, is situate on the former site of Alpha-road, and between it and a new road to the south of it, which extends from Grove-road to Park-road, and which will cross over all the lines of way leading into the passenger station. This road will be 60 ft. in width, and is being paved with hard wood blocks of Jarrah timber; another new road leaves this at right angles near to the new vicarage and schools of St. Paul's Church, which have had to be rebuilt, and runs alongside the site of the new passenger station and to the Marylebone-road.

The passenger station, which will have a frontage of 325 ft. on what was formerly the south side of Harewood-square, will contain the booking office, restaurant and the usual waiting and other rooms on the ground floor, and general offices for the Company on the first floor, will be of red brick. In front of the office there will be a promenade 100 ft. in width, and extending the whole length of the frontage, and from this promenade access will be had to the departure and arrival platforms, which, for the present, are limited to a width of 158 ft. on the easterly side, the rest of the space to the west being reserved for future extensions.

The platforms and cab rank, which latter is entered from the bridge over the lines at the north end of the station, will extend to that bridge and will have a length of 1,000 ft., but the roofing will at present only extend northwards for half that distance.

The spans of the roof will be two of 50 ft., one of 40 ft., and a temporary span of 18 ft., and will be carried on columns and arched lattice spars running north and south.

The work for the station has only just been commenced, and it will be some months yet before the character of this work can be seen.

In the covered way, tunnels, and retaining walls already done, strength and massiveness are the principal characteristics, and there has been no superfluous expenditure upon ornamentation.

There are an average number of 3,000 men employed upon the works, which are let under contract with the company to Mr. J. T. Firbank, M.P. Messrs. Sir Douglas & Francis Fox are the engineers-in-chief.

In front of the station, and between it and the Marylebone-road, the Grand Central Hotel of the Gordon Hotels Company, and to be worked in connexion with the railway, is being erected. It will consist of a building occupying a block of land 313 ft. from north to south, and 23 ft. in average width from east to west. It is being built on four sides of a central quadrangle, which will be roofed over in the manner of several continental hotels, and will form a handsome front for the station, to which access will be had by two new wide streets east and west respectively, of the hotel. Colonel Edis is the architect of the hotel.

Books.

Bell's Cathedral Series. Edited by GLEESON WHITE and EDWARD F. STRANGE. Chester, by Charles Hiatt; Rochester, by G. H. Palmer, B.A.; Oxford, by the Rev. Percy Dearmer, M.A.; Canterbury; and Salisbury.

WE have nothing but praise for these admirable little handbooks. Some might suppose it difficult to add anything that would be useful to the already voluminous literature dealing with the English cathedrals. As a matter of fact, however, most of the books on the subject are somewhat elaborate and expensive; a good many are overloaded with details of very secondary interest, however desirable to make the work complete, and with criticism which, if sometimes useful, is more often in the way. Between the more sumptuous volumes, and the little local visitors' guides, there stands really only Mr. Murray's excellent and learned series of handbooks, themselves so full as to be standard works and beyond the requirements of a good many people who are more or less interested in the subject.

The editors tell us, in a general preface, that the present series has been planned to supply visitors to the buildings with accurate and well-illustrated guide-books, at a popular price, and not too technical, but compiled with sufficient knowledge and scholarship to make them useful to the student. In the five volumes

before us this object seems to be very well attained. The "visitor" is obviously the principal object of solicitude, and the "student," as modestly indicated, is only incidentally catered for; but the really accurate information provided for the former is of a kind, and is so arranged, that it must often be of value to the latter when larger works cannot be referred to; and the price is such as to put it within easy reach of every one. In each case the history of the building, the descriptions of the exterior and interior, and the history of the See are separately treated, and the descriptions are divided into sub-sections for easy reference. This is, no doubt, wise, if not inevitable under the circumstances, and one must wait patiently for more ambitious books which may give life and interest to the dry details by treating all these sections together; showing how the history of the building has been bound up with the course of events and influenced by the characters of men; how its arrangements have been affected by changes of ceremonial, or of religious or architectural ideals, by the wealth or poverty of communities, and so forth; and how the architectural details are the result of some of these combined with the nature of the material and class of workmanship available when they were executed. We believe that adequate knowledge, a little research, and very moderate literary ability would suffice to produce books on these lines which, if not as absorbing as a first-rate romance, would at any rate be far more interesting to the public and useful to the student than anything yet attempted, and we hope some day to see something of the kind.

Meanwhile these little volumes supply many hints, and a good deal of the actual information that will be required by the future author, and although they do not tell a connected story, they do frequently trace effects to their immediate causes in a very interesting way. They bring out the peculiar characteristics of each building, they state the important facts correctly; scrupulously pointing out those which are disputed or uncertain. Their criticism is well informed, and confined within reasonable limits, and their judgments are stated with moderation, and will commend themselves as a rule to the professional reader. The views and sketches introduced are necessarily small in scale and do not show a great deal of the architectural details; a good many are reproductions from photographs and a few from prints in older books, and are not in themselves very interesting, though adequate for the incidental illustration of the text. But there is also a fair sprinkling reproduced from sketches that are fresh and pretty enough. In the matter of illustration we think the Salisbury volume is somewhat inferior to the others. Each book contains a little sketch plan placed near the beginning of the chapter on the "interior"; a position the appropriateness of which is not quite clear to the architectural reader: one would suppose it might be exceedingly useful for reference when reading the earlier parts of the book, and that its place would be on the first page or where it could be easily turned to at any time without searching for its position in the index.

These volumes would be welcome if only as a sign that the interest in our cathedrals, the principal architectural monuments of the country, has not died out with the Gothic revival to which it mainly owed its origin in the present century. They are especially welcome as showing that, in works written with an avowedly popular object, it is no longer considered sufficient to adopt a tone of florid eulogy of everything old, and indignant

condemnation of what is new; but that it is worth while, on the contrary, to understand both and give each its due.

The Law of Boundaries and Fences. By ARTHUR JOSEPH HUST BANISTER. Fourth Edition by Archibald Brown Banister. London: Butterworth & Co. 1896.

THIS is a very well-known book, and may fairly be said to contain the whole law on the subject. In some respects the work is almost too full, as there is a portion of one chapter on level crossings and the duty of railway companies in connexion therewith. We can scarcely consider this subject to fall within the real object of the book. In fact, we should be inclined—without referring to these details—to suggest that in any future edition the question of eliminating some of the existing material should be considered. The chapter which will have most interest for readers of this journal is that on party walls, apart from statute and under the London Building Act. One important case is noted in it, namely: that of the Mayfair Property Company v. Johnston, decided in 1894. Here two persons were tenants in common of a party wall, and each was held entitled to enforce a partition of it, and such partition was ordered to be made longitudinally, and each party was ordered to execute the necessary conveyance. A useful feature of the book is the chapter on the evidence of boundaries. There is nothing more important for landowners than to be clear about the boundaries of their property, and to understand what facts are evidence in support of their views. We may also commend the plan of adding the dates to the decisions of the Courts. To laymen, especially, this knowledge is valuable.

A Short History of Musical Instruments. Compiled by JOSEPH GERMAINE. London: S. & P. Erard. 1897.

THIS is really a short illustrated pamphlet issued by Messrs. Erard, the pianoforte makers, partly with the idea of tracing the progress of the percussion class of stringed instruments from the earliest forms down to (or up to) the modern pianoforte; but it contains a good deal of information and illustration in a small compass, and may be useful to those who have to represent ancient musical instruments in decorative design.

Correspondence.

To the Editor of THE BUILDER.

SEWER CAPACITIES, BY DIFFERENT FORMULÆ.

STR.—I have recently tabulated the results of a comparison of various hydraulic formulæ, chiefly of figures worked out, over a year ago, in connexion with an American sewerage scheme. I do not remember having seen similar results, in a form admitting of ready inspection, and, therefore, enclose copy of table for publication.

Having regard to the disparities shown, it would seem desirable that greater uniformity of practice should be established in this matter, and the Kutter formula (No. 6 in Table) with its varying coefficient "c" for mean velocity, giving a relatively low result for small conduits, appears to possess advantages not offered by other rules. The use of different values for "n," to suit varying degrees of roughness in the conduit, is another well grounded departure from opinions once commonly entertained.

Formulæ Nos. 7 and 8 are modifications of

DISCHARGES THROUGH CIRCULAR CONDUITS, RUNNING FULL, IN CUBE FEET PER MINUTE.

Formulæ.	Earthenware Pipes.						Brick Sewers.					
	6 in.		12 in.		2 ft.		4 ft.		6 ft.			
	1 in.	1 in.	1 in.	1 in.	1 in.	1 in.	1 in.	1 in.	1 in.	1 in.		
1 Eytelwein	55	22	248	140	99	1,256	725	458	3,180	1,833	5,054	3,577
2 Chezy (coefficient 94)	55	32	248	140	99	1,253	723	457	3,179	1,830	5,043	3,563
3 Weisbach (Latham's Table)	60	34	268	148	102	1,357	779	478	3,431	1,919	5,344	3,676
4 "Box's Hydraulics," Table 3	54	31	249	137	97	1,210	705	448	...	...	...	...
5 Neville (Molesworth's Tables)	65	35	260	137	105	1,359	826	490	...	...	...	...
6 Kutter ("n" = .013 for Pipes, .015 for Brick)	41	24	225	127	90	1,133	654	414	3,149	1,925	5,759	4,020
7 Massachusetts Drainage (Water)	58	34	283	160	114	1,533	859	569	4,283	2,473	7,140	5,062
8 Commission, 1885 (Sewage)	52	30	252	142	101	1,385	799	506	3,807	2,198	6,364	4,500
9 Mean Velocity (ft. p. sec.) Kutter	3'48"	2'01"	4'77"	2'70"	1'91"	6'01"	3'47"	2'19"	4'43"	2'55"	3'39"	2'37"

the Chézy rule (No. 2) with the use of a varying "c" coefficient derived from experiments on the Sudbury River Conduit (Boston Water Works) and Boston Main Drainage Works respectively. These coefficients range within the limits of the Table, between 88° and 133°; a fact amply sufficient to account for the divergent results as compared with No. 2. The constant used in the latter, 0.90, brings the formula into remarkably close agreement with the better known Eytelwein (No. 1).

The mean velocity for each size and inclination of sewer, as per Formula No. 6 (Kutter), is shown in last line of Table.

JOHN S. HODGSON.

Wellington, Mass., U.S., April 21, 1897.

THE GRAVES OF GREAT ARCHITECTS.

SIR.—When wandering recently in Shenleybury churchyard (near St. Albans), the sexton drew my attention to the broken grave of Hawksmoor. It consists of a flat slab of stone on a low brick plinth, and bears the following inscription:—

P.M.S.

Hic jacet

NICHOLAUS HAWKES-MOOR ARM.

Architectus

Obijt vicesimo quinto die Martij

Anno Domini 1736

Ætatis 75

The month and final figure were not clearly decipherable, and I have supplied them from the "Architectural Dictionary," where, by the way, Hawksmoor is spelt without the "e."

The meaning of the opening initials of the epitaph is also obscure. Perhaps some of your readers can explain them. What, however, I wish to draw attention to is the advisability of ensuring the preservation of the scattered monuments of great architects. A very small annual outlay would suffice, if systematically expended. Probably 2l. would put Hawksmoor's gravestone together again and free it from lichen. The Institute might consider such a work within their sphere.

Now, if one may wander from Hawksmoor's tomb at the east end of the churchyard to the south door, the paving in front of which was the floor of the now demolished tower, one may read another epitaph of interest to the architectural student:—

"In Memory of Joseph Rogers, who died August 17th, 1828, in the 77th year of his age, having been Clerk of this Parish a half-Century.

Silent in dust lies mouldering here

A Parish Clerk of Voice most clear:

None Joseph Rogers could excel

In laying bricks or singing well;

Though snapped his line, laid by his rod,

We build for him our hopes in God,

The Saviour God, that he will raise

Again that voice to sing his praise

In Temple blest which always stands,

The Church of God, not made with hands."

Although still remembered by a few surviving inhabitants as leading the singing in the church, and not born until after Hawksmoor's death, Joseph Rogers represents a type of workman more familiar to the architect of Hawksmoor's time than our own. It would be interesting to know how many bricks the old parish clerk considered it proper to lay in a day.

F. H. M.

THE ASSOCIATES' (R.I.B.A.) VOTE.

SIR.—Whilst admitting there may be a difference of opinion as to whether the Chairman's ruling of the last week was correct or not, you infer that he was entitled to his opinion. But was he? He was not asked for a ruling; nobody objected to the Associates present voting. Why this haste, therefore, to give a ruling which nobody apparently wanted, and which you admit is open to question? Surely the proper course would have been to wait for an objection, and even then to give us the benefit of the doubt—if there was one.

But I must repeat my conviction that no Chairman has the right to read into the clause of the Charter words which do not exist there. Our right to vote is clearly only prohibited in the "making, altering, &c., of any by-law." We were not at the time discussing the alteration of a by-law—that came later. And I refer for confirmation of my

statement to the Minutes published on p. 306 of the last issue of our "Journal," where I read "on this and the two following Resolutions" (the italics are mine) the Chairman ruled, &c. Mr. Langlands was quite right in saying "by-law" was not mentioned. It is not in either of the three. They are simply resolutions which, to be valid and sufficient to enable the Council to act, must be passed by the Institute and not by a section of it.

Let me state another case. Suppose a Fellow brought forward a motion that "The Associates be no longer permitted to vote on any questions before the Institute," and Mr. Webb were in the chair. I ask him would he permit the Associates to vote on that resolution? And I ask him this publicly, because our mouths were absolutely shut at the meeting, it being obviously a breach of order to discuss a Chairman's ruling. Besides, the ruling was not logical, for whilst prevented from voting on a particular clause of a report (it was nothing more), we were told we could (and we did) vote on the motion that the report be adopted. Now, sir, the greater must include the less, and if one clause affected the by-laws, much more so did the three clauses which the whole report contained, and yet on which we were allowed to vote.

That Mr. Webb is the last man to do the Associates an injustice I believe, for no man more enjoys the respect—almost affection—of the juniors in the Institute. But that he has done so, however unwittingly, I hope he will perceive.

C. H. BRODIE.

The Student's Column.

SPECIFICATIONS.—XXVI.

TERRA-COTTA.

WITH buildings in which terra-cotta plays an important part, it is usual to make a sub-contract with a manufacturer for the supply of the material to the general contractor. Questions of colour, quality, and punctual delivery make this desirable, if not absolutely essential. The amount of the sub-contract is usually arrived at by obtaining an estimate (with or without competition) based upon a bill of quantities supplied to the manufacturer. Unless there be very exceptional features in the work, this bill contains but few items, viz.:

- 1. cubic feet plain and moulded terra-cotta.
- 2. cubic feet enriched do. do.
- 3. No. models.
- 4. No. enriched models.

It then becomes necessary to make the manufacturer and the builder jointly responsible for matters in which their respective duties overlap, and separately responsible for those things over which they have individual control. We, therefore, now proceed to give the separate forms of specification for manufacturer and builder; but, as many of the clauses are the same in both, the second specification gives merely a reference to those items of the first which it is desirable to repeat.

It may be mentioned that it is best for the manufacturer to receive direct payment upon certificate—the builder including in his own estimate his percentage upon the sub-contract to cover his liabilities in connexion with it.

Specification for the Terra-Cotta Manufacturer.
 1. The terra-cotta to be delivered at the station in ton lots, complete and perfect, free of all charge for carriage and packing. All requisite information concerning, and marking upon the material shall be supplied by the manufacturer. It is to be of best quality, free from all cracks, and equal in all respects to samples deposited with the architect. These samples are to show the two allowable extremes of colour, and the extreme permissible deviation from true lines in mouldings and arisises—as well as the general finish of the enrichments. All pieces in any way inferior to these samples will be rejected, and new blocks in their place are to be supplied by the maker, who will not be entitled to any time allowance on this score for completion of either the whole work or of the sections into which it is divided in clause 6 below. The terra-cotta to be in strict conformity with the drawings, models, and instructions supplied.

2. The setting out of the work to the necessary shrinkage scale, and all responsibility for its turning out of the exact sizes required for use to be undertaken by the manufacturer.

3. But the builder may be called upon to supply particulars upon all points of setting out requiring attention in order to meet the wants of other trades, and to assist in determining the numbers of the several pieces, and the identification marks to be put upon the various blocks.

4. The manufacturer to make and supply all

the models that may be wanted. (In some cases, where the enrichments require more artistic treatment than the manufacturer would be able to give them, a special arrangement is made for this portion of the models to be supplied to the manufacturer.) Such models as the architect may wish to see are to be submitted to and approved of by him before being used for moulding form. Piece moulds to be made of the various blocks so that they may be moulded without stopping up the several parts with clay to the injury of the modelling. The clay to be pressed well home in the moulds and when it is taken out the seams to be carefully obliterated. Each piece of terra-cotta is to be properly chambered and perforated and to have such cross-webs, joggles on arch joints, &c., as will give it the requisite strength for its intended position in the building.

5. All joints to have chipping pieces and recesses or projections for joggling together.

Each piece must have the necessary cavities, fillets, channels, grooves, grooves for flashings, stubs, sinkings, joggles, dowel holes, mortices, perforations and recesses worked thereon to allow of proper bonding and connection to adjoining work of whatsoever material it may be. All the blocks must be delivered perfectly accurate on all faces, with all requisite chipping to the joints already executed. No chipping, rubbing, or other interference with the fired surface of the material will be allowed to any exposed face.

6. The deliveries to begin weeks from the date of the order to proceed, and to be completed within months from such date, the whole being divided into sections as arranged between builder and manufacturer before the manufacture is begun. For any delay in the delivery of any section within the time so agreed upon, the manufacturer shall pay as liquidated damages 10 per cent. on the value of such section per month, after due allowance has been made for variations ordered, and for any strike or lock-out among the manufacturer's workmen.

7. Any terra-cotta damaged while the building is in progress by reason of defects in the manufacture shall be replaced at the manufacturer's expense, or, if the architect so choose, the full value of such replacement shall be deducted from the contract amount.

8. The architect shall be free to alter the extent and character of the work by written order, but this shall not invalidate the contract. The value of such alterations shall be determined by the prices of the original estimate, a fully-priced copy of the quantities being deposited with the architect for that purpose.

9. Payments will be made from time to time on the architect's certificate to the extent of per cent. on the value of material delivered and approved in sums of not less than £ , until the reserve amounts to £ . After that payments will be made in full and the balance of £ will be paid months after the whole work has been fixed in the building.

10. All the work intended to be level bedded shall, unless otherwise directed, range with a certain number of brick courses, the number varying, as shown upon the detail drawings.

The plain ashlar to be in alternate courses, or alternate pieces in each course, 4½ in. and 9 in. on the wall, the blocks, with 9 in. bed being chambered. The lengths of the several string blocks to average 12 in., with closers as wanted. In no case shall strings, cornices, &c., have a bed on the wall less than their projection from it. The window and door jambs and dressings generally to be very carefully bonded with each other and with the brickwork, the moulding, where possible, being subdivided into two or more blocks in each course, breaking joint, moreover, with blocks above and below. The details of all such bonding, and the necessary variations of the blocks, will be arranged from the detail drawings by the builder and manufacturer.

11. The architect, clerk of works, and the builder shall have access to the manufactory at all reasonable times.

12. The prices to include manufacture, delivery, models, moulds, and all other works and expenses consequent upon the above conditions.

13. The cubic contents are arrived at by measuring all lengths net, and the heights and beds to ½ in.

14. The dates and sums left blank to be filled in as may be arranged before the signing of the contract.

* "Hawksmoor" is now the usually accepted spelling. Gwilt gives "Hawkesmoor." The "e" on the tombstone is perhaps a mistake of the country mason who cut the inscription. As is well known, until within a comparatively recent period there was great uncertainty and apparently indifference as to the spelling of proper names in English records. A man would even write his own name two different ways on different occasions.—Ed.

Builder's Specification in connexion with the Terra-Cotta Work.

This specification should embody those clauses of the foregoing specification for the terra-cotta manufacturer numbered 1, 3, 5, 6, 10, 11, which need not here be repeated.

1. The builder shall give all such assistance to the manufacturer as may be necessary to secure the strongest and best construction, and that best adapted to the requirements of the material; and he shall be held responsible for the accuracy of all information supplied by him.

2. Any objection the contractor has to make to goods delivered must be made within one week of their arrival on the site.

3. The whole of the terra-cotta for as long as possible before fixing (and never for less than two hours) to be soaked in water. It is then to be filled up solid with cement concrete at a time when there is no frost. The concrete to be formed of one part by measure of Portland cement and six parts of finely broken stone and hard brick with an approved proportion of clean sand. The terra-cotta thus prepared is to be bonded to the utmost practicable extent with surrounding brickwork. The bricks to be well wetted and the whole flushed up.

4. By careful laying out and assortment in long lengths before fixing the utmost possible regularity and truth of line is to be secured in both horizontal and vertical members—special attention being given to the truth of the outer arris of the vertical mouldings.

5. Supply all necessary shores, stays, centreings, and supports with all requisite tile or deal protections and casings, making good any defects arising from the protection thus given.

6. Set in Portland cement the window-sills, strings, cornices, corbels, mullions, transoms, copings, chimney-caps, and such like features. All other parts set in mortar as for the facings generally. Carefully wash down and clean at completion, and make good all defective pointing.

7. The contractor must reject all unsuitable and defective terra-cotta. Any terra-cotta injured during the building's progress must either be replaced by the contractor, or, at the architect's option, have the full cost of such replacement deducted from the contract amount.

8. Work or cut all necessary grooves for lead flashings, and after wedging up the lead, point with cement. In the leaded gutter of main cornice, form or cut dovetail mortices $\frac{1}{2}$ in. by 1 in. by $\frac{1}{4}$ in. deep, about 12 in. apart. Clean up and carefully finish the terra-cotta against all door and window frames, and set out or cut all mortices for fixing purposes as described in other trades. The mortices for the lead plugs for fixing of iron casements are to be cut to correspond with the screw holes in the casements.

9. Put $\frac{3}{4}$ in. by 1 in. by 1 in. slate dowels to mullions, balustrades, &c., and run same with cement. Put $\frac{1}{4}$ in. by $\frac{3}{8}$ in. copper cramps, 10 in. long, to joints of copings, knee blocks, balustrade cappings, and chimney caps, and run with cement. Put $\frac{1}{2}$ in. by $\frac{3}{8}$ in. copper dowels long to all finials.

10. The contractor is to receive the terra-cotta at the station, do all cartage to the site, unload, store, and protect it from all injury.

GENERAL BUILDING NEWS.

CONVALESCENT HOME, EAST FINCHLEY.—The new Convalescent Home erected at East Finchley for the National Hospital for the Paralyzed and Epileptic of Queen-square, Bloomsbury, was opened by the Duchess of Albany on the 16th inst. The building stands on a site of nearly four acres, close to the Great Northern Railway station, and contains accommodation, all on the ground floor, for thirty women and six men. The former are mostly accommodated in one long dormitory, but there is a separate room for six paying patients, and a large day-room, at the south-west corner, commanding views of the Hampstead hills. A main corridor well lighted from the rear, connects these rooms with the staircase and with the dining hall, an apartment about 30 ft. by 24 ft., and 20 ft. high, in which all the patients have their meals. Opposite to this hall are the kitchen, scullery, pantry, larder, &c., while beyond it the corridor forms the main entrance, and leads to the men's wing, which contains a day room, Co. The carters' pier, lavatory, and water closet. The women have a bath, two water-closets, a slop sink, and four lavatory basins, arranged in a properly isolated block adjoining the staircase. The servants have a separate water-closet next the kitchen entrance, and there is a lavatory and closet, opening from the main entrance, for the use of the doctors or Visiting Committee. The first floor, which does not extend over the men's wing, contains

bedrooms for the nurses and servants, and a sitting room for the former, with lavatory, wash, closet, and slop-sink placed over the women's lavatories below, and the main corridor has windows looking into the upper part of the dining hall. All the closets, sinks, bath-rooms, and lavatories have light and ventilation from external windows. The floors are of asphalt or cement, the closets are Bolding's lead-pedestal pattern, the slop-sinks Cliff's "Cecliz," and every part of the sanitary arrangements has been specially arranged to be in accordance with the best modern practice. The soil drains are of cast-iron, jointed with lead, and there is a separate system of stoneware rain-water drains, not connected to the former. The water supply is from the Barnet Company, and enamelled iron has been used for the drinking-water cistern. The materials used externally are yellow stock bricks with red brick arches, &c., on the ground floor, and red tiles on the gables and roofs above. The first floor is chiefly lighted by tiled dormers, and the dining hall has a large louvre ventilating cupola in the centre. The men's wing has two bays, one circular, with moulded cornices like the dormers. Internally the walls are plastered, with a painted dado and distemper above. The heating of the rooms is by Teale fireplaces, and there is a special boiler for the hot-water supply to the lavatories and bath-rooms. The stained glass in the dining hall and corridors was supplied by Messrs. Kelley & Co. to the architect's designs. The lighting is chiefly by incandescent gas lights, the wrought-iron pendants in the dining-hall being supplied by Messrs. Starkie Gardner, & Co. The contractors for the main building were Messrs. Godson & Sons, of Kilburn, and Mr. B. E. Waller, who the electric works. There is a gardener's lodge at the entrance, similar in style to the Home, erected by Messrs. Wheeler & Peake, of Finchley. The architect is Mr. R. Langton Cole. The total cost has been about 10,000.

HOTEL METROPOLE, FOLKESTONE.—The foundations of this hotel were executed by Mr. H. Lovatt, of Wolverhampton, and the building has been erected and finished by Mr. J. A. Lock, J.P., of Dover, Mr. Chedzey acting as his resident manager. The building is faced with dark red bricks, from the High Broom Brick Company, Tambridge Wells, and terra-cotta, executed by the Burnmantotts Company. The roofs, covered with light green Tiberthwaite slates, the dome to centre roof being covered with copper by Messrs. Bray & Co. The constructional iron and steel work—some 700 tons—by Messrs. Drew-Bear, Furks, & Co. The fire and sound proof floors by Banks' Fireproof Construction Syndicate, together with all coffered and other ceilings, cornices, encasement to iron columns, &c., which were covered with helical steel lathing—no wood lathing being used throughout the building. The partitions, where not brick, are constructed of iron framing and lathing, encased in solid plaster. All the staircases and external steps are fireproof, and executed in Stuart's granolithic concrete. The rooms in roof are fire, heat, cold, and sound proof, being specially finished with Anderson's silicate cotton. All communicating doors between rooms are removable, and are double and sound-proof. All sashes are removable, and can be cleaned inside rooms, and are fitted with N.A.P. patent fastenings. The warming and ventilation, cooking apparatus, complete installation of electric light and bells, and the whole of the engineering work (except lifts), has been executed by Messrs. J. Slater & Co. The wiring for electric light is Andrew's concentric wiring, executed by the patentee for the above firm, as also a complete system of improved telephones for the hotel service. Heating coils are placed in all the principal rooms, halls, and all corridors and landings. Fire hydrants are on every alarm in all public corridors. Some 20,000 gallons of water are stored in roof for drinking, fire, and sanitary purposes, and the tanks can be refilled by steam pumps at any moment. The scheme of sanitation has been carefully planned by the architect. There is no drain inside building. All baths, lavatories, and water-closets are unenclosed, and detached from main building by water-cast iron lobbies. The plumber work and fittings have been executed by Mr. George Jennings, under the direction of the architect. Walls of lavatories, &c., are lined with tiles and glazed bricks, floors, marble mosaic. The general lavatory, ball-room lavatory, ladies' lavatory, hair-dresser's rooms, and staircases to same have been lined with Burnmantotts' falience. In the basement the kitchen, larders, pantries, service-rooms and offices are lined throughout with glazed bricks, also dado in corridors, and paved with wood-block flooring. The service, luggage, and passenger lifts have been erected by the Otis Elevator Company. The visitor's hall, main staircase balustrade, dining-room chimney-piece, &c., have been executed in marble by Messrs. Burke & Co., from the designs of the architect. The marble mosaic floors are by Marks and Pinner & Co. The carters' pier, lavatory, and water closet, and small dining-rooms, ball-room (Renaissance), drawing-room (Louis XV.), billiard-room (Spanish Renaissance) were executed by Messrs. G. Jackson & Sons, from the architect's drawings. The locks were specially made by Mr. J. Gibbons, every key differing, with a master key for each floor, and a grand master key for the whole building. The stained glass and some decorative painting by

Messrs. Campbell, Smith, & Co. Two subject-panels in Lounge were modelled and painted by Messrs. Moria & Jenkins, and represent "The Arrival of the Princess" and "The Dance." The whole of the furnishing and equipment of the hotel has been specially designed and executed by Messrs. Smees & Cobay, and the decorations were carried out by them under the directions of the architect. The hotel contains over 250 beds and sitting rooms, and on the ground floor, arrival entrance and hall, visitors' entrance hall, and lounge, entrance to ball-room and suite. Two dining-rooms, reception-room, drawing, reading, smoking, and billiard rooms, and the necessary service rooms. The hotel stands in its own grounds of about four acres, and is bounded by roads on all sides. Mr. W. Woodward and Mr. J. Davies have acted as clerks of works, and the building has been designed and finished at a cost of about 150,000, by the architect, Mr. Thomas V. Cutler, of London.

RESTORATION OF SHERNBOROUGH CHURCH, NORFOLK.—At Norwich Consistory Court recently Mr. Chancellor Blofield granted, on the application of Mr. J. B. T. Hales, Proctor of the Court, a faculty to the vicar and churchwardens of the parish of Sherborne, near Sandringham, for the restoration of the church of that parish. This is a small flint-built structure, erected in the Early English style. Plans have been prepared by Mr. H. J. Green, the Diocesan architect, by which the chancel and south aisle are to be rebuilt, new roofs provided, the church reseated, and the general repairs of the fabric carried out. The estimated cost of this restoration is 1,500.

THE HOTEL RUSSELL, RUSSELL-SQUARE.—In a "Note" published in our issue of August 4, 1894, we directed attention to the demolition of a block of houses on the eastern side of Russell-square, together with portions of Bernard and Guilford streets, and of the Colonnade. The area in question has been taken as the site for a large hotel now in course of erection by Messrs. Langdale, Hallett, & Co., from the designs of Mr. C. F. Doll. The sanitary arrangements, interior decorations, furniture, and equipment will be supplied by Messrs. Maple & Co.

CHURCH OF ST. ALBAN'S, FULHAM.—On the 15th inst. the church of St. Alban's in the Margrave-road, Fulham New Town, was consecrated by the Bishop of London. The foundation stone of the new church was laid by Mr. V. Hayes Fisher, M.P., on June 17, 1895. The portion of the church at present built consists of the nave and aisles only, and will accommodate 500 worshippers. It is proposed to add transepts, chancel, and organ chamber, for which space has been left to the east of the present nave. There is also space for a vicarage at some future time, in addition to the site occupied by the temporary iron building, now used as a nursery-room. The church is built externally of red bricks, with green slates. Internally the walls are faced with yellow stocks and red bricks in ornamental patterns. The church is entered direct from the narthex, with double doors. The nave is 25 ft. wide, 42 ft. to the ridge, and the aisles are 12 ft. wide. A temporary chancel and vestry have been erected at the east end. The ceiling will be decorated with pictures illustrating scenes in the life and death of the patron saint of the church. The church has been built by Messrs. Dove Bros., of Islington, and the architects are Messrs. Aston Webb and E. Ingress Bell, of Westminster. The cost of the present structure amounted to 3,300.

FACTORY WORKS, CHORLEY.—The Mayor of Chorley (Councillor Whittle) laid the corner stone recently of new calico bleaching and print works, situated on Chorley Moor. Messrs. Jolly & Beechley are the architects. Messrs. Furnival, of Haslingden, being the engineers.

PAROCHIAL HALL, DARLINGTON.—On the 16th inst. the foundation stone of the new Parochial Hall in connexion with the parish of St. Cuthbert's, Darlington, was laid by Mrs. Mortimer. The new hall is an oblong building, two stories in height, with a frontage to Victoria-road. In the basement there are a class-room, covered cloister, heating chamber, &c. The hall is on the upper floor, and can be divided into three class rooms. There are two entrances and lobbies from Victoria-road. A small ante-room is provided off the platform. Over the rear of the hall there is a small gallery, reached by open staircase, which also gives access to the basement class-room. The roof will be covered with red Staffordshire tiles. The heating will be by open fire-places and hot water. The contracting for the work have been let to Messrs. R. Kitching & Son, T. Metcalf, R. Smith, J., and G. Wharton, and J. Robinson & Son, all of Darlington. The architects are Messrs. Clark and Moscrop, of Darlington.

HOTEL GORLESTON-ON-SEA.—In a recent limited competition the designs of Messrs. George I. Skipper & F. W. Skipper, architects, of Norwich, were selected for a new hotel, to be erected on a site on the top of the cliffs at Gorleston-on-Sea. Beneath the cliffs, the outskirts of the site afford excellent sites for shops, baths, lavatories, &c. Some of the shops are now being erected by Mr. J. F. W. Bray, contractor, of Great Yarmouth, who has undertaken to complete this contract by the middle of July, ready for occupation this season. The hotel is to be completed in readiness for next season.

NEW THEATRE, DOVER.—On the 14th inst., the new Tivoli Theatre at Dover was opened

to the public. The theatre has been erected on the site of the old Clarence Theatre, and some adjoining property has been acquired to enlarge the space available. The building is well equipped in all its requirements, and the auditorium has seating accommodation for about 800 people. The architects for the work were Mr. C. J. Phipps, who died a few weeks before the theatre was opened, and Mr. Arthur Bloomfield Jackson, of London. The general builder's work was executed by Mr. H. Richardson, of Dover, and Messrs. Beer & Gash, of London, were employed to complete certain technical details involved in the construction of the theatre.

TOWN HALL AND LIBRARY, EAST DEREHAM, NORFOLK.—Messrs. George J. & F. W. Skipper, architects, of Norwich, have received instructions to prepare designs for the new Town Hall and Public Library, &c., proposed to be erected in this town.

CONSERVATIVE CLUB, HETTON-LE-HOLE.—A new Conservative Club has just been opened at Hetton-le-Hole. The building is situated near the railway station, the frontage being about 48 ft., while the depth is nearly 100 ft. The building is two stories high. The ground floor is approached by a flight of steps from the front entrance. Mr. Frank Carr was the architect, and the contractor was Mr. Stephen Branton.

NEW CHURCH, LUNDY ISLAND.—The new church, dedicated to St. Helena, which has been erected at Lundy, was opened on the 17th inst. by the Bishop of Exeter. The church is in the Early Decorated style, and was a liberal accommodation for 165 worshippers. The internal length exclusive of the chancel (which is 25 ft. in length and 17 ft. 6 in. in width), is 50 ft. 6 in., the width being 21 ft. 8 in. There is a vestry 14 ft. 6 in. wide by 12 ft., a portion of the room forming the organ-chamber. The building has been erected from the designs of Mr. John Norton, architect, London, by Messrs. Britton & Pickett, of Liverpool. The architect's assistants were Mr. G. W. Clayton & Bell, of London. A feature of the interior is the marble reredos, by Messrs. Harry Hems & Sons, of Exeter. The church has been built of granite quarried in the island. The lower part of the tower, which is 70 ft. high, will serve as an entrance porch, and there is a square turret at the southeast angle of the tower, which gives an approach to the belfry.

THE SHERRINGHAM HOTEL, NORFOLK.—A new central block and corridor corridors, comprising large dining-hall, kitchen, sitting-rooms, and thirty-five new bedrooms, with all modern appointments, are now being completed by Mr. George Riches, contractor, of Norwich. The whole of this building, including the decorations internally, have been carried out from the designs of the architects, Messrs. George & F. W. Skipper, of Norwich.

GARTLOCH ASYLUM, GLASGOW.—The new Gartloch Lunatic Asylum and Hospital, which has been completed by the Glasgow District Lunacy Board, has just been opened for patients. The asylum and hospital are situated on the old Gartloch Estate, lying about seven miles east of Glasgow. The buildings consist of two parts, asylum and hospital, with workshops, laundry, electric lighting plant, &c. The asylum comprises four blocks, the male and female patients' accommodation being separate, and each block is connected with the administrative buildings. In the hospital, the main reception area is a dining hall, kitchen, sculleries, and general stores, and over the dining hall is placed a recreation hall. The official block is situated to the north, and is flanked by two towers rising each to a height of 130 ft. Here are the Board room, the doctor's room, waiting rooms, &c., on the ground floor; and on the upper stories sleeping accommodation for the staff. Each block is divided into two wards, with dormitories above, and is equipped with boot rooms and lavatory accommodation and large bath rooms entering from the corridors. Like the asylum, the hospital consists of two main parts, one for male and the other for female patients. These are similar in construction and arrangement, and in each are placed observation wards for newly-admitted patients, wards for physically-ailing inmates, for those requiring special nursing by reason of old age and infirmity, for those suffering from infectious diseases. It is entirely separated from the asylum, and has its own kitchen, dining hall, doctor's room, nurses' apartments, &c. The asylum has accommodation for 380 patients, and the hospital for about 140, but meantime only part of the buildings are in occupation. Special water reservoirs have been constructed, and the electric light has been installed. The architects were Messrs. Thomson & Sandilands, of Glasgow. The total cost of the work will, it is stated, be about 200,000.

BUSINESS BUILDING, ABERDEEN.—A block of buildings is to be erected by the Town and County Property Company, Limited, at Aberdeen. The site has a frontage of 200 ft. along the west side of Rosemount Viaduct. The ground floor is occupied by shops, having saloons behind and cellars in the basement. The upper floors are arranged in tenements. Messrs. Brown & W. are the architects, and the estimated cost of the building is 14,000.

SCHOOLS, TUNBRIDGE WELLS.—On the 16th inst. the new parochial schools of St. Barnabas, Quarry-road, Tunbridge Wells, were opened. They have been built by Mr. W. T. Judd, from designs prepared

by the architects, Messrs. H. H. & E. Cronk, and will provide room for 450 children of St. Barnabas parish. The building is of red brick with stone facings, and is two stories high. One room is 71 ft. by 22 ft., with mans of sub-division when needed, and a class-room 25 ft. by 24 ft., with 15 ft. pitch. The upper school is for boys and girls, and there are lesser rooms, cloak-rooms, lavatories.

HOSPITAL, ROTHESAY.—The new non-infectious hospital at Rothessay, built at a cost of 5000*l.*, and named the Victoria College Hospital, in commemoration of the Diamond Jubilee, was opened on the 21st inst. by the Marquis of Bute, Provost of Rothessay. Mr. J. Russell Thompson was the architect for the building.

WESLEYAN SCHOOLS, DRIFHLINGTON, YORKSHIRE.—The memorial-stones of new Sunday schools connected with the Wesleyan Church at Drifhlington were laid recently. The building, which is to consist of a central hall with seven class-rooms and caretaker's house, is estimated to cost 1,500*l.*, and has been designed by Mr. Walter Hanstock, of Batley. It is to be built by Messrs. George Holdsworth, of Gildersome.

PUBLIC HALL, WADDESON, BUCKS.—A new public hall has just been opened in the High Street, Waddeston. The building, which is capable of accommodating some 450 persons, was erected by Messrs. Webster & Cannon, of Aylesbury, under the management of Mr. W. Creed, from plans prepared by Mr. W. F. Taylor, also of Aylesbury. The hall is in the Elizabethan style. The interior has a hammer-beam roof, covered with broseley tiles.

ALTERATIONS IN THE FOUNDATION STONE OF A CHURCH, MIDDLETON.—Alterations are at present being carried out by the School Board at Keptie School. These consist of an extension to the school accommodation and various improvements on the school building. The new class-room will contain seventy-five places. The following are the contractors:—Mason work, Alexander Reid; joiner, A. M. Soutar; slater, John Reid; painter, John Reid; plasterer, Middleton & Donald; painter, W. L. Grant; heating engineer, James Keith—all of Arbroath. Plans have been prepared by Messrs. Carver & Symon, architects, Arbroath and Forfar, and the work is being carried out under their superintendence.

NEW WING, ST. BONIFACE COLLEGE, WARMINSTER.—The foundation stone of a wing of the new College of St. Boniface, Warminster, was laid recently. The plans provide for the erection of a building of Jacobean design. It will be built of stone, and its principal rooms will be a large dining hall, lecture room, library, common room for the students, and Vice-Principal's rooms. The eastern wing, the foundation stone of which has just been laid, will consist of kitchens, stores, and other offices, above which some fourteen bedrooms will be provided. The tenders of Mr. J. Burgess, of Westbury, and Mr. J. Gaistford, of Warminster, were accepted by the Building Committee. The architect is Mr. J. A. Reeve, of Westminister.

THE STAFFORDSHIRE BUILDING TRADES.—The building trade of North Staffordshire is in a flourishing condition, and it is gratifying to note that most of the buildings in course of erection throughout the district are artisan dwellings. These are of a much superior class to those which have hitherto been erected. Bricklayers have none out of work. Carpenters and joiners are also busy, with a demand for their services. Painters and plumbers are very busy, and there is a great demand for men, for when the strike was on a large number of operatives left the district, and now that the dispute is over they have refused to return, as they have been able to obtain much higher wages than were asked for in this district, and are now working under much pleasanter conditions. At Crewe business is very brisk, both in the Leek and in the general trade of the town. At Leek and Staford there are no operatives out of employment.—*Staffordshire Sentinel.*

CATHOLIC CHURCH AND SCHOOLS, BEVERLEY.—On the 15th inst. the foundation stone of the new Catholic church and schools New Walk, Beverley, was laid by the Bishop of Middleburgh. The new church will consist of a nave and sanctuary, 82 ft. long by 21 ft. wide; on the west side of the nave is the Lady Chapel, 17 ft. long by 10 ft. wide, and by the side of this the sacristy. The church will be lighted by eight traceried windows, filled with tinted cathedral glass. The roof is an open traceried one of pitch pine. The organ is to be the main entrance, access to it being gained by a flight of circular steps in the bell turret. The style of the building is that of the fifteenth century; the traceried windows, doorways, &c., will be in buff terra-cotta, bonded in with red stock bricks. There will be over the main entrance and in the apex of the gable the figure of the patron saints. The church will accommodate about 200 adults. The present old chapel at the back of the site is being converted into a mixed school. The buildings are being carried out by Mr. Pape, builder, Beverley, from the designs and under the superintendence of Messrs. Smith, Brodbeck, & Lowther, architects, Hull.

SCHOOL, GRANDTULLY, PERTH.—A new school was opened at Grandtully on the 10th inst. for the Logierath School Board. The accommodation is for 130 pupils. A dwelling-house for the teacher has been erected near the school. The following is a list of the tradesmen who have carried out the work,

viz.:—Mason work, Charles Robertson, Pitlochry; joiner, W. R. Reid, Aberfeldy; slater, W. M. Dow, Morrhay; plumber, A. J. Menzies, Aberfeldy; plaster work, Thomas Stewart, Aberfeldy; bell hanging, John Bryden & Son, Dundee; iron work, P. Murray, Strathay; heating, G. H. Nicoll & Co., Dundee; painting, John Simpson, Aberfeldy; laying out grounds, A. Brenner, Fortingall. The buildings were erected from plans by Mr. William Bell, architect, Aberfeldy.

PARISH CHURCH HALL, ELGIN.—A new parish church hall has just been opened at Elgin. The hall is situated on the north side of Greyfriars-street. The main hall is 71 ft. by 30 ft., and 25 ft. high, and is provided with a gallery. It will accommodate 720 persons. To the north of the hall is a smaller hall, 32 ft. by 22 ft., and the west wing of the building consists of a third hall. In the basement is the heating apparatus. The building has been erected from the designs of Messrs. A. & W. Reid & Wittet, architects, Elgin. The masons were Messrs. Davidson & Hay, Elgin; carpenters, Messrs. A. & R. Dunbar, Elgin; plumber, Mr. James Ross, Elgin; slater, Mr. George Ogilvie, Elgin; plasterer, Mr. George Gray, Elgin; painter, Mr. William Fordyce, Elgin; heating engineers, Messrs. Mackenzie & Moncur, Edinburgh; ironwork, Mr. George Souter, Elgin.

NEW CHANCEL, &c., CHILCOMPTON CHURCH, SOMERSETSHIRE.—In order to make good the east end of the nave walls, and to enable a better chancel arch to be put in, the east wall and everything east in the parish church of St. John the Evangelist, Chilcompton, have been taken down and the chancel rebuilt in the Perpendicular style to correspond with the tower. It is built of Pennant stone, with freestone dressings. The walls externally are finished with freestone battlemented copings, and moulded cornice with gargoyles at the angles. The east end is surmounted with a cross. The roofs are framed of unvarnished pitch pine, with moulded purlins and rafters. The chancel roof being supported by four piers, each containing traceried panels. Internally, the old east wall of the nave, being thin and unsound, was entirely removed, and a new wall has been built, containing a chancel arch. On each side, north and south, are two similar arches to the vestry and organ chamber. Towards the nave, new responds for a future nave arcade have been built in, and the springing stones of the future arches are placed in position. The central gateway of the chancel has been laid with ornamental and encaustic tiles, as also the whole of the space inside the Communion rails. The reredos is of oak, and the Communion rail is of moulded oak, supported on four standards of polished brass scroll-work. A feature of the work is the four-light east window, which is filled with glass. The other windows are filled with plain Cathedral glass. One ancient three-light window of the medieval church has been restored and incorporated in the south chapel. In addition to the foregoing works a considerable portion of the old square seating has been removed and replaced by open benches; whilst the floor of the nave has been partly renewed, and the whole of the nave walls and roof cleaned and coloured internally. The future works contemplated will include carved screens of open tracery to both sides of the chancel and the north and south arches. At present, curtains will be used to disconnect the chancel from the vestry on the one side and the organ chamber on the other. The architect for the work is Mr. F. Bligh Bond, of Bristol, and the work has been carried out by the contractor, Mr. C. A. Hayes, of Bristol.

SANITARY AND ENGINEERING NEWS.

SEWERAGE SCHEME, WALSALL DISTRICT.—On the 16th inst. Mr. Ricard Walton, on behalf of the Local Government Board, held an inquiry at the Endowed Schools, Aldridge, with reference to an application by the Walsall Rural District Council to borrow 4,500*l.* for sewerage purposes. The scheme has been prepared by Mr. Wilcox, C.E.

SEWAGE DISPOSAL, HOLMERTH, YORKSHIRE.—Col. J. Ord Husted, R.E., Inspector under the Local Government Board, held an inquiry at Holmeford on the 16th inst. respecting the application of the Urban District Council for sanction to borrow 10,877*l.* for the purposes of sewerage and sewage disposal. Mr. Lomax, clerk, stated that the Council had an agreement to purchase 10 acres of land at Neilfens from the Earl of Dartmouth for 1,500*l.*, and the scheme would drain the whole of the district at a cost of 10,877*l.*, including the treatment of partially clarified trade effluents. Messrs. Beesley & Barrowclough, the engineers, explained the scheme.

WATER SUPPLY, WINSCOMBE, SOMERSETSHIRE.—An inquiry was held on the 17th inst., at the Assembly Rooms, Winscombe, by Mr. W. O. E. Macleod-King, an Inspector of the Local Government Board, as the result of an application made by the Rural District Council of Ashbridge to the Local Government Board for sanction to borrow 2,400*l.* for works of water supply for the parish. Amongst those present were Mr. W. Reece (Clerk to the Rural District Council), and Mr. A. Powell, C.E. (the engineer to the scheme).

WATERWORKS, BAKSLEY.—On the 17th inst. Alderman Wray (Mayor) cut the first sod of the new waterworks at Midhope, on the South Yorkshire Moors, about ten miles from Barksley. The engineer is Mr. Charles Hawley.

STAINED GLASS AND DECORATION.

STONY STRATFORD.—The reredos in the parish church, designed some twenty years ago, has recently been increased by the addition of three traceried and panelled shutters on each side, and now forms a Triptych. The gilding, oak work, and new marble altar shelf have been done by local tradesmen, but the chief portion of the work, the paintings, will be added as funds are forthcoming. Mr. N. H. J. Westlake, F.S.A., has already painted the centre, and panels on either side of it, with Our Lord in Majesty and Angels censuring, and the figures of SS. Giles and Mary Magdalen (the patron saints of the two parishes), with the "Wounded Hind" and "Pot of Ointment" as their attributes. All these are on gold grounds and richly raised nimbiand diaperings. The work was done under the direction of the architect of the original scheme, Mr. E. Swinlein Harris.

MEMORIAL WINDOWS, DETLING CHURCH, KENT.—Two memorial windows have just been placed in Dettling Church. The work has been carried out by Messrs. Heaton, Butler, & Bayne, of Covent Garden.

WINDOWS, AMBERGATE CHURCH, DERBYSHIRE.—Stained-glass windows have been placed in the church of St. Anne's, Ambergate. The work was by Messrs. Heaton, Butler, & Bayne. The windows are placed in the chancel.

FOREIGN.

FRANCE.—After a first vote which gave no result, the Médaille d'Honneur for architecture has been awarded by the jury of the Champs Elysees Salon to M. Marcel, by fifty-three votes, against forty-five for M. Pontremoli, his only competitor. M. Marcel exhibited this year a "Salle des Fêtes à Paris," and, in co-operation with M. Blanc, "L'Université de Jassy" and the "Gare Centrale de Bucharest."

M. Emile Berton, late pupil of the Académie de France at Rome, has just been made Inspecteur des Bâtimens Civils, and attached to the rebuilding of the Opéra Comique in place of M. d'Espouy, who has been made professor at the Ecole des Beaux Arts. The marriage has been announced of the celebrated artist, M. Puvion de Chavannes, to the Princess Cantanhez. M. Faiguère, as sculptor, and M. Dionis, as architect, have been commissioned to carry out the monument to Baron Larrey, which is to be erected in the Court of the Val de Grâce. M. Bouvens Van der Boijen, architect, has just finished the tomb of Alexandre Dumas, at the Montmartre Cemetery. It is in blue granite, and consists of four columns supporting an architrave, and an entablature on which is placed a cenotaph, recalling that to the Scipios at Rome. This monument will be ornamented with the marble statue which is in the Champ de Mars Salon, the work of M. de Saint-Marceaux. One of the first cares of M. Bouvard, the new Director of Architecture and Promenades, will be the definite arrangement of the Place du Carrousel, which is to be laid out with lawns and flower-beds. M. Baukult, the sculptor, has been commissioned by the Government to execute a bust of Daine for the Versailles Museum. The Municipal Theatre of Cahors is shortly to be rebuilt. The Municipality of Lens has just opened a competition for the construction of a Hôtel de Ville, which is to be erected on the site of the present Mairie. The jury on the open competition in the town of Nîmes for the erection of three blocks of school buildings has awarded the premiums to MM. Raphael, Arnaud, and Raudon de Crozier. M. Schmitt has just been commissioned to rebuild the Theatre and the Hotel de Paris, at Monte Carlo. A syndicate has just been formed in the Department of the Loire Inferieure to drain the lake of Grandlieu, near Nantes, which covers a surface of 3,800 hectares. A canal for the navigation of large boats will be formed, to allow the rivers of Boulogne and Ognon, which now feed the lake, to flow into the Loire.

The work of restoring the south porch of Chartres Cathedral is shortly to be commenced. The statues and all the stones are to be carefully marked and replaced, after having been repaired. The same work is to be carried out for the north door, which is in a very bad state. The Municipal Council of Chantilly have decided to raise a monument, by public subscription, to the Duc d'Anville, to be erected on the Place de l'Hospice d'Anville. The death of Victor Gensollen, a talented pastellist, is announced at Toulon. For several years he had been attached to the Imperial Court, at Brazil. He had sent this year to the Palais de l'Industrie a study of a woman, and a study of still life.

GERMANY.—Innumerable minor buildings appear at present to be made the subject of architectural competition throughout Northern Germany, and though, no doubt, the method of competition is very useful for the larger public buildings, it can scarcely be said to be appropriate for smaller structures. Among the competitions of the last few weeks, we find one for a New Town Hall at Waldheim, with three prominent assessors. A competition for the buildings on a rifle range at Graudenz has been won by Herr Wendorf. Another competition has been opened for some school buildings in Neisse; another for the residence of a regimental chief at Neumenster, which is to cost

under two thousand pounds; and a further one for some restaurant buildings in the Municipal Park at Gelsenkirchen. Of others we may notice one for a Memorial Fountain at Altona, but, taken as a whole, these competitions by no means equal in importance those at the beginning of this year. At the Conference of German Engineers, to be held at Cassel in the middle of August, there will be a number of interesting papers read on what are termed "Popular Engineering Subjects."

The regulations for the Government Travelling Studentships at the Royal Technical College have been revised, but these grants, which are practically in the form of scholarships, will only be awarded to such applicants as can prove poverty, which is by no means a pleasing condition. On the retirement of Professor Ende from the Technical College at Berlin, Professor Wolf will take his place. The Academic Society of Junior Architects, known as the "Motiv," to which we have already had occasion to refer, celebrated the anniversary of its formation with considerable ceremony, no less than 700 members and past members attending. The Society counts at present twenty-seven honorary members, and ninety-four ordinary members, with 1,480 ex-members. There was the usual "conversazione," and an amateur theatrical performance. The attendance at the Royal Technical College at Munich is again increasing rapidly, for there are now 1,711 students as compared with 1,580 of last year. Of these 350 are architects. A new garrison church has been inaugurated at Strasburg, designed by Baurath Mueller, with accommodation for a congregation of 3,100. The cost of the building, with the site, was 70,000. The small gold medal of the Berlin "Salon" has been awarded to Baurath Otto Mah, of Berlin, to whose work we have had frequent occasion to refer.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Messrs. Edward Saunders & Son, surveyors, have removed from 6, Bishopsgate-street Without to new offices at 48, Bishopsgate-street Within.

REERDOS, ST. MARY'S CHURCH, BLAKESLEY, NORTHAMPTONSHIRE.—The reopening of the chancel of St. Mary's Church, Blakesley, and the dedication of the reredos, windows, and the organ, took place recently. The reredos, erected at the eastern end of the church, has been designed by Messrs. Law & Harris, architects, of Northampton. It is constructed almost entirely of Staffordshire alabaster. There is a carved string running through from north to south, above the super altar. The reredos proper is entirely of alabaster, having in its midst a sculptured representation, modelled in high relief, of the Last Supper. On either side are lesser panels. The panels are divided, and flanked by buttresses. The reredos is the work of Messrs. Harry Hems & Sons, of Exeter.

REERDOS, PARISH CHURCH, SEAFORTH.—A reredos is being erected in Seaforth parish church, at a cost of 300l., as a memorial of the Queen's reign. The work, which is of alabaster, has been executed by Messrs. Earp & Hobbs, of London, from designs by Mr. C. E. Deacon, architect, of Liverpool.

ELECTRIC LIGHTING, CARLISLE.—Mr. Applebee, chief electrical engineer, recently reported to the Carlisle Lighting Committee that the demand for electric lighting in the borough was continually increasing. There were now 1,123 lamps ordered waiting connexion. The demand thus exceeded the supply, and the present generating machinery was taxed to the utmost. The contractors, however, are pushing forward the new plant. At present there are 14,113 lamps supplied, an increase of 1,001 over the number of the corresponding month in last year.

LEEDS STREET IMPROVEMENTS.—Colonel John Ord Hasted, R.E., an Inspector of the Local Government Board, held an inquiry in Leeds City Council Chamber on the 17th inst. with respect to the application of the Leeds Corporation for permission to borrow 62,300l. for the purpose of carrying out street improvements in the city. The City Council was represented by the Town Clerk (Mr. Jno. Hartison), the City Engineer (Mr. T. Hewson), the City Accountant (Mr. W. Derry), the Highway Surveyor (Mr. T. A. Prince), and the Vice-Chairman of the Highways Committee.

SANITARY INSPECTORS' ASSOCIATION OF SCOTLAND.—The annual Congress of this Association took place in Aberdeen Town Hall on the 18th inst. Among the papers read was one by Dr. Beveridge, member of Aberdeen Town Council, on "The Housing of the Working Classes." The Corporation of Aberdeen entertained the delegates (sixty in number) to dinner in the evening. Mr. K. Cameron, chief sanitary inspector Aberdeen city, is President of the Association.

THE CAZIN POWER WHEEL.—We have received a little book from the American Impulse Wheel Company of New York, describing the Cazin power wheel, which they manufacture. They state that this wheel contains all that is meritorious in the Pelton wheel, and much that is meritorious that the latter wheel has not, the chief feature being the complete and absolute inversion of the jets in all positions of the buckets, an indispensable condition of highest efficiency. The book

contains much information relating to power wheels, and is worth careful perusal by those interested in the subject.

PROPERTIES FOR SALE.—Ditton Park, Datchet, the seat of the Dowager Duchess of Buccleuch, who died two years ago. The house was erected (in place of one burnt down on April 28, 1812) after the designs of William Atkinson, and in the style he adopted for Sir Walter Scott at Abbotsford, 1822-3. In James I.'s reign Ditton belonged to Sir Ralph Winwood, principal Secretary of State, whose daughter Ann married in marriage to Edward Lord Montagu, of Bovington, Northants. From their son Ralph, created Duke of Montagu, it passed to his granddaughter, Lady Mary, whose husband George, fourth Earl of Cardigan, was advanced, October 28, 1776, Duke of Montagu. Duke George died without male issue; his daughter and sole heir, Elizabeth, married Henry, the third Duke of Buccleuch. The park is conspicuous for its old oak trees, the gardens for their avenues of chestnut and yew. Pyrgo Park, near Havering-atte-Bower, which seems to have been a jointure-house of our earlier queens-dowager. Slow records in his "Annals" that Joan of Navarre, Henry IV.'s second consort, lived there as a widow (see Gidea Hall, *infra*). In 1559, Elizabeth granted Pyrgo to Sir John Grey, brother of Henry Duke of Suffolk, who died 1564, and was buried in the chapel. His youngest son Henry, elevated Lord Groby, sold the estate to Sir John Cheke, Bart.; it ultimately passed by marriage to Thomas Archer, who in 1747 was elevated Baron Archer, of Umberlade, co. Warwick. The original mansion was pulled down in 1770, and was again rebuilt, by Cubitt, about forty years ago. Gidea Hall, Romford, built *circa* 1720 by Sir John Evelyn, Bart. The former manor-house, begun in 1467 by Sir Thomas Cooke, elected Lord Mayor in 1462, was completed by his grandson, Sir Anthony, tutor to Edward VI., and father of the learned daughters whose classical attainments are graphically described by Dr. Walter Haddon in his address to Cambridge University. Sir Anthony entertained Queen Elizabeth there in July, 1588. Of the daughters, Anne became wife to Sir Nicholas Bacon, and Elizabeth married John Lord Russell. The latter composed the polygot inscription on her husband's monument (restored, 1867, by the Duke of Bedford) in St. Edmund's Chapel, Westminster Abbey. The bridge, having three elliptical arches, is ascribed to James Wyatt. Of the earlier house a view was given in Le Serre's description of Marie de Medici's journey from London from Harwich; Charles I. met her at Chelmsford, and having escorted her to Gidea Hall, stayed the night at Pyrgo.—Danbury Park, near Chelmsford, purchased in 1845, for 24,700l., by the Ecclesiastical Commissioners, as a palace for the Bishops of Rochester. It was the residence of the late Dr. Cloughton, Bishop of St. Albans, and was sold in November, 1862, for, we understand, 20,000l., under provisions of the St. Albans Bishops Act. Danbury takes its name from a reputedly Danish ford within whose area stand the church and churchyard. The former house was erected by Sir Walter Mildmay, of Apethorpe, *obit*, 1589. In his "Essex," 1835, T. Wright says that the house had been lately demolished, and that Mrs. [sic] Round designed the house build in its stead.—Winslow Hall, Bucks, attributed to Sir Christopher Wren, and presenting many features, both of plan and decorations, characteristic of his style and period.

CONDITION OF KILDWICK PARISH CHURCH, YORKSHIRE.—On the 17th inst. a meeting of the parishioners of Kildwick took place in the National Schools to hear a report upon the condition of the church building. Mr. Peterson, architect, Bradford, reported upon a recent examination of the fabric. He stated that three bays of the choir were 6 in. out of the perpendicular. The centre pillar of the south aisle was considerably damaged, and this fixture was insecure in itself and dangerous to the public. He considered that the north and south arcades should be rebuilt, and that the roof of the church should be restated. He estimated the cost at about 1,200l. A committee was appointed to deal with the matter and to communicate with the patrons of the living, Christ Church, Oxford, suggesting that the advice of Messrs. Paley & Austin, of Lancaster, should be taken before the scheme was submitted to the public.

CARPENTERS' COMPANY'S EXAMINATIONS.—The annual examinations for shop and outdoor foremen, &c., held by the Carpenters' Company, took place at their hall, and at the Technical Schools, Great Titchfield-street, for the practical part of the examination, on June 16-19. Among the examiners present were Sir Philip Magnus, Professor Banister Fletcher, Professor Roger Smith, Mr. John Slater (Vice-Chairman of the Board of Examiners of the Royal Institute of British Architects), and Mr. Hampden W. Pratt, President of the Architectural Association. The number of candidates sitting for the examination was the largest the Company had yet had. Those who passed, arranged in order of merit, were, *First Class Certificates*.—J. C. Brown, Jno. Cresswell, H. C. Williams (equal), Silver medals; Wm. Humphries, J. E. Pearce (equal), Bronze medals; G. A. Chambers, Geo. Evers, S. M. Hornc, Arthur Thomas, Fredk. Bull, Geo. Ayres, H. A. Davey, F. Hartnoll. *Second Class Certificates*.—A. Balfour, T. E. Kinch, W. S. Blair, Wm. Gritton, A. C. H. Fendleybur, Chas.

Rowe, H. C. Blackman, Hy. Snowdon, Jas. White, A. E. Martin, T. A. Hansard. Several candidates entered who, already holding certificates, wished to better their positions, but as they failed to do so, their names are not included in the above list.

CARPENTERS' HALL LECTURES.—On Friday the 17th inst., Mr. C. T. Aston gave a lecture at Carpenters' Hall on "Wood-working Machinery." He first described the circular-saw, the various benches, spindles, and bearings used; the methods of sharpening saws for different work; the different feeds used, such as the roller, rack, and rope feed, and their advantages and disadvantages. He next described the frame-saw, its uses, advantages, and weakness if driven too fast; the band-saw and its various kinds, its advantages for cutting other than curved surfaces, because of the small saw-kerf and less power to drive, turning out as much work as the circular or frame-saw; its guides, and the care necessary to ensure that the saws do not generate too much heat from friction. He then passed to planing and moulding machines, cutter blocks and their bearings; the advantage of the shearing cutter block as against the old-fashioned parallel ones; the balancing and fixing of the cutters; the advantages of double and single feeds, also the rack feed. The spindle, its uses, and cutters, were then described, and the advantage of having a heavy machine so as to lessen the vibration, which gives the machine a better chance of producing smoother work. The boring and shelling machines, mortice and dovetailing machines, also grinding and gulleting machines were also described. Professor Banister Field was in the chair. A vote of thanks was proposed by Mr. W. Dixon for the very practical paper.

NEW PARK, TOLL-CROSS, GLASGOW.—The new park at Tollcross, which was acquired for 30,000l., was formally opened to the public on the 19th inst., by Lord Provost Richmond. It extends to eighty-four acres, and brings the area of recreation grounds owned by the Corporation of Glasgow up to 1,000 acres.

CAPITAL AND LABOUR.

THE BUILDING TRADE DURING MAY.—Employment in the building trade continued brisk during the past month. The percentage of unemployed in various making returns for May are only 0.8, compared with 1.0 in April, and with 1.6 in May, 1896. Forty disputes occurred, involving 3,040 work-people.

THE STONEMASONS' STRIKE, NEWCASTLE.—The dispute between the operative stonemasons employed in the Newcastle, Gateshead, and Gosforth districts and the Master Builders' Association, which led to a strike, has been settled at a conference between the parties. The employers agreed to concede the men's demands with regard to hours of labour, these were as follows:—From March 1 to November 30 work to commence at 7 a.m. and cease at 4.30 p.m.; from December 1 to the last day of February, work shall commence at 8 a.m. and cease at 4 p.m. The masters could not, however, agree to the request that masons only should fix worked stone on account of the difficulty of procuring men, but accepted a provision that the use of the trade should be employed in preference to trieklayers whenever they were procurable. A mass meeting of stonemasons was held subsequently, and the result of the conference reported, when it was resolved that the terms offered be accepted and work resumed.

CRIEFF MASONS' STRIKE.—The Crieff operative masons recently met in the Crieff Hall to decide as to the attitude they were to adopt in regard to the refusal of the masters to comply with the demands of the men for an additional 3d. an hour or shed accommodation. It was reported that the employers had got the necessary warning, and after some discussion it was decided to cease work immediately, and to strike till the masters conceded the demands. The men therefore entered on a strike. It was intimated that one of the masters had agreed to grant the desired rise in wages. On the 15th inst., the Crieff master masons met to decide as to what was to be done. The original intention was to hold out, but after some discussion they agreed to grant the demands of the men.

THREE TOWNS BUILDING STRIKE.—A deputation from the men engaged in this strike met the Employers' Association on the 14th inst., and, after some discussion, the latter made an offer to grant the increased wage on August 1, but the carpenters held out for July 1.

STRIKE OF BRICKLAYERS' LABOURERS, HAMPTON.—The bricklayers' labourers employed at Riverdale by Messrs. Aird and Lucas, recently struck work for an advance of 3d. per hour, but consented to resume operations to afford of a reference of the demand to the firm. This was subsequently done, and the men were informed that their demand had been conceded, viz., 0.3d. per hour.

PETERBOROUGH PAINTERS AND THEIR WAGES.—At a meeting of the master painters of Peterborough recently it was agreed to give good men 6d., and others 5d. per hour as before, and a resolution was passed not to employ any men who went out on strike. A Master's Association has been formed.—Peterborough Standard.

LEGAL.

ALLEGED WRONGFUL INTERFERENCE WITH A WALL AT CLERKENWELL.

THE case of the School Board for London v. Hunt came before Mr. Justice Romer, in the Chancery Division, on the 18th inst., it being a motion by the plaintiffs for an interim injunction to restrain the defendant from pulling down any part of a wall which it was alleged belonged to the School Board's public-house, Clerkenwell, of which the defendant was the licensee.

Mr. Stokes, who appeared for the plaintiffs, said that his clients had a school in Clerkenwell which occupied the site of the late Clerkenwell Prison, which was closed in 1885, the site in question being sold to the plaintiffs in 1888. The learned counsel added that the defendant had knocked a hole into the wall, and was proceeding to erect a building on the other side, and the plaintiffs asked for an injunction restraining this interference with the wall.

Mr. Ralph Neville, Q.C., for the defendants, said that it was a very extraordinary claim, and if his learned friend had really got a conveyance of this piece of property, the only question in the action would be a question of user because the owners of the title had been the plaintiffs, and the "Jolly Coopers." The defendant denied that the plaintiffs had got the wall in question. He (the learned counsel) supposed there had never been a case before in which people claimed half the width of a wall opposite to their premises, there being a passage between the two buildings.

His Lordship said that there seemed to be a question to be tried, and a very serious question, too, and he thought things must stand till the trial. (To Mr. Neville.) Can you not proceed with your buildings without touching this wall?

Mr. Neville: No, my Lord.

His Lordship: Will you undertake to re-erect the wall if the plaintiffs turn out to be correct?

Mr. Neville: I should have thought that we might have given an undertaking to replace the wall or a sufficient substitute. It cannot matter to the plaintiffs whether the exact wall is replaced, so long as they have a dead wall opposite to their school.

Mr. Stokes said that that suggestion would not be satisfactory to his clients.

Mr. Neville said that his learned friend need not be frightened about the windows which were proposed to be erected, as they were ordinary domestic windows, used for the purposes of the lunatic, and not for the purposes of the licensed portion of the premises. Eventually, on his Lordship's suggestion, it was arranged that the motion should stand till the trial, the defendants to go on with their building, but undertaking to replace the wall in such way as the Court should direct if the plaintiffs succeeded, and also further undertaking, pending the trial, to put up a hoarding which would prevent any windows of the defendant's new building overlooking the plaintiffs' premises. There was consequently no order on the motion, except that costs be costs in the action.

ALLEGED INTERFERENCE WITH LIGHT AND AIR AT LEEDS.

IN the Chancery Division, on the 18th inst., the case of Taylor v. the New Bridge Area Committee, was mentioned to Mr. Justice North, it being an application by the defendants to change the venue from London to Leeds. The case has reference to an alleged interference of light and air at Leeds by the defendants, who now sought to have the action transferred from the High Court to the next Leeds Assizes, commencing on July 26, on the ground that there was little probability of the case being reached in London before the Long Vacation, that a speedier trial could be obtained at Leeds, that it would be more convenient to have the trial at Leeds, where a jury would have the opportunity of viewing the premises.

Eventually his Lordship ordered the case to stand until July 9, and if it was not reached in London by then he directed that the case should be transferred to the Queen's Bench Division, and be tried at the Leeds Assizes, the costs to be costs in the action.

MEETINGS.

MONDAY, JUNE 28.

Royal Institute of British Architects.—Sixteenth general meeting (ordinary), to present the Royal Gold Medal for the promotion of Architecture, conferred by Her Majesty the Queen, to Myraener P. J. H. Cuyper, Amsterdam, for his executed works as an Architect. 8 p.m.

TUESDAY, JUNE 29.

National Association of Master Plumbers (London Branch).—Annual Dinner, Caledonian Saloon, Holborn Restaurant. 8 p.m.

WEDNESDAY, JUNE 30.

Builders' Foremen and Clerks of Works' Institution.—Half-yearly meeting of the Directors. 8 p.m.

Zincifer Institute of Architects.—Annual business meeting. 8 p.m.

SATURDAY, JULY 3.

Institution of Junior Engineers.—Visit to the Engineering Laboratories, &c., Cambridge University, by invitation

of Professor J. A. Ewing, F.R.S. Train leaves Liverpool-street (G.E.R.) at 2.30 p.m.

Northern Architectural Association.—Annual Excursion, Banburgh.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

11,392.—FASTENINGS FOR DOWN-SPOUTS AND THE LIKE: E. T. Fitcher and Others.—Invention consists in a square-pointed iron spike for insertion in walls, the protruding end of which is furnished with a shoulder and threaded portion to take a brass nut, made with a fixed washer and square portion for use with key.

12,016.—SANITARY APPLIANCES USEFUL FOR PREVENTING STOPPAGE OF DRAINS AND OTHER PURPOSES: J. Edmondson.—In order to prevent stoppage by large foreign substances, inventor places in water-closet basin or other receptacle a shallow interior basin supported above bottom of main basin and leaving space around wide enough to allow passage of the excreta and paper, but stopping all larger articles. The flush is arranged to shoot over the basin and thus flush it clean. For ordinary side gulleys, a horizontal disc, fixed with a central eye-bolt and having its sides some distance from the siles of the gully, is adopted.

12,165.—WINDOW SASHES AND FRAMES: G. Kidout.—In order to render the vertically-sliding sash reversible, inventor hinges the inside beading so as to permit of being turned back close to the frame, and parting beads flush with the pulley slats. When window is open, bottom sash can be turned in and will rest against an inrunner guard. The cords of this sash are then hooked up. The top sash is then brought down and similarly treated.

12,664.—APPARATUS FOR APPLYING PAINT, &c.: R. Walbrook.—In an apparatus for "spraying" paint, &c., inventor claims:—(1) The combination with the nozzle-head of a sliding spring-controlled rod, having its inner end reduced to form a piston valve; (2) the combination with the nozzle-head of the sliding valve of a detachable plug, provided with a stuffing-box, through which spindle works, and a strainer forming part of the detachable plug.

16,938.—WINDOW SASHES: A. Sutherland.—In order to preclude the entrance of wind or dust, inventor forms longitudinal grooves in the edges of the side bars and lower rail and in the side of the upper rail, and inserts "closing strips" therein.

17,354.—SOCKETS OF PIPES FOR SEWERAGE, &c.: W. Goodwin and Another.—Invention consists of improvement in socket of earthenware pipe to secure alignment, and obviate lateral play. Inventor adopts a socket for pipe joint, having a tapered or sloping flat V-shaped bed, and a socket having a polygonal form for the reception of the end of a spigot.

NEW APPLICATIONS FOR LETTERS PATENT.

JUNE 2.—12,951, J. Craid, jun., Door Knobs.—13,081 J. Quigley, Tools.—13,082, J. Quigley, Bricks.—14,001 W. Lee, Fastenings for Windows.—14,037, H. Werner Baker's Ovens.

JUNE 9.—14,028, H. Friend, Pulley Stile Sash Retainer.—14,054, P. Liebig, Flushing Apparatus for Water-closet.

14,056, M. Ireland, Holding in Position Water and Gas Pipes, &c., when Soldering Same.—Metal Pipes.—14,064, T. Krah, Slabs for Covering Walls.—14,068, J. Fisher, Fireproof Ceilings and Partitions.—14,073, G. Dugnite, Fastening for Sashes.—14,105, F. Hoising and Others, Enamelled Paint and Method of Applying Same.

JUNE 10.—14,121, A. Williams, Window Fastener.—14,179, W. Thomas, Fastenings for Windows.—14,199, H. Jones, Nails.

JUNE 22.—14,216, R. Wilton and S. Goodman, Frames for Pavement Light Lenses and Tiles, and Method of Fixing Therein.—14,217, W. Hawkins, Sash Pulleys.—14,220, A. Fowler, Sower and Drain Ventilator.—14,235, A. Teller and D. Richardson, Double Doors and Closing Apparatus therefor.—14,245, G. Verrey, Flushing Apparatus.

JUNE 12.—14,205, A. Patrick, Manufacture of Portland or Similar Cement.—14,226, J. Peurs, Chimney or Ventilator Top.—14,229, A. Elbers, Process of Treating Brick Furnace Slag for Use in Cement, Mortar, &c.

PROVISIONAL SPECIFICATIONS ACCEPTED.

11,191, M. Adams, Drain and other Pipes.—12,200, G. Hunt, Platform for Use with Ladders, &c.—12,310, J. Alton, Window Sash Fasteners.—12,311, G. East, Window Sash Fasteners.—12,322, W. Garbham, Window Sash Fastener.—12,475, A. Wright and Others, Dies for Making Bricks, &c.—12,500, G. Janeway, Window Fastener.—12,526, J. Duckett & Son, Limited, and J. Duckett, Water-Closets.—12,719, E. Thomas, Sash Fasteners.—12,720, S. Francis, Sash Fasteners. 12,724, G. Aikman, Sash Fasteners. 12,725, R. Price, Sash Fasteners.—12,903, H. Tidswell, Window Sash Fasteners.—12,925, J. Powell, Window Sash Fasteners.—12,920, R. Ewing, Joints of Earthenware Pipes.—12,956, E. Thomas and A. Hobman, Building Bricks.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

17,178, J. Rudd, Hinges and Staples for Doors and Gates.—17,227, J. Padbury, Roof and Wall Tiles.—21,324, J. Walters, Water-waste Preventers for Flushing Purposes.—21,078, W. Nicholson, Flying Bricks for Building.—20,005, Fixtures.—9,112, A. Thieke, Attachment of Woodwork or Fixtures to Walls or Parts of Buildings.—21,177, J. Seward, Combining and Bolt for Doors, Windows, &c.—10,438, J. Kahle, Window Sashes and Frames.—10,628, M. Vliegen, Flushing Apparatus.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

JUNE 4.—By WISCH & SON (at Sandhurst). Sandhurst, Kent.—"Scrum's Farm," 5 a. 3 r. 28 p. 11. By SALTER, DIMSON, & SONS (at Mildenhall). Mildenhall, Suffolk.—Two sets of farm premises and 19 a. 3 r. 23 p. 11. 1,210 A copyhold cottage and two enclosures, 7 a. 2 r. 28 p. 269 An unall holding, comprising 2 a. 0 r. 23 p. 205 Freehold enclosures of land, 23 a. 2 r. 14 p. 475 JUNE 5.—By T. W. GAZZ (at Norwich). Framlingham Earl, Norfolk.—A freehold farm, 52 a. 0 r. 17 p. 1,025

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Table with 4 columns: Nature of Work, By whom Advertised, Premiums, and Date to be delivered. Includes entries for Art Gallery and Public Library, Tower, and High Row.

CONTRACTS.

Table with 4 columns: Nature of Work or Materials, By whom Required, Forms of Tender, and Date to be delivered. Includes various construction and renovation projects across different locations.

CONTRACTS—Continued.

Table with 4 columns: Nature of Work or Materials, By whom Required, Forms of Tender, and Date to be delivered. Continuation of construction contracts from the previous section.

PUBLIC APPOINTMENTS.

Table with 4 columns: Nature of Appointment, By whom Advertised, Salary, and Application to be in. Lists various public service roles and their associated details.

Those marked with an asterisk (*) are advertised in this Number. Competitions, iv. Contracts, pp. iv. vi. viii. & xxi. Public Appointments, pp. xix. & xli.

Large table listing land sales and property transactions. Columns include location, details of the property, and the agent. Includes entries for How Cople, Kenton, Kensington, and various other areas.

LONDON.—For the erection of two shops at High-street, Plumstead, for Mr. J. Austin. Mr. Harold Busbridge, architect.—
Spreckley & Co. £7,226 Welch & Sons £1,677
Stanford £2,214 Fretton £1,222
Thomas & Edge 2,217 Hart 1,849

LONDON.—For repairs to be done at the Licensed Victuallers' Asylum, Asylum-road, Old Kent-road, S.E. Mr. W. F. Potter, architect.—
R. Hirst £143 F. Dawes £175
R. J. Young 218 W. Croft, Sydney 186
H. James 300 * Accepted.

LONDON.—For alteration at the "Lord Stanley" public-house, Camden Town, London, N.W. Mr. Herbert Riches, architect, 3, Crooked-lane, King William-street, London, E.C.—
A. Porter £728 P. Hart * Accepted subject to slight modification.
T. Osborn & Sons, 723

LONDON.—For alteration in making billiard room at the "Hope and Anchor," Camden Town, N.W. Mr. Herbert Riches, architect, 3, Crooked-lane, King William-street, London, E.C.—
W. H. Durrant £485 Antill & Co. £450
Stuart 479 P. Hart (accepted) 392

LONDON.—For alteration and fittings to shop, High-street, Deptford, S.E. Mr. Herbert Riches, architect, 3, Crooked-lane, King William-street, London, E.C.—
Farrell & Co. £216 Spreckley & Co. £257
S. J. Scott 261 * Accepted.

NEW BRUMBY (via Doncaster).—For supplying 720 tons broken granite, for the Brumby and Fordingham Urban District Council. Mr. John Spavin, surveyor, Beckett-amp-street, New Brumby Station.

Firm Name	Tons	Per ton
Enderby & Stoney Stanton	12 4	12 1
Ferguson & Stoney	12 4	12 1
Ellis & Everard	17 6	12 3
Mitwick Company	11 9	11 7
Shap Granite Company	12 4	12 2
Kaltenback & Schmitz	11 0	12 9
Orl & Maddison		Per ton
Mount Sorrell		12 8
Jackson & Sons		11 6
Jackson & Sons		11 6

* Accepted.

PORTSHHEAD (near Bristol).—Accepted for completing 1st sewerage scheme. Mr. T. J. Moss Flower, Assoc. M.Inst. C.E., Carlton Chambers, Bristol.—
J. & T. Binns, Horwich £15,627 9 10

REDHILL.—For the erection of St. Joseph's Catholic Church at Redhill, Surrey. Mr. A. E. Purdie, architect. Mr. J. T. Carew, surveyor.—
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W. Baguley & Sons 8,220 J. Larnick 5,221
Smith & Sons 6,135 D. Durbham 5,327
C. Nighthingale & Sons 6,029 F. G. Minter, Westminster 5,303
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SOUTHAMPTON.—For carrying to the playgrounds of three schools, viz., Central District (infants), Ascupart (infants), Northern three departments, for the Southampton School Board. Mr. John H. Bizard, Surveyor to the Board.—
J. E. Enderick £2,219 9 1 E. Bradshaw, South-C. Milson 2,216 2 1 sea* £427 5 7
J. Walwright & Co. 2,216 9 7
[Architect's estimate, £435.]
* Accepted, subject to the approval of the Education Department.

STOKE-ON-TRENT.—Accepted for converting No. 6, Liver-cool-road, Stoke-on-Trent, into a shop, for Messrs. Jackson's Stores, Limited, of Leeds. Mr. E. Penn, architect.—
T. R. Yoxall, Stoke £205

STOKE-ON-TRENT.—For alterations to the "Saracen's Head" Inn, Stoke, for Messrs. Worthington & Co., Limited. Mr. E. Penn, architect.—
T. R. Yoxall £695 T. S. Bromage, Longton* £521
L. Price 258 * Accepted.

STOKE-ON-TRENT.—Accepted for erecting a detached house, James-street, Stoke, for Mr. H. J. Wildin. Mr. E. Penn, architect.—
T. R. Yoxall, Stoke £546

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Ormerod Ashworth, Crawshawbooth, near Manchester £9,450

WOKING.—For new drill hall, Walton-road, Woking, Messrs. Pooley & Follett, architects and surveyors, 21, John-street, Adelphi, London, W.C.—
Chafen & Newman £469 Ingram & Sons £430
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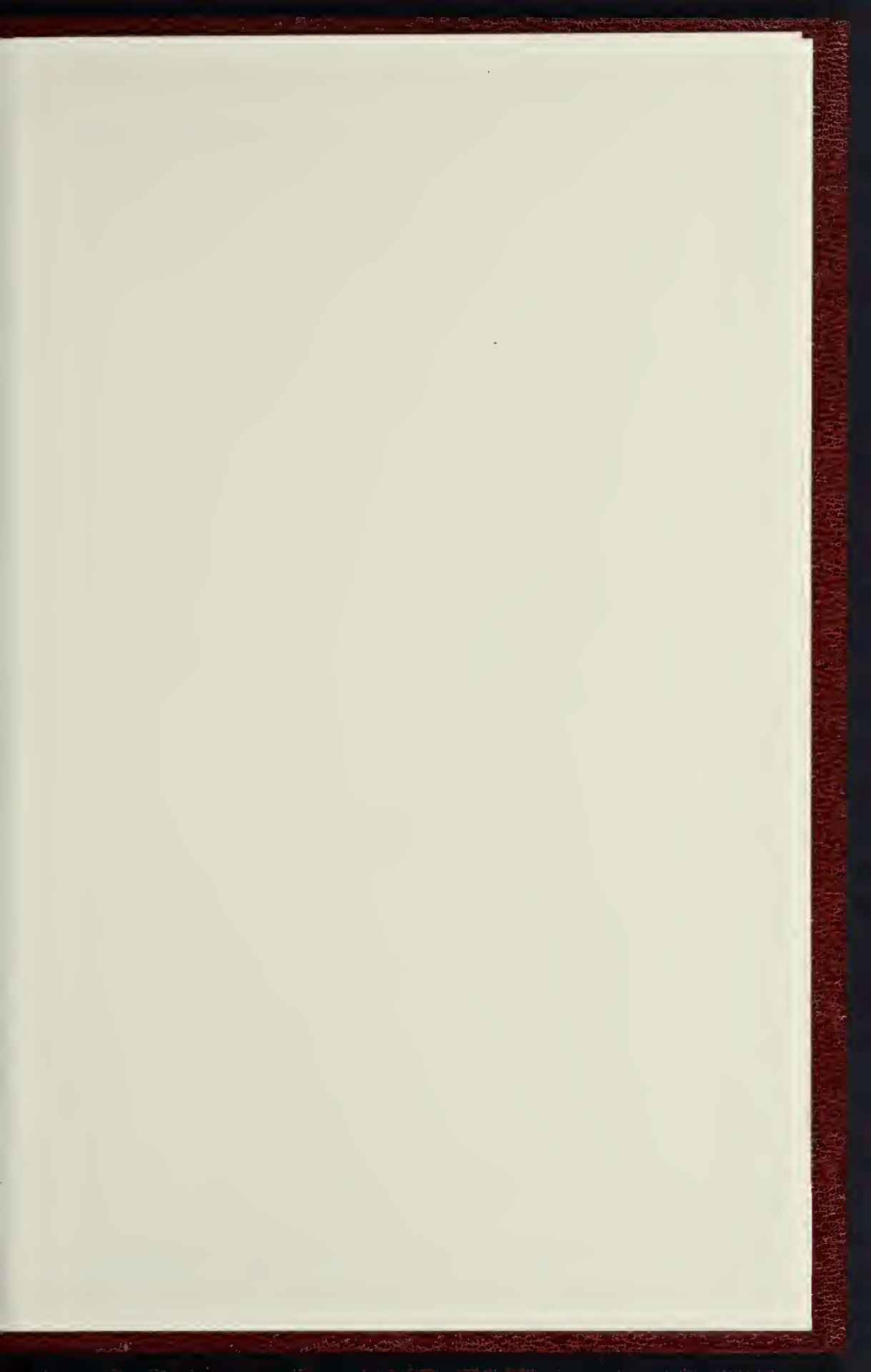
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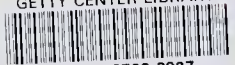
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